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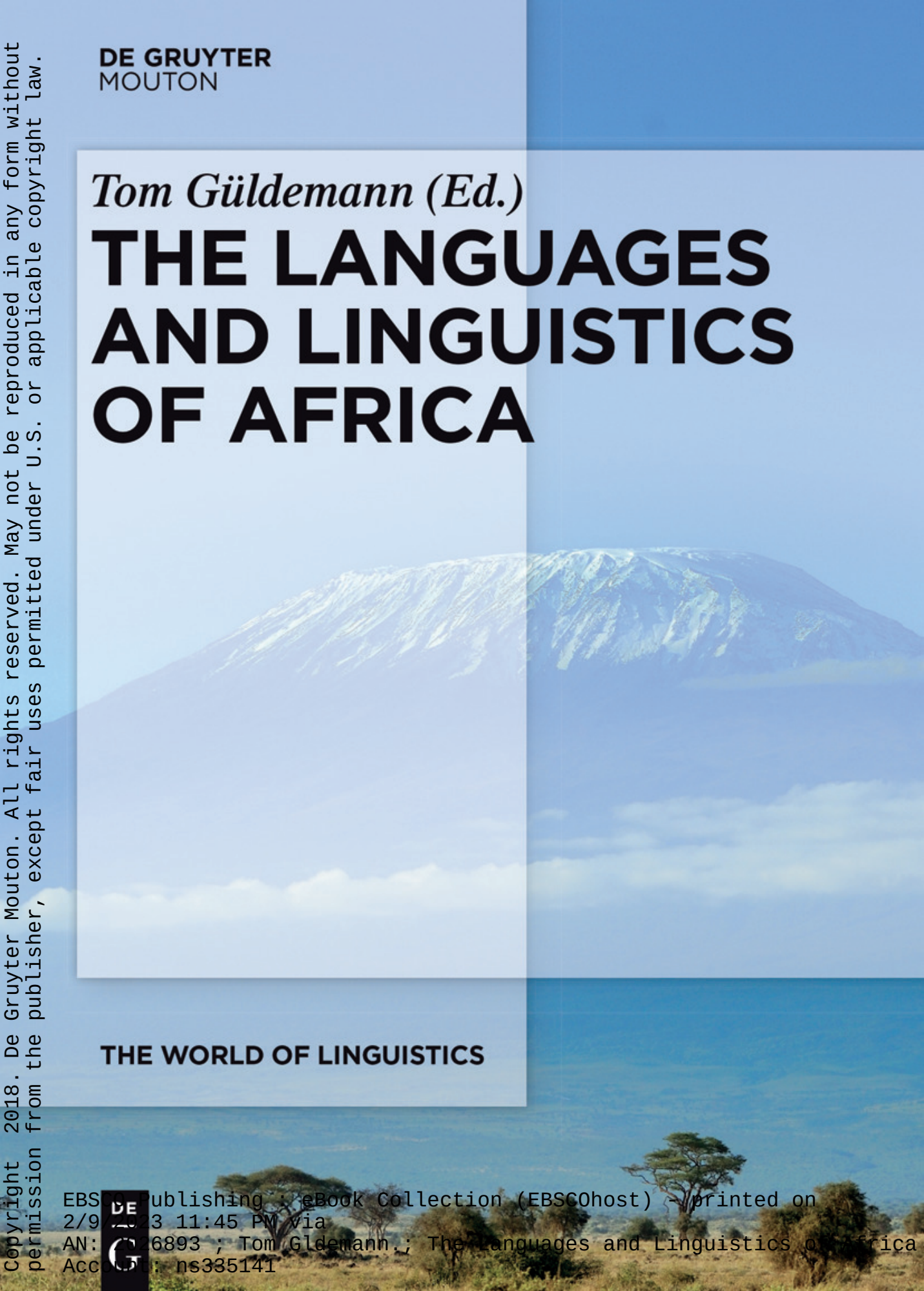
Tom Güldemann (Ed.)

THE LANGUAGES AND LINGUISTICS OF AFRICA

THE WORLD OF LINGUISTICS



The Languages and Linguistics of Africa
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The World of Linguistics

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Hans Henrich Hock

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Edited by
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Preface

It is more than ten years ago that Larry Hyman asked me whether I was interested in editing a comprehensive volume on the languages of Africa in the series "The World of Linguistics." At the time I accepted the offer with enthusiasm without anticipating that this project could cause anything else than eagerness and joy in bringing the publication to fruition. Now that it finally sees the light of the day, the uneasiness felt at times in preparing it is gone, having made way to a feeling of some hope that Larry need not regret his decision to have handed over this publication project to me.

From the outset, this book was not planned as a fully representative and complete survey of the linguistic situation on the African continent, not only due to the enormous task but also because the field is currently highly dynamic, so that any attempted overview may soon become outdated. Accordingly the book hardly provides full lists of typical structures of African languages, judgments about frequency and distribution of individual features across areas and language families and the like. Instead, the contributors were asked to tackle their topic particularly from two perspectives that relate to the interplay between African linguistics and our general discipline. One focus of this book is the past and expected future contributions of African languages to related scientific fields. In particular, what phenomena in Africa have informed, challenged or even shaped general linguistic research and our present theoretical thinking, or are likely to do so in the near future? The other focus goes in the opposite direction. Inevitably, there are certain linguistic topics which have so far been debated on the basis of language data from other parts of the world or with approaches different from those prevalent in Africa, so that linguistics focusing on this continent may partly lag behind. Hence, it is useful to ascertain where and how African linguistics can, or even need to, take general disciplinary approaches and their results into account in order to profit better from them. In this sense, the aim of this book is to highlight interesting linguistic challenges and thus provoke new ideas and prepare novel research agendas rather than serving as a comprehensive guide.

This intended focus also entailed breaking at times with certain common practices. In particular, this is related to the present conceptualization of Africa as a linguistic region. There is a certain tendency to restrict Africa in a linguistic sense to its sub-Saharan parts and deal with large parts of the Afroasiatic family, and certainly the Semitic languages of Western Asia, in a different areal context. This volume sees Africa as a linguistic whole in considering Afroasiatic as an integral part of this continent, even though individual contributions to this volume may not reflect this idea to an equal extent; Part 2 of Chapter 3 even argues on various kinds of evidence that Asian Semitic, and thus the Arabian Peninsula, should be added to the wider African region.

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The fact that the book project has taken so long is attributable to the usual problems encountered when pursuing a project like this – finding knowledgeable colleagues who are willing to contribute, making sure that they actually do contribute, making alternative plans when things go wrong, and parallel to all this, coping with many other concurrent responsibilities of a busy academic career. Unfortunately, the invited contributors for two important areas – Part 1 of Chapter 3 planned to deal with "Language contact and contact languages" and Chapter 7 on "Anthropological and cognitive linguistics" – were unable to meet their deadlines. To make sure that the appearance of the chapters of the remaining contributors would not be delayed further, I had to make the regretful and admittedly unusual decision to only adumbrate the planned treatment of such important linguistic areas in the table of contents and go ahead without them. I certainly hope that the other chapters, adding up to an already sizable volume, not only make up in quantitative but also qualitative terms for these, and possibly other, gaps.

That the volume appears at last is due to the support and collaboration of various people and institutions. I would first of all thank all co-authors of the volume for their initial interest and subsequent effective participation in this publication project, including the trust in its final realization. I am grateful, too, to Bernard Comrie and Russell Gray by hosting me at the Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology Leipzig and the Department of Linguistic and Cultural Evolution at the Max Planck Institute for the Science of Human History Jena, respectively – in both places I received important logistical support and could undertake parts of the work for this book in an inspiring academic environment. My thanks also go to the staff of De Gruyter Mouton, in particular Barbara Karlson, and the editor of this series Hans Henrich Hock for their cooperation and patience attesting to their understanding that daily responsibilities of authors are notoriously in the way of production schedules. Two people, Heather Weston and Ali Hatcher, deserve my special thanks as editorial assistants – without them this book would not yet exist. Last but not least I owe an immense debt of gratitude to my family for putting up with my excuses of work plans and publication deadlines while they had their own projects with and for me. I dedicate this book in particular to my parents.

Berlin, 20 July 2018

Tom Güldemann

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1. A survey of African languages

Harald Hammarström

1.1. Introduction

The African continent harbors upwards of 2,000 spoken indigenous languages – more than a fourth of the world's total. Using ISO 639-3 language/dialect divisions and including extinct languages for which evidence exists, the tally comes to 2,169. The main criterion for the ISO 639-3 language identification is mutual intelligibility, but these divisions are not infrequently conflated with sociopolitical criteria. This causes the tally to be higher than if the language/dialect division were to be based solely on intelligibility. Based solely on mutual intelligibility, the number would be approximately 85 % of the said figure (Hammarström 2015: 733), thus around 1,850 mutually unintelligible languages in Africa. A lower count of 1,441 is obtained by treating dialect chains whose endpoints are not mutually intelligible as one and the same language (Maho 2004).

The amount of information available on the language situation varies across different areas of Africa, but the entire continent has been surveyed for spoken L1 languages on the surface at least once. However, so-called "hidden" languages that escaped earlier surveys continue to be discovered every year. These are all languages that are spoken by a (usually aging) fraction of a population who otherwise speak another (already known) language. The least surveyed areas of Africa include Northern Nigeria, Eastern Chad, South Sudan and various spots in the Republic of Congo, the Democratic Republic of Congo and Angola.

The situation is entirely different with respect to sign languages (cf. Padden 2010: 19). Almost no surveys of sign languages have been carried out, but some admittedly incomplete listings are available (Kamei 2004; Nyst 2010; Schmaling 2012). Sign languages in Africa include both indigenous rural sign languages such as Adamorobe Sign Language in Ghana (Nyst 2007) and varieties of the overseas sign languages American Sign Language, British Sign Language, Langue de Signes Française and occasionally other European sign languages, taught in deaf schools that are tied to nation states. There is reason to believe there are proportionately more sign languages in sub-Saharan Africa than in Western countries due to the prevalence of bacterial meningitis (Molesworth et al. 2002). Table 1 lists sign languages in Africa and the Arabian peninsula so far identified in the literature, though there is insufficient information to confirm or deny that each one is mutually intelligible with the others or its overseas progenitor.

The surveying of other kinds of languages, such as initiation languages (Moñino 1977; Ngonga-ke Mbembe 2009), ritual languages (Brindle et al. 2015), or secret languages (Leiris 1948; Dugast 1950; Ittman 1959; Leslau 1964), can

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Table 1: Sign languages in Africa and the Arabian peninsula so far identified in the literature. There is insufficient information to confirm or deny that each one is mutually intelligible with the others or its overseas progenitor.

Sign Language	ISO 639-3	Progenitor/ Sign Language Family	Source
Egypt Sign Language	esl	Arab SL	Hendriks and Zeshan 2009
Kuwaiti Sign Language	–	Arab SL	Al-Fityani and Padden 2010
Libyan Sign Language	lbs	Arab SL	Al-Fityani and Padden 2010
Yemeni Sign Language	–	Arab SL	Hendriks and Zeshan 2009
Congo-Brazzaville Sign Language	–	American SL	Dalle 1997
Ethiopian Sign Language	eth	American SL	Tamene 2015
Gambian Sign Language	–	American SL	Nyst 2010
Guinean Sign Language	gus	American SL	Nyst 2010
Moroccan Sign Language	xms	American SL	Wismann and Walsh 1987
Nigerian Sign Language	nsi	American SL	Nyst 2010; Odusanya 2000
Sierra Leone Sign Language	sgx	American SL	Nyst 2010
Ugandan Sign Language	ugn	American SL	Lutalo Kiingi 2014
Namibian Sign Language	nbs	British SL	Madison 2005
South African Sign Language	sfs	British SL	Nieder-Heitmann 1980
Eritrean Sign Language	–	Finnish SL	Moges 2015
Algerian Sign Language	asp	LS Française	Delaporte 2008
Tunisian Sign Language	tse	Italian SL	Khayech 2014
Madagascar Sign Language	mzc	Norwegian SL	Minoura 2012
Ghardaia Sign Language	–	–	Lanesman 2016
Guinea-Bissau Sign Language	–	–	Nyst 2010
Al-Sayyid Bedouin Sign Language	syy	–	Sandler et al. 2014
Saudi Sign Language	sdl	?	Sprenger and Mathur 2012
Lesotho Sign Language	–	?	Machobane et al. 2010
Mozambican Sign Language	mzy	?	Ngunga 2013
Mbour Sign Language	–	–	Nyst 2010
Langue de Sign Malienne / Bamako	bog	–	Nyst 2015
Burkina Faso Sign Language	–	–	Nyst 2010
Chadian Sign Language	cds	?	Lewis et al. 2015
Nanabin Sign Language	–	–	Nyst 2010
Tebul Sign Language	tsy	–	Nyst et al. 2012
Adamorobe Sign Language	ads	–	Nyst 2007
Bura Sign Language	–	–	Blench and Warren 2003
Yoruba Sign Language	–	–	Orie 2012
Hausa Sign Language	hsl	–	Schmaling 2000
Mofu-Gudur Sign Language	–	–	Sorin-Barreteau 1996
Rwandan Sign Language	–	?	Woolley 2009
Tanzanian Sign Language	tza	–	Muzale 2004

Sign Language	ISO 639-3	Progenitor/ Sign Language Family	Source
Kenyan-Somali Sign Language	xki	–	Woodford 2006; Morgan et al. 2015
Langue des Signes Zairoise (A sign language distinct from American Sign Language used for everyday communication between attendants of a deaf school in Beno in the Bandundu region of DRC)	–	?	Cornett 1990
Zambian Sign Language	zsl	–	Serpell and Mbewe 1990; Mulonda 2013
Zimbabwe Sign Language	zib	–	Mhlanga 2011

be expected to be incomplete. Similarly, it has not been systematically investigated which languages can be whistled and which can be drummed, but there are a number of examples (Betz 1891; Carrington 1949; Arom and Cloarec-Heiss 1976; Meyer 2015: 6, 11, 16, 23–24, 30).

The colonial languages – predominantly French, English and Portuguese – are strong in their respective nation states. Most of the colonial languages have developed a local variety in Africa, e. g., French in Burkina Faso (Carriere-Prignitz 1999) or Burundi (Bastin 1979), Italian in Eritrea-Ethiopia (Habte-Mariam 1976) and not least Afrikaans in South Africa and Namibia (Ponelis 1993). Languages from the Indian subcontinent are also found with a specifically African flavor on the eastern coast (Neale 1971; Lodhi 2005) and in South Africa (Mesthrie 1988).

Creoles, i. e., languages that (are presumed to) have expanded from pidgins, are spoken in West Africa. Kabuverdianu, Upper Guinea Crioulo, Annobonese (aka Fa d'Ambu), Angolar, Sãotomense and Principense are Portuguese-lexified (Hagemeijer 2011) while Krio, Pichi (aka Equatorial Guinean Pidgin), Ghanaian Pidgin, Cameroon Pidgin, Nigerian Pidgin are derived from English (Huber 1999: 75–134). The Arabic expansion exhibits a spectrum of contact varieties, including rapidly nativised lects (Owens 1997; Luffin 2011; and below, in section 2.1). Simplified high-contact languages of indigenous lexical stock developed after contact with Europeans along the major rivers, namely, Lingala (from the Bantu language Bangi; Meeuwis 2013), Kituba (in two forms, from Koongo; Mufwene 1997) and Sango (from Ngbandi; Samarin 1982).

Several African capitals have seen the development of urban youth languages (Kießling and Mous 2004), i. e., a local vehicular language more or less consciously altered to assert the speakers' separate identity. Table 2 lists the urban youth languages so far identified in Africa. The rampant development of urban youth languages in Africa has yet to be explained in sociodemographic terms, but

can plausibly be linked to the demographic profile of many African urban areas, where adolescents make up a large fraction of the population in streets, markets and transportation hubs[1] (cf. Hollington and Nassenstein 2015).

With Africa's population of over a billion and just over 2,000 languages, the average population speaking a given African language is half a million speakers. But the number of speakers is not evenly distributed. Among the largest languages we find Egyptian Arabic (Egypt), Nigerian Pidgin (Nigeria), Maghreb Arabic (Morocco/Tunisia), Hausa (Nigeria), Yoruba (Nigeria), Swahili (Tanzania/Kenya), Amharic (Ethiopia) and Oromo (Ethiopia) with over 20 million speakers each and a large number of L2 speakers in addition. Reliable figures for speaker numbers for comparison across Africa are lacking, not least because of rapidly fluctuating language alliances and demographic change. Unless otherwise noted, speaker numbers will be cited from Lewis et al. (2015), which has the most extensive coverage. The median number of speakers is 26,400, thus over 1,000 languages have fewer speakers than this. The distribution of languages is relatively sparse in the North African countries and dense all over the sub-Saharan area. Spots of even higher language density are the mountainous Nigeria–Cameroon border area, the Nuba mountains and the lowlands of southwestern Ethiopia. Large countries predictably have hundreds of languages, with the largest, Nigeria, home to over 500 languages. Most sub-Saharan countries encompass dozens of languages and a only a few small countries, e. g., Burundi, are linguistically uniform. Although hard figures are lacking, bilingualism and multilingualism appear to have been the norm for African traditional societies. Cases where entire communities speak five or more languages are known from sub-Saharan Africa (e. g., Lionnet 2010: 2; Lüpke 2013).

Chapter 2 in the present volume discusses the evidence regarding genealogical classification in Africa, covering every (sub-)family. A complete listing of individual African languages can be found via Ethnologue (Lewis et al. 2015) and Glottolog (Hammarström et al. 2015). Lewis et al. (2015) has information on speaker numbers, the geographic extent and division of languages/dialects, endangerment and other relevant metadata. Hammarström et al. (2015) encompasses a comprehensive bibliography with over 60,000 entries deriving from the *Electronic Bibliography of African Languages and Linguistics* by Jouni Filip Maho, and a genealogical classification that includes every individual language.

Describing the more than 2,000 African languages is an enormous task. Regarding the present state, fully systematic figures on description level are available for grammatical description only (as opposed to textual, audiovisual or lexical documentation). The figures relating to grammatical description (Hammarström et al. 2015) allow for some surface comparisons as follows. For every language we consider all the descriptive publications relating to it and count its *most extensive description*, i. e., the highest level attained by at least one publication, according to

[1] I owe this suggestion to Jeffrey Heath (p. c. 2015).

Table 2: Urban youth languages so far identified in the literature. Some named urban youth languages can be formed from any of a number of local base languages. As such they do not represent a modification of a specific language, but the same kind of modification applicable to various base languages. These are indicated with a plural (s) in the listing.

Urban Youth Language	Base Language	Urban Center	Country	Source
Camfranglais	French	Douala/ Yaoundé	Cameroon	Kießling 2004
Sango Godobé	Sango	Bangui	CAR	Landi and Pasch 2015
Nouchi	French	Abidjan etc	Côte d'Ivoire	Kube 2005
Indoubil	Congo Swahili	Bukavu	DR Congo	Goyvaerts 1988
Inverted Kindoubil	Lingala	Kisangani	DR Congo	Wilson 2015
Kindubile	Congo Swahili	Lubumbashi	DR Congo	Mulumbwa Mutambwa 2009
Kindoubil	Lingala	Kisangani	DR Congo	Wilson 2015
Langila	Lingala	Kinshasa	DR Congo	Nassenstein 2015a
Yanké	Lingala	Kinshasa	DR Congo	Nassenstein 2014
Yabâcrane	Congo Swahili	Goma	DR Congo	Nassenstein 2016
Egyptian Arabic youth language(s)	Egyptian Arabic	Cairo	Egypt	Manfredi and Pereira 2013
Yarada K'wank'wa	Amharic	Addis Ababa	Ethiopia	Hollington 2015
Sheng	Swahili	Nairobi	Kenya	Rudd 2008
Sheng ya Kijaka	Dholuo	Kisumu	Kenya	Rüsch 2016
Chibrazi(s)	Chewa / Tonga / Tumbuka	various	Malawi	Kamanga 2014
Maghreb Arabic youth language(s)	Maghreb Arabic	various	Morocco	Manfredi and Pereira 2013
Randuk	Sudanese Arabic	Khartoum	North Sudan	Manfredi 2008; Mugaddam 2015
Imvugo y'Umuhanda	Kinyarwanda	Kigali	Rwanda	Nassenstein 2015b
Tsotsitaal(s)	Any major South African language	various	South Africa	Hurst 2015
Rendók ta Juba	Juba Arabic	Juba	South Sudan	Miller 2004
Lugha za Mitaani(s)	Swahili	various	Tanzania	Reuster-Jahn and Kießling 2006
Leb pa Bulu	Acholi	Gulu	Uganda	Rüsch and Nassenstein 2015
Luyaayi	Ganda	Kampala, etc.	Uganda	Naluwooza 1995

the hierarchy in Table 3. As the figures in Table 3 show, grammatical information is lacking for almost half of Africa's languages. The geographical distribution of described versus undescribed languages is fairly uniform on the geographical distribution of languages itself (Figure 1), making Nigeria the major country of undescribed languages. The average level of description measured numerically from 0 to 5 (as per the numerical score of Table 3) is 2.67, leaving Africa the second least known continent (after Oceania, dominated by the New Guinea area). Figure 2 shows how the average description level has increased yearly since 1500. Despite one and a half centuries of intensive investigation, especially since Koelle (1854), as much as has been done remains to be done.

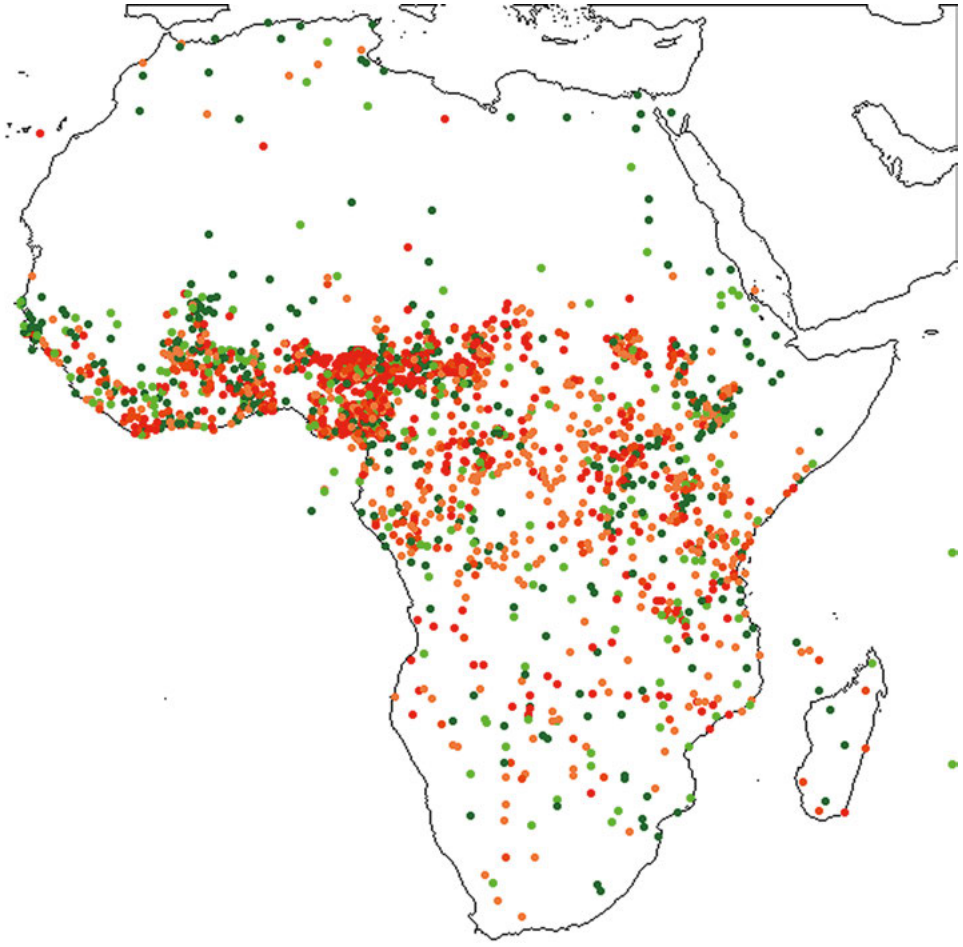
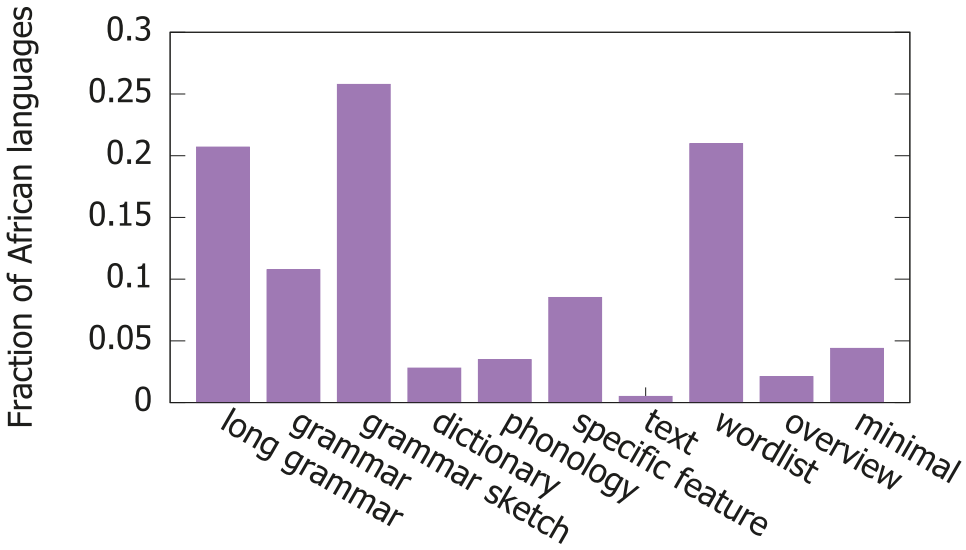


Figure 1: The geographical distribution of language description in Africa. Legend: Red (minimal/overview/wordlist), orange red (phonology/text/dictionary/specific feature), orange (grammar sketch), green (grammar), dark green (long grammar).

Table 3: Statistics on the type of most extensive description for the languages of Africa computed from the bibliographical database of Hammarström et al. (2015), largely based on the *Electronic Bibliography of African Languages and Linguistics* by Jouni Filip Maho.

Num. Score		Most Extensive Grammatical Description Type	# languages	
5	long grammar	extensive description of most elements of the grammar ≈300+ pages	411	**18.9 %**
4	grammar	a description of most elements of the grammar ≈150 pages	243	**11.1 %**
3	grammar sketch	a less extensive description of many elements of the grammar ≈50 pages	562	**25.9 %**
2	specific feature	description of some element of grammar (i. e., noun class system, verb morphology, etc.)	157	**7.2 %**
2	phonology	a description of the sound inventory utilizing minimal pairs	82	**3.7 %**
2	dictionary	≈75+ pages	53	**2.4 %**
2	text	text material	13	**0.5 %**
1	wordlist	≈100−200 words	476	**21.9 %**
0	minimal	a small number of morphemes	124	**5.7 %**
0	overview	document with meta-information about the language (i. e., where spoken, non-intelligibility to other languages, etc.)	48	**2.2 %**
			2,169	



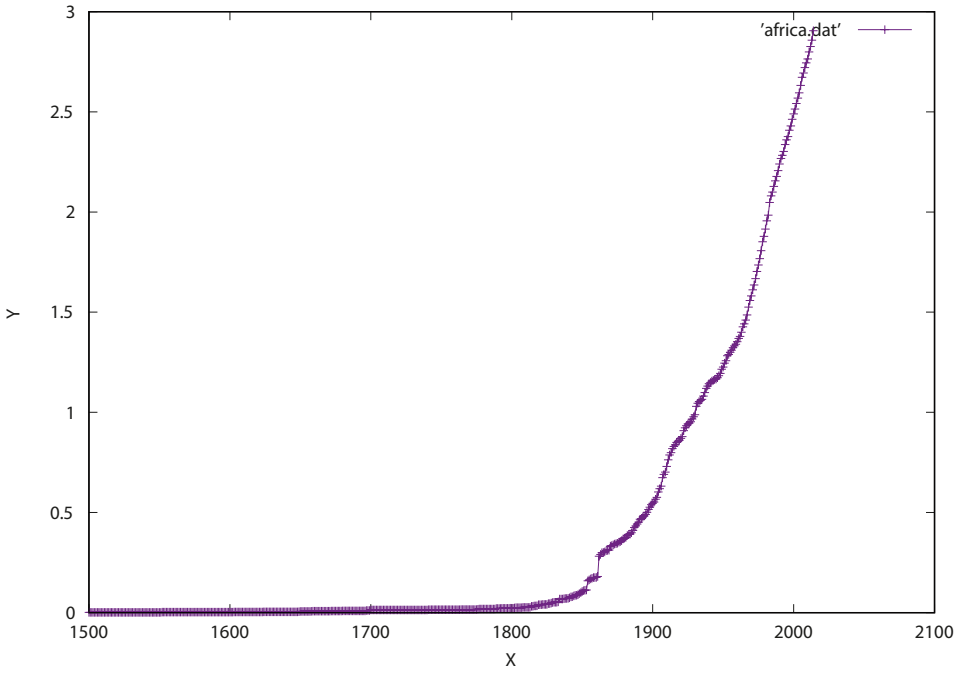


Figure 2: The average description level of African languages over time. The average description level (y-axis) is the average numerical score of the most extensive description for each African language available at the year indicated by the x-axis.

1.2. Survey by region

The people speaking indigenous African languages inhabit a variety of geoclimatic zones and display a range of cultural expressions. The survey of Baumann (1975) divided precolonial Africa into 26 zones based primarily on subsistence type, but also in consideration of other cultural factors (Figure 3). In the present survey we follow these divisions, grouping them into nine larger regions as per linguistic contingencies that extend across the divisions (Figure 4). Table 4 tabulates a concordance between the two divisions.

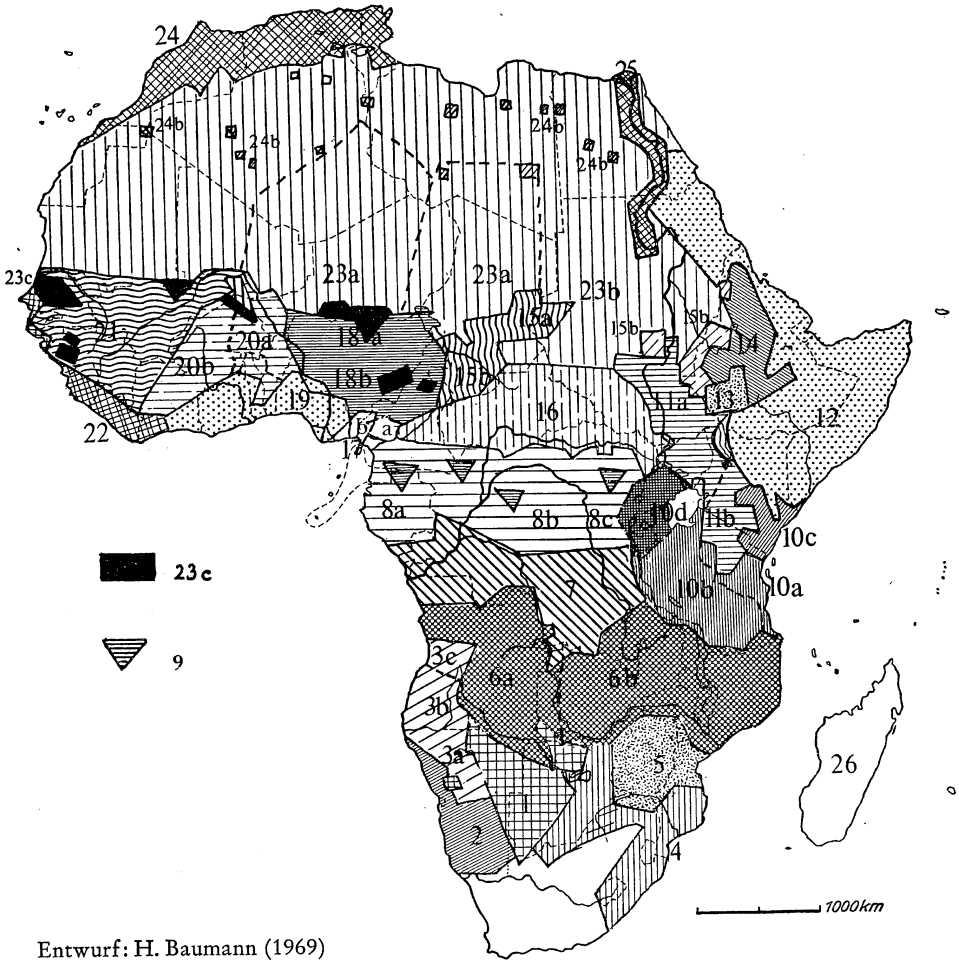


Figure 3: A culture-based division of Africa into 26 regions, adapted from Baumann (1975: 378).

Figure 4: Divisions used in the present chapter.

Table 4: Concordance between the regional divisions used in the present chapter and those of Baumann (1975: 378).

Region in the present chapter	**Baumann (1975: 378)'s classification according to *Kulturprovinz* ('culture area')**
North Africa and the Arabian Peninsula	24. NW-Afrika (u. Sahara-Oasen) 25. Nil-Oase und Nubien
The Greater Saharan Area	23. Sahara und Sahel
Ethiopic Sphere	12. Osthorn-Provinz (ostkuschitische Hirten) 13. West-Äthiopien 14. Hoch-Äthiopien
Sudanic West Africa	19. Ostatlantische Provinz 20. Ober-Volta-Provinz 21. Westatlantische Provinz 22. Ober-Niger-Provinz
Central Sudan and Cameroon Grassland	15. NO-Sudan-Provinz 16. SO-Sudan-Provinz 17. Kamerun-Nigeria-Pufferzone 18. Zentral-Sudan-Provinz
Equatorial Rain Forest	7. Südkongo-Provinz 8. Nordkongo-Gabun-Provinz 9. Wald-Wildbeuter (Pygmäen)
Eastern Savanna	10. Ost-Bantu-Provinz 11. Niloten
Southern Tip	1. Die Steppenwildbeuter SW-Afrikas 2. Khoikhoi (Hottentotten) 3. SW-Bantu-Provinz 4. SO-Bantu-Provinz 5. "Zwischenfluß"-Provinz ("Simbabwe-Provinz") 6. Sambesi-Angola-Provinz
Madagascar	26. Madagaskar

1.2.1. North Africa and the Arabian Peninsula

North Africa was an integral part of the Mediterranean political scene in antiquity. As part of the Roman empire, Christianity made significant inroads in the centuries after Christ. The traditional economy was based on grain agriculture, olive plantations and livestock farming. The domesticated dromedary, with its numerous adaptations to a desert climate, arrived from the east and was established only in late antiquity.

While at present the area comprising North Africa and the Arabian Peninsula harbors relatively few languages, it presumably hosted a larger array of languages in the past few millennia. Written records only allow the identification of a dozen or so, before the spectacular takeover of Arabic, in the wake of the Islamic expansion (Retsö 2003, see below). A few non-indigenous languages from the Mediterranean are amply attested on African soil in the past, such as Punic (Kerr 2007) and Greek (Torallas Tovar 2010) but are no longer spoken there. Peripatetic people with roots in India ("gypsies") are found in the Maghreb, Egypt and Sudan (Ḥannā 1982; Streck 1989; Weber 1989) but no case of an Indo-Aryan language retained as a mother tongue is attested.

The entire North African area is now dominated by varieties descending from Arabic spoken in the South Arabian peninsula in the seventh century. Conventional divisions of African Arabic varieties recognize a North African group (Pereira 2011), corresponding to an early expansion in the century following the birth of Islam. The North African group includes the Arabic varieties in Libya, Malta, Algeria, Tunisia, Morocco and Andalusia (now extinct) as well as the Hassaniyya dialect at the western end in Mauretania. Another expansion, many centuries later and much slower, is the line going southwest from Egypt. The Sudanese-Chadian Arabic subgroup stretches from North Sudan, through Darfur into Chad, northern Cameroon and northeastern Nigeria (Kaye 1976). The varieties so far mentioned do not show signs of regularization due to second language imperfect learning, and the westernmost Nigerian Arabic retains the unusual emphatic series of consonants (Owens 1993). But there were (and probably still are, cf. Bell 1975b) Arabic pidgins in the Arabic border area in the past. One variety documented in the early 20th century is dubbed Turku ('soldiers') because it was used by soldiers in the Sara-speaking area in Chad (Tosco and Owens 1993). Another is Bongor Arabic, spoken around the town of that name in Chad (Luffin 2013). Two other named high-contact Arabic varieties originating in southern Sudan went on to become mother tongues. In the late 20th century, an army from North Sudan became stranded in South Sudan. They recruited locally into the lower ranks and after a series of turns were incorporated into the Imperial British East Africa company. Subsequently demilitarized, communities are now found in Uganda and Kenya (Wellens 2003; Luffin 2005) under the name Nubi. Independently, in South Sudan the role of Arabic continued to play a major role as a lingua franca. Juba is the main urban center and hence the Arabic emerging here is termed Juba Arabic (aka Sudanese Creole Arabic). Rather than a single uniform Juba Arabic, there is a range of varieties depending on individual speaker background, including natively spoken Juba Arabic. Among the core defining features of Juba Arabic we find influences from the local (mostly Nilotic) languages and regularizations such that, e. g., inherited Arabic broken plurals are no longer productive (Smith and Ama 1985). Although not on an expansion frontier, the large influx of foreign workers from South Asia into the Gulf States of the Arabian peninsula has given rise to several varieties of pidginized Arabic (Almoaily 2014).

The harsh climate has kept the Arabian Peninsula relatively sparsely populated except for the mountainous and coastal south, where a succession of small kingdoms emerged. The languages of these kingdoms belong to the Sayhadic subgroup of Semitic and are attested from the southwest of the Arabian peninsula in the centuries 800 BC–500 AD (Nebes and Stein 2008). Sabaic is the best-known representative, for which there are enough inscriptions to compile a grammar sketch (Beeston 1962). The inscriptions are written in a family of South Semitic scripts that are ultimately akin to the Hebrew, Greek and various other well-known scripts. Inscriptions were made on rock as well as palm-leaf stalks and wooden sticks and included building inscriptions, legal texts, graffiti, letters, deeds, contracts and so on. There are also inscriptions from this time of a language difficult to interpret as Sayhadic, dubbed "unknown" by Beeston (1981) and associated with the tribal name Himyaritic by Stein (2008). The island of Dhofār holds another set of undeciphered inscriptions called the Dhofār dipinti inscriptions (Al-Jallad 2014: 13).

The inscriptional languages survived maximally until perhaps a millennium ago. A possible modern reflex is the variety of Arabic of Jebel Rāzih in Yemen, famously unintelligible to other modern Arabic varieties in the peninsula. Arabic of Jebel Rāzih contains morphological features otherwise only found in Sayhadic. These must have either been taken over at some stage in the Arabic incursion, or Jebel Rāzih is a relexified Sayhadic continuation (Watson et al. 2006).

A different subgroup of West Semitic languages are the half a dozen Modern South Arabian languages, endangered but surviving in Yemen and Oman (Simeone-Senelle 2011). They are not descendants of either Arabic or the Sayhadic (also known as Ancient South Arabian) languages. The best-known language is Mehri (Rubin 2010). Further witnesses to other pre-Arabic languages of the Arabian peninsula are absent. Though a non-pastoral lifestyle remains – the Solubba (Pieper 1923; Dostal 1956) – if they represent a continuation of a pre-Arabic ethnic group, nothing has survived of their language.

Oman harbors one Indo-European language, Kumzari, originating as a Southwestern Iranian variety but subsequently influenced by Shihhi Arabic to the extent that synchronically it consists equally of elements from either source (van der Wal Anonby 2015).

1.2.1.1. The greater Nile area

Moving west to Ancient Egypt, hieroglyphic (on stone) and hieratic (on papyrus) records attest the Ancient Egyptian (3000–2000 BC), Middle Egyptian (2000–1300 BC) and Late Egyptian (1300–700 BC) stages. Later stages of this language are Demotic (700 BC–500 AD) written in a script derived from hieratic (Loprieno 1995) and the final stage is known as Coptic, written in a Greek-derived script. The ability to read hieroglyphs was lost in antiquity, and famously deciphered by Jean-François Champollion using trilingual texts and preceding work by Thomas

Young (Allen 1960). Coptic, on the other hand, was spoken until the 17th century and is in fact the first ever African language to be described by a grammar sketch, by an Arabic scholar in the 1300s (Bauer 1972 [1300]). Coptic was also studied by early European scholars (e. g., Tuki 1778), and it continues to be used for liturgical purposes today. The Egyptian-Coptic language represents 4,000 years of recorded history, longer than any other known language.

The Egyptians made no organized effort to describe the languages or language situation further up the Nile, but the various ethnicities depicted or mentioned throughout the millennia must have represented various languages. One such language that can be safely identified is the language of the Meroe civilization (300 BC–400 AD) in what is now North Sudan. This language was written in a script of its own, discovered in the early 20th century. Thanks to the existence of name equations to hieroglyphic Egyptian, the script was deciphered shortly after discovery (Griffith 1909), and is alphabetic, making it one of the earliest known alphabetic scripts. However, beyond personal names, the meaning of the individual words and sentences recorded in this script still remains elusive. No more than a couple of dozen have a convincing interpretation. With the assumption that Meroitic forms resembling forms in languages found later in the area are related, the meaning of a few dozen more can be posited (Rilly 2009). One more indigenous language of the antiquities in the Nile region is amply attested in texts from 800–1500 AD in a Greek-derived script, namely Old Nubian in what is now North Sudan, the ancestor of Nobiin (300,000 speakers) still spoken there today (Browne 2002). The modern Nubian languages are spoken not only on the Nile but also in the west and south of Khartoum (North Sudan). The westernmost Birked Nubian language in Darfur is nearly extinct (Bell 2006) but the southernmost Hill Nubian languages are still spoken in the Nuba mountains. The Harāza Nubian variety provides the missing link geographically between the Nile and the Nuba mountains but succumbed to Arabic before it could be adequately recorded (Mohamed 1974; Bell 1975a). The distribution of Nubian language has thus prompted the question whether they originated in the Nile region and then migrated south and west, or vice versa (Bechhaus-Gerst 1985).

1.2.1.2. Northwest Africa

West of the Egyptian language area, languages of the Berber subfamily are found in the habitable mountains, oases, and coastal areas all the way to the Atlantic coast. Some have given way to Arabic already, while others remain with sizable speaker communities, although not without influence from Arabic. In some cases, the Arabic contact has penetrated far into the Berber basic vocabulary, while the local Arabic acquired Berber phonology (Kossmann 2013), to the effect that, anecdotally, one cannot tell if Berber or Arabic is the language spoken in a market conversation. Some Berber varieties have become famous for allowing vowel-less

utterances, such as the tongue-twisting *tftktstt tfktstt* in Tachelhit of Taroudant, meaning 'You sprayed it (fem.) and then you gave it (fem.)' (Dell and Elmedlaoui 1988).

Despite the great distances from the Siwa Oasis in the east to Mauritania in the west, the Berber languages are closely related, roughly comparable to the Germanic subgroup of Indo-European. Yet the Berber languages show little in the way of neatly separable subbranches. The Tuareg languages, spoken by nomads of sub-Saharan ethnic descent, show unique innovations (Kossmann 1999: 31) as do Zenati and the newly discovered Tetserret forming the Western Berber branch (Lux 2011) and Libyan-Egyptian Oases Berber in the east (Souag 2014: 17–26). Yet the remaining core varieties show chains of innovations characteristic of a very long dialect chain breakup or of long-term language contact, though see, e. g., Souag (2014: 17–26), for some further suggested subgroups. A curious case is the Guanche language spoken in the Canary Islands up until the 18th century. The body of data consists of a few short amateur wordlists and another batch of individual words that can be extracted from travelers' records. The data show major similarities and major differences from known Berber languages on the mainland. Though there is a compilation of all that is known about Guanche (Wölfel 1965), it remains to be investigated with a modern understanding of Berber subgrouping whether the Guanche language is a separate Berber branch, belongs to a specific Berber branch, is a non-Berber language with a Berber stratum of some specific Berber language, or is a non-Berber language with a miscellaneous Berber stratum. Another enigmatic language associated with Berber is the language of the Numidians in present-day Libya, mentioned in both Roman and Egyptian sources. Only personal names and a distinctive script have been passed down to us (Rössler 1979). The script is either a highly altered continuation of Phoenician-Punic or a separate branch of the Semitic family of scripts (Pichler 2007). While variants of this script were used along the Mediterranean coast in antiquity, the only modern survival is Tifinagh, sometimes used to write Tuareg languages, chiefly in Algeria. The value of Tifinagh as a source of ethnic pride is greater than its everyday use, and has led to the adoption of it in modern times as an alphabetic script, "Neo-Tifinag", to write other Berber languages. The oldest substantial written records that can be securely identified as being of Berber provenance date back to the medieval period; they are written in an Arabic script (Brugnatelli 2011).

1.2.2. The greater Saharan area

1.2.2.1. Northeast Bilād as-Sūdān

Trans-Saharan trade networks were in full swing by the time of the Arabic expansion southwards. One of the several short-lived kingdoms formed around hub market towns was the Funj empire between 1504 and 1821 in Sennār, in north-

eastern Sudan (O'Fahey and Spaulding 1974). Curiously, it is not known what language(s) was current in the empire. However, a listing of 10 numerals and a poem written in Arabic script are attributed to the Funj language by the 17th-century Turkish traveler Evliya Çelebi (Spaulding [1672] 1973). The numerals are undoubtedly Kanuri, a major language of the Lake Chad area that could easily have been encountered at this time from itinerant individuals in northeastern Africa, but it could hardly have been the language of the Funj empire. The poem, on the other hand, cannot be read as coherent Kanuri (p. c. Dimitry Bondarev 2012), and its identity has yet to be ascertained. While the poem may hold the answer to the question of the language of the Funj, there are also good reasons to doubt the accuracy of the data. Evliya Çelebi probably never made it personally as far as the Funj empire (Peacock 2012), and the Turkish translation for the poem may not, or only loosely, correspond to the text in the unknown language, since there are recurrent morphemes in the source text that seemingly have no counterparts in the translation.

The slave trade and associated slave raiding in the centuries before European colonization must have severely affected the indigenous populations of the North Sudan–Ethiopia borderland. But the languages that survived the turbulent times bear witness to considerable linguistic diversity in this region. The Eastern Jebel group, the Berta dialect cluster, the Koman group, the Gumuz dialect cluster, the Mao group, the Nara language and the Kunama language are still spoken while the Gule language gave way to Arabic earlier this century (Delmet 1980: 7–8). These languages have been relatively neglected in both description and appreciation, though this is changing thanks to recent descriptive work. They are all typically subsumed under the Nilo-Saharan umbrella in one constellation or the other (except the Mao group, which is typically filed as Omotic since Bender 1975, see Güldemann, this volume, Chapter 2). Even if some version of this hypothesis should ultimately prove to be correct, the grammar and vocabularies of each lineage show large differences, so that any common ancestor must have been very far back in the past. The peoples of the Ethio-Sudan borderland traditionally had agro-pastoral economies supplemented by hunting and gathering (Cerulli 1956: 17–19) and formed small political units, rarely larger than the village (Cerulli 1956: 25–26).

It is no coincidence that languages in the area of the Saharan desert are found around mountains. With mountains there are rivers with water, which facilitate human subsistence conditions. A veritable mountain of tongues is found one day's bus ride south of Khartoum. The Nuba mountains are home to some 50 languages from up to nine different lineages. Grammar sketches for one language from each group are found in Stevenson (1957) but for most languages only wordlists are available. The northernmost group is the Hill Nubian languages, which have already been mentioned above. Next, in the center, we have two large dialect clusters, Heiban and Talodi, spoken in a range of localities with populations on the order of 5,000. The Katla-Tima group consists of two clearly distinct but related

branches, Katla-Julud and Tima (Alamin Mubarak 2012). In the Tegali-Tagoi group, two dialect clusters with a total of about 50,000 speakers are spoken in the northeast, in the Rashad hills. Ama, with 40,000 speakers in the mid-West Nuba Mountains is related to Afitti (some 4,000 speakers), spoken in a more northern location far away enough that the two are not aware of each other. The Temein dialect cluster is also spoken in the midwest Nuba mountains and totals perhaps 15,000 speakers (Blench 2013). The southwest, around the urban center Kadugli, is dominated by the Kadu dialect cluster, whose main language Krongo (20,000 speakers) is described with a full-length grammar (Reh 1985). West of the Kadu group we find two incoming languages of the Daju family (see below). In the far south, the language Lafofa is spoken in two distinct varieties (Amira and Eliri) by perhaps 600 people. The Heiban, Talodi, Rashad and Lafofa groups have nominal class systems with alliterative concord, and have therefore (along with Katla-Tima, on some lexical resemblances) long been argued to be genealogically related to the geographically separated Niger-Congo languages (see Chapter 2 of the present volume).

The peoples of the Nuba mountains share a number of cultural features (Nadel 1947), such as having birth-order names, and many have pondered the reasons for the linguistic diversity. Classically, Thelwall and Schadeberg (1983) interpret the linguistic situations as layers of refuge, where the oldest layers are represented by deep genealogical relatives within the mountains and languages on the fringe, with relatives outside, are more recent layers. In contrast, based on data from Tima, Dimmendaal (2009a) speculates that the key to the diversity lies in a conscious ideology to keep and accentuate linguistic identity. Indeed, one curiousity that seems to challenge the received views on what deliberate language change can access is the language spoken in the village of Laro. Laro is 90% lexicostatistically cognate with the larger language Heiban but shares no form – meaning noun-class pairings with Heiban or the rest of the languages of its subfamily (Schadeberg 1981b: 147–149)! The Laro story is that the noun class prefixes were obfuscated deliberately to confuse their neighbors. As Schadeberg (1981a) concludes, there appears to be no convincing alternative to this story.

1.2.2.2. Sahara and Sahel

Moving west into Darfur we find the Fur language, which has around half a million speakers and is traditionally the lingua franca of the Fur area. Fur has a relative (Greenberg 1972) in the Amdang language, also known as Mimi or Jungraithmayr's Mimi, spoken by some 40,000 people in the Biltine region across the border in Chad (Wolf 2010). Also straddling the Chad–Sudan border is the Tama dialect cluster with 100,000–150,000 speakers in total. The Tama verb undergoes extensive morphophonological changes, leading earlier researchers to remark that "no two verbs in Tama appear to be conjugated alike" (Dimmendaal 2009b: 315–

317). The Daju languages have a wider east–west extension stretching from Dar Sila in Chad to the Nuba mountains in Sudan. The total number of speakers of Daju languages is around 100,000 with two poorly known southern varieties in Bahr-el-Ghazal presumed extinct. The Daju family owes its spread to the Daju empire, mentioned by many Arab geographers in the 10th–13th centuries (Thelwall 1981: 162–174).

The handful of Maban languages dominate the border area more to the south, including the very inaccessible areas around the border of Chad Sudan–Central African Republic. The most important languages are Masalit (mainly Sudan) and Maba (mainly Chad), with around 300,000 speakers each. Data on two mysterious languages in the Maban region,[2] both called Mimi, were collected about a century ago but neither has been heard of since and the languages are thus presumed extinct. Their genealogical relation(s), to each other and the Maban family, remains somewhat enigmatic (see Chapter 2).

Perhaps even more enigmatic is the Kujarge[3] language first reported by Doornbos and Bender (1983: 59–60) with a 100-word list. Under challenging circumstances, Doornbos collected 200 words in total on two different occasions in 1981 from a father and a son, near the border town of Foro Boranga. The informants reported that the language is spoken in seven villages in Chad, near Jebel Mirra (11º 45' N, 22º 15' E)[4] and scattered among the Fur and Sinyar in the lower Wadi Azum valley. In 1981, the Kujarge were a hunting and gathering people estimated to number 1,000. The uncertain classification of this language (see Güldemann Chapter 2), the inaccessibility of the area today, the rarity of a predominantly foraging subsistence pattern in the region and the fact that no other researcher is on record to have encountered the Kujarge ethnic group contributes to the mystery.

A couple of dozen East Chadic languages are found across central and eastern Chad. Speakers of East Chadic and Sara-Bongo-Bagirmi languages in the mountain massifs have a common identity as "Hadjerai" (cliff dwellers). The Hadjerai have an agropastoral subsistence pattern and a sociopolitical organization around clans and age groups (Fuchs 1979: 217–221).

Dominating the central Saharan area we find the aptly named Saharan family, consisting of a western branch and an eastern branch, as envisaged by Nachtigal

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2 Yet another Mimi is sometimes posited on the basis of listings ultimately emanating from van Bulck's (1954) survey of southern Chad. No linguistic data (if any were collected) has surfaced but since van Bulck associates this Mimi with the Biltine region, it seems safe to assume it refers to the same Mimi as Jungraithmayr's Mimi, also known as Amdang.

3 The name Kujarge is a local designation for 'sorcerers', and this name also occurs (MacMichael 1918: 45; Lebeuf 1959: 116) referring to other groups than the people whose language Doornbos recorded.

4 Not to be confused with the more famous Jebel Marra, on the Sudan side.

already in 1881. The eastern branch consists of Zaghawa (over 150,000 speakers in Chad and Sudan; Jakobi and Crass 2004) and the extinct Berti (Petráček 1966). The western branch consists of the Teda-Daza branch (ca. 500,000 speakers) and a Kanuri-Kanembu branch, a dialect cluster totaling up to 4 million speakers covering a large area around Lake Chad. Kanuri was the language of the Bornu empire (14–19th centuries) and thus an important language politically. Kanuri was written (mainly in religious or legal contexts) using the Arabic script, in an adaptation that rendered Kanuri tones. Kanuri was recorded early with a wordlist from the 17th century in the works of the Turkish traveler Evliya Çelebi (Habraszewski 1967). A recent discovery to Western scholars is that Tarjumo, an old form of Kanuri-Kanembu not intelligible to any variety spoken today, has been used for religious analysis and passed on as a literary language until today (Bondarev 2005).

Many millennia earlier than the Arabic expansion, the Sahara was more fertile and likely hosted human populations in places where there are none today (Drake et al. 2011). With the gradual drying up of the Sahara, many populations must have moved or perished altogether. Rivers completely dried up, leaving *wadi*:s, the local Arabic term for an empty riverbed. The Wadi Howar represents a (once) major tributary to the Nile, west of the White Nile, which may have left consequences traceable in modern languages (Dimmendaal 2007). One may speculate about further remnants of a once-greener Sahara in ethnographically marginal groups. The Daouada are a little known ethnically distinct group in South Libya (Pauphilet 1953) but the few reported encounters with them have revealed no other language than the local variety of Arabic. Groups who subsist mainly on hunting and gathering in the Saharan area are restricted to the Nò-èy (until recently, Matthey 1966), Kujarge (see above), Haddad-Cherek (Tedaga-speaking) and Haddad-Nichab (Kanembu-speaking). The latter had a hunting strategy[5] similar to those known from prehistoric rock engravings from the Sahara (Nicolaisen 2010). However, not even in the earliest descriptions of the Haddad (Nachtigal 1881: 258–264, 330–331) is there any trace of a separate language.

The language family Songhay owes its distribution to the Islamic empire centered at Gao in the beginning of the 11th century. It is hence a rather shallow language family often figuring in discussions of the potentials of language contact, in several ways. Firstly, there is the idea that the core lexical stock of Songhay is cognate with another African language family ("Nilosaharan" according to Ehret 2001, or an otherwise unattested branch of Afroasiatic according to Nicolaï 2003) and its grammar somehow taken over from neighboring Mande language(s). Less radical suggestions merely argue that the typological similarity between Songhay and Mande languages may be the result of long-term interaction between the two. Secondly, the Northern Songhay languages are so influenced by neighbor-

[5] Disguised in sheepskins and masks, the hunters sneak up on the animals and kill them with bows and poisoned arrows (Nicolaisen 2010: 24).

ing Berber languages that entire Berber morphological subsystems operate within Northern Songhay (Christiansen-Bolli 2010; Souag 2010). Various stages of the breakup of the Songhay family can be dated thanks to loanwords from Arabic (Souag 2012).

The Dogon languages form a small family in the mountainous area around the city of Bandiagara in Mali. The Dogon were studied relatively intensively by anthropologists and much has been written on their religion and cultural traits, such as mask dances and sculptures. A secret language, Sigi, was used by a male section of society for ritual purposes (Leiris 1948). The languages remained relatively neglected until the 21st century when a systematic documentation project headed by Jeffrey Heath commenced. More than a dozen different Dogon languages have to be recognized on grounds of mutual (un)intelligibility. Furthermore, the Bangi Me people live in the same mountain massif and are culturally similar to the Dogon. They speak a language traditionally filed as a Dogon "dialect", which, on closer inspection, turns out to have a core vocabulary completely different from Dogon as well as any other nearby language family (Blench 2007a). Unless there are similar cases still "lurking" (cf. Siamou, Chapter 2 of the present volume), Bangime represents the only fully surviving language isolate in West Africa.

1.2.3. Ethiopic sphere

The Ethiopian Highlands provide a large habitable area in the Horn region of Africa. The bulk of the area lies above 1,500 meters and is thus relatively cool and free from mosquitoes. A number of crops originate in the Ethiopian Highlands, such as coffee and t'ef. T'ef is a small-grained cereal that has been cultivated for more than 2,000 years and is a staple food in the region but unlike coffee, it is difficult to grow in other ecoclimatic zones. The Highlands are dominated by a set of languages forming the Ethiopic branch of the Semitic (sub-)family that must have entered from the Arabian peninsula sometime in the first millennium BC (Gragg 2008: 211). The earliest testimonies are pagan epigraphic inscriptions, but later materials include a significant body of Christian literature, written in Ge'ez, the language of the Aksum empire. In some ways the Ethiopian Highlands resemble European medieval states. Around 350 AD Christianity was made the state religion, which continues up until today as the Ethiopian Orthodox Tewahedo Church. The empire had a strategic location for trade between Egypt and the Indian Ocean, and had diplomatic contacts with the East Roman empire. After a "dark ages" the Ethiopian empire gradually lost its connections with the civilizations to the north. Beginning in 1270, there was a long dynasty of kings culminating in Haile Selassie's dethronement in 1974. Ge'ez, extinct since a millennium as a spoken language, holds a position as a liturgical language and is used and studied in some ways similar to Latin in Europe. Ge'ez was also studied by European scholars as early as the 16th century. A famous anecdote recounts how Job Ludolf, a 17th-cen-

tury German religious scholar who had learned Ge'ez from books, met with Abba Gregorius, an Ethiopian convert to Catholicism, in Rome. Gregorius spoke Amharic as his everyday language[6] and did not know Latin or any contemporary European language. Thus they were obliged to converse in Ge'ez, the only language in common, which neither party had used as a spoken language (Pankhurst 1965: 56–66). While Ge'ez is a verb-initial language and similar in typology to the other ancient Semitic languages (Lambdin 1978), the modern Ethiosemitic languages have undergone a complete typological makeover, presumably due to contact with or shift from languages in situ, to being verb-final with associated characteristics (Crass and Meyer 2011). The Ethiopian civilization had its own grammatical tradition, where a few other languages in addition to Amharic were described (Mulugetta 2010). Ge'ez, Amharic, and further languages of Ethiopia are written with *fidel*, a distinctive script of the South Semitic family of scripts (Bender et al. 1976).

Apart from Ethiosemitic, the other widespread (sub-)family in the Ethiopian highlands is Cushitic. The Northern Cushitic Branch is represented only by the Muslim pastoralist Beja people in present-day Sudan and Eritrea. Four endangered languages in the highlands make up the Central Cushitic branch (Appleyard 2006). One of them, Qwara (aka Qimant) (properly part of the Kemant dialect cluster), is the traditional language of the Falasha, who have received some notoriety as a group of Ethiopians who have long self-identified as Jews (Appleyard 1998).

The East Cushitic languages are found both in the Highlands and the Lowlands, spoken largely by terrace-farming communities. The largest language is Oromo, which is also the largest language in Ethiopia in terms of L1 speakers and also stretches down into Kenya. It has a Roman-script written standard that has some use in schools, administration and literature (Griefenow-Mewis 2001). A particular age-grading system known as Gada is found in a number of East Cushitic cultures. Jensen (1954) describes the system for the Konso. The entire population is divided into the two classes Galgússa and Hirba, whereby membership is passed on patrilineally. Within each division there are four age-grades: (1) Fareita, (2) Chela, (3) Gada and (4) Orschada. Every 18 years a celebration is held where members are promoted one step up, retaining a fixed gap of two grades between father and sons. Thus, if a man is Gada (3), all his sons are Fareita (1), until the man is promoted to Orschada (4), when his sons step up to Chela (2). The age-grade and division regulate all aspects of Konso traditional life, i. e., labor tasks, ceremonial functions, marriage order, dancing conventions, and so on. Another strong East Cushitic language is Somali, spoken in Somalia and adjacent countries, by muslims of a traditionally pastoralist economy. Somali has many "dia-

[6] The first wordlist of Amharic, collected in Jerusalem, dates from the 15th century (Cohen 1931; Muth 2010).

lects" that may not all be inherently intelligible (Tosco 2012). Somali has a Roman written standard as per a decision in 1972 to switch from an Arabic-based script.

The area southwest of the Ethiopian Highlands is drained by the Omo River. The language density here is among the highest anywhere on the continent (Pauli 1950), and the area also harbors considerable cultural and genealogical diversity. The (sub-)families represented are Surmic, Maji aka Dizoid, Nilotic, East Cushitic, Ta-Ne Omotic, Ari-Banna, and the isolates Shabo and Ongota. There are also scraps of data on a further (vanished or spurious?) unclassified group, named Dima by Bottegò (Rossini 1927). Most Surmic and Nilotic groups as well as the East Cushitic Dhaasanac are predominantly pastoralists, and with a few exceptions (see below) the remaining groups are predominantly agricultural. Many of the ethnic groups in the Omo Valley maintain their traditional lifestyle and appearance. Because of the elaborate bodily decorations, including lip discs, many collections of photos have been published in popular and/or art-oriented press (e. g., Sullivan 2012).

A number of languages in Southwest Ethiopia are highly tonal, culminating in Bench, a language with five distinct tone levels, which can be whistled as well as played (!) on a five-stringed guitar at least to the degree sufficient to describe the location of an object (Wedekind 1983: 148–151).

Agriculture/pastoralism is now the norm all over the Ethiopian sphere, but pockets of hunting and gathering subsistence modes survive, likely reflecting an earlier more widespread presence. The Shabo live embedded as hunters and gatherers in Majang (Surmic) society (Stauder 1971) and speak a language with no known relatives. The Ongota are an ethnic group of 83 individuals who now live in close association with the Ts'amakko (East Cushitic) and have a similar agropastoral culture. Some earlier testimonies describe the group as cattle-less, and predominantly hunting, but detailed testimonies of a foraging subsistence mode is lacking (Savà and Thubauville 2010). The language, still known by fewer than a dozen older members of the community, is unrelated to its neighbors, save for lexical loans. Boon is a name used for remnant (former) hunting and gathering communities in the Somali sphere. Apart from varieties of Somali with special vocabulary, one highly endangered Boon language has been briefly recorded. As far as can be told it represents an East Cushitic language (Lamberti 1986). The Weyto live at Lake Tana and were hippopotamus hunters until the last century (Gamst 1978). The early Scottish traveler James Bruce, who spoke Amharic, passed through the area around 1770 and reported that "the Wayto speak a language radically different from any of those in Abyssinia" (Bruce 1790: III: 403), but by the time Marcel Griaule visited in 1928 they had already switched to Amharic (Darmon 2010). A number of Surmic groups in the Omo Valley have hunter-gatherer castes (Cerulli 1929), but whenever their language variety is known, it is on par with other Surmic lects (Haberland 1966; Hieda 1990). The Mangio form a caste among the Kafa (Ta/Ne-Omotic) associated with hunting, and now speak Kafa, but some special vocabulary relating to their speciality has been recorded (Cerulli 1951). Further

castes are known among other highland Ethiopian peoples, not only as hunters but also as potters or tanners. Likely, with diminishing possibilities for hunting and gathering, such peoples were driven to become specialists in labors pertaining originally to a foreign culture (Freeman and Pankhurst 2003).

1.2.4. Sudanic West Africa

Sahelian West Africa was home to several medieval empires that flourished on trade, typically in gold and salt. Many of them are described by Arab travelers (such as Ibn Batūta; Hamdun and King 1994 [1353]) as prosperous, but their success is most clearly reflected today in the continued existence of various widely spoken languages. The country of Mali owes its name to the Mali empire, a Muslim kingdom that at its peak stretched from the coast of Senegal to Timbuktu (Niane 1975). The Manding subfamily owes its spread to this empire, with the three largest varieties Bambara (aka Bamanankan), Mandinka and Jula accounting for some eight million L1 speakers and twice as many L2 speakers in present-day Mali, Ivory Coast, Senegal and The Gambia. The close-knit Manding group languages form part of a large and deep family called Mande, which stretches as far east as northwestern Nigeria, with Busa spoken on the Niger River. The northwestern Mande language Bozo spoken in Kelinga (a variety of Hainyaxo Bozo [bzx]) is noteworthy as a language with an unusual noun-verb derivational relationship. Throughout the lexicon, referential use of a lexeme requires one tonal pattern while predicative use requires an inverted tonal pattern (low becomes high, high becomes low, falling becomes rising and rising becomes falling). In contrast to languages with overt derivational morphemes, no natural direction of derivation suggests itself, i. e., Kelengaxo Bozo does not specify whether verbs are derived from nouns or vice versa (Ebermann 2005).

In westernmost West Africa, the languages that are not part of the Mande family all have concordial noun class systems but do not otherwise form a coherent group. A cover term for the five coordinate genealogical groups is Atlantic. The biggest, North-Central Atlantic, encompasses the bulk of indigenous languages of Senegal, The Gambia and the Guineas. The most important language is Wolof, with two mutually intelligible written standards in Senegal (with francophone loans) and The Gambia (with anglophone loans).

Although pre-Arabic and pre-Tifinagh writing is attested in the Sahara (Monod 1993), the popularity of writing was conditioned by the incursion of Arabic and Islam. The practice of writing an indigenous African language using (possibly a modified version of) the Arabic script is now known as Ajami (Mumin and Versteegh 2014). Large collections of writing of various genres exist in large West African languages such as Fulani or Bambara, but further manuscripts exist with writing in smaller, e. g., Mande, languages that have only just begun to be studied philologically (Ogorodnikova 2014).

Most West African traditional societies subsist mainly on agriculture, aided whenever possible by herding, hunting and gathering. But this is not universally the case. A number of predominantly fishing populations exist along the Niger River (the Bozo, Ligers 1969), in coastal areas (e. g., Lebou, Mercier and Balandier 1952 or Imraguen, Athonioz 1967), as well as in the lagoon area of Ivory Coast (e. g., Avikam, Zwernemann 1979). The Némadi of Mauretania is the last hunting and gathering (sub)group remaining in West Africa, but if the Némadi had a remnant language in the past, there is little trace of it today. Endogamous castes specializing in occupations such as metalwork, bardship, leatherwork, woodcarving and weaving are found throughout the area (Tamari 1988).

The Fulani are a predominantly herding people who are found in a more or less continuous belt from Senegal to western Central African Republic. Naturally, the Fulani move with their herds, typically over territories seasonally occupied by other, sedentary, ethnic groups with whom the Fula have a symbiotic and sometimes hostile relationship. All Fulani languages are closely related, betraying a very fast expansion over a quite enormous territory. The Fula languages are most closely related to Serer in Senegal, which implies a far western origin of the Fulani. The Fula languages have full-fledged noun class systems with alliterative concord. In various areas of West Africa, the local Fula variety is an important language, spoken also by other ethnic groups, and in Cameroon, a simplified Fula is attested (Lacroix 1959) that has lost the noun classes.

Nearly all West African languages between Liberia and Nigeria belong to the Mande (roughly Northwest), Kru (roughly West), Kwa (roughly East) and Gur (roughly North) subfamilies. The most important Kru language is Grebo, spoken with many regional variants in Liberia. The Cape Palmas variety was studied relatively early by missionaries (Auer 1870).

Liberia has seen the development of no less than five different scripts, all developed by visionary native speakers of Vai, Mende, Loma, Kpelle (all Mande family) and Bassa (Kru family) respectively. The oldest one, Vai, was developed in the 1830s while the others were devised in the 1920s or slightly later. Only the Vai script is still in use today. The scripts are not variants of each other or of European/Arabic scripts. Only the Bassa script is alphabetical and records tone, while the others are syllabic scripts. Mende was written from right to left, while the others left to right (Dalby 1967).

Most of the many dozens of Gur languages are spoken in or around Burkina Faso. The largest Gur language is Mòoré, with around 5 million speakers in and around the capital Ouagadougou. Kwa is also a large group with many smaller languages, but has a few larger coastal languages (see below). Some Kwa (as well as some Mande) languages lack phonemic nasal consonants, as all phonetic nasals can be felicitously analyzed as nasal allophones conditioned by a nasal vowel (Saout 1973; Bolé-Richard 1984). There are surprisingly few traces in West Africa of what would have been the languages before the expansion of the Niger-Congo

and Mande families. Ega, Mpra and Pere are languages that have been difficult to place in the larger subgroups but are nevertheless arguably part of the Niger-Congo family (see Chapter 2 of the present volume).

A number of large West African languages owe their expanse to pre-Colonial empires. The Akan (the Ashanti Kingdom), Ewe in Ghana and Togo (the Dahomey empire), Yoruba in southwestern Nigeria (the Oyo empire) and Edo/Bini in southwestern Nigeria (the Benin empire) were coastal states that profited from trade with the Europeans after 1500, first with the Portuguese and subsequently with the British. In the 1500s vocabularies of coastal West African languages began to appear in travelogues and the like (Cole 1971). The transatlantic slave trade brought slave raids into the interior of West Africa. For many languages in the interior, the first published data were collected from slaves ex situ. Notably Koelle's (1854) compilation of wordlists from 180 languages encountered among freed slaves in Liberia is remarkable for its accuracy and the detail paid to phonetic transcription and geographical provenance. Furthermore, it is organized according to genealogical subgroups with insight far ahead of its time.

Yoruba is the paramount language of the region around Lagos, the economic capital of Nigeria. Yoruba has over 20 million L1 speakers and several million L2 speakers. It has a Roman script orthography that was created in 1850 and adjusted to its current form in 1966 (Bamgbose 1965). Yoruba is used in all domains, including newspapers and movies. In the slave trade diaspora some Yoruba presence survives in the new world. Lucumí, a language spoken in Cuba by practitioners of the religion known as Santería, is a varety of Yoruba (Olmsted 1953; Concordia 2012).

Akan, dominant in the southern half of Ghana, has over 10 million L1 speakers and another few million L2 speakers. Three mutually intelligible dialects have been developed as literary standards with distinct orthographies: Asante, Akuapem (together called Twi), and Fante. The Akan convention of naming children after the day of the week on which they are born has led to the proliferation of certain names, e. g., Kofi is the given name for a male born on a Friday (Dolphyne 1988).

Ewe, with over three million speakers, is an official language of Togo and Ghana. It is part of the larger Gbe cluster, which dominates the coastal areas between Ghana and Nigeria (Manoukian 1952).

Further east along the Nigerian coast and hinterland we find the smaller (sub) families of Edoid, Ijoid, Igboid and Cross River languages (Williamson 1971). The principal means of subsistence for these people is the cultivation of yams and cassava (Forde and Jones 1950; Bradbury 1957).

1.2.5. Central Sudan and Cameroon Grassland

1.2.5.1. Central Sudan

The area between the Niger and Logone Rivers is a tableland savanna broken up by a number of mountain massifs, the Mandara Mountains, the mountainous Adamawa Highlands and the Nigerian Plateau. The language diversity in these highland and mountainous areas is staggering. Most of the area above the Niger River in Nigeria is covered by different subgroups of Niger-Congo, the large Kainji subgroup, in the western part, near the lake of the same name, mid-south is Nupe and a handful of closely related languages forming the Nupoid subgroup, the large Plateau subgroup in mid-central Nigeria and the Jukunoid subgroup in the mideast. There are a couple of in-depth descriptions of individual Kainji (McGill 2009) and Plateau (Bouquiaux 1970) languages, but overall, these groups belong to the least-studied subfamilies in all of Africa (Sands in press). Most of these languages have noun classes with alliterative concord and the remainder are thought to have lost such a system. The merit of studying these languages is effectively illustrated by the discovery of a phonemic "explosive bilabial nasal", provisionally transcribed as [ŋ͡Θʷ] (Harley 2012: 59–62) in Ninkyob, a sound not known to occur in any other language.

Jukun, of the Jukunoid subgroup, is a relatively widely spoken language, owing to the (non-Islamic) Kororofa empire along the Benue River in the centuries after 1500.

To the north and northeast, around the mountainous border with Cameroon, we find a large array of languages from the Adamawa pool of Niger-Congo and the Chadic subgroup of Afroasiatic. In the west, predominantly Nigeria, the languages belong to the West Chadic subgroup. Although a subgroup, its internal depth is frequently compared with Indo-European as a whole (Schuh 2003). The Central or Biu-Mandara subgroup is much less deep. Hausa is the paramount Chadic language, whose triumph started with the Hausa empire in the middle ages, and now counts some 35 million native speakers and another 15 million L2 speakers. Hausa was written in an Arabic-derived script but has now adopted a Roman-based orthography. Hausa is dominant over all of northern Nigeria and adjacent regions in neighboring countries, and is the target of language shift for many of the innumerable small languages in the area, be they Niger-Congo or Chadic, which are increasingly becoming endangered as a result (Blench 2007b). Hausa spoken as an L2 language with differences from standard Hausa has been recorded by linguists (Feyer 1947; Hodge 1960) but may or may not represent stable pidgins.

Nearly all the peoples in the central Sudanic area are farmers of various kinds and intensities. Although, again, along the major rivers, the Niger and the Logone, as well as the Buduma around Lake Chad, we find predominantly fishing populations. Laal is a fishing-farming language on the Chari River discovered only

in the 1970s (Boyeldieu 1979) with no demonstrable relatives (Lionnet 2010). Sorghum and millet are the principal crops in the north, while yams become more important the further south one moves. A common kind of hereditary professional specialization was (black)smithing, and endogamous smith clans are found across the area. Occasionally, such groups have a language of their own, unintelligible to outsiders, e. g., Kawaway in southern Chad (Lionnet and Hoïnathy 2015), Uneme in southwestern Nigeria (Bradbury 1957: 123–129) or Kpeego in southwestern Burkina Faso (Zwernemann 1996).

Islam is the most common religion across the central Sudanic area, though scattered non-islamic areas exist, called Maguzawa in the Hausa sphere and Kirdi in the Mandara sphere.

1.2.5.2. Cameroon Grassfields

A grassy high plateau aptly labeled the Grassfields provides home to a large number of languages belonging to the various constellations of the Bantoid subfamily. The area was previously covered by forest but was tamed to its current state for greater agricultural productivity (Chilver and Kaberry 1967). The linguistic diversity in the hilly areas of Cameroon is certainly impressive, so that several authors have suspected deliberate language change to play a role, which is consistent with data from ethnography and oral history (Dicarlo 2011).

An indigenous script for the Bamun language was developed, starting in 1896 by a royal decree from King Njoya. The script evolved from a pictographic type to a partially alphabetic syllabic script in the space of 14 years, from 1896 to 1910. The latter version contained 73 syllable characters plus 10 signs for numerals, and tonal indications were used to differentiate between otherwise homonymous words. After he had invented his script, Njoya opened a school and taught a large number of people to write. Scribes were installed in the courts and cases were recorded, but already around 1931 the script fell into disuse. King Njoya attributes the idea of devising a script to a dream, but the idea of writing was not unknown, as Hausa merchants had brought books with Arabic script to the area around the mid-19th century, and German and English books somewhat later (Dugast and Jeffreys 1950).

1.2.5.3. The Central African area

Most of southern Chad is inhabited by peoples speaking languages of the Sara-Bongo-Bagirmi subgroup. Bagirmi is the language of the Kingdom of Bagirmi (1522–1897; Lebeuf 1978), and while the number of L1 speakers does not exceed 100,000, many speakers of smaller languages of the area speak Bagirmi as L2. A few Sara-Bongo-Bagirmi languages are also found across the border in South Sudan and in Central African Republic (CAR). One Sara language, Furu, is found

at the very southern border of CAR, at a considerable distance from its congeners (Boyeldieu 1990).

The western part of CAR is dominated by the close-knit Gbaya subfamily of Niger-Congo, which also extends into Cameroon. La'bi, an initiation language learned by men among many groups of Gbaya, is documented. The lexicon of Gbaya consists of predominantly non-Gbaya lexical items, but these often have similarities with, and probably derive from, non-Gbaya languages in the vicinity such as Sara or one of the Adamawa languages. The grammar, as far as is known, is identical to Gbaya (Tessmann 1931; Moñino 1977).

The eastern part of CAR is dominated by another close-knit subfamily, the Banda languages, which also extend down into Democratic Republic of Congo (DRC) and western South Sudan (Olson 1996). The southward spread of Banda is in part due to migration to escape slave traders in the 19th century (Maes 1984: 87).

The indigenous languages of the very remote western part of South Sudan are among the least studied in all of Africa. In fact, that which is known is largely due to one indefatigable individual. The missionary Stefano Santandrea wrote no fewer than 25 grammar sketches, along with lexical and ethnographic documentation of the little-known languages and peoples of southwest (South) Sudan. The area is quite diverse in terms of genealogical (sub)families. A handful of languages belong to the Sara-Bongo-Bagirmi group, another handful to the Mundu-Baka group, nine languages form the Sereic group and another few to the Zandeic group (cf. Chapter 2 of the the present volume). The small Kresh-Aja group (Santandrea 1976), the highly endangered Birri language (Santandrea 1966) and the Moru-Ma'di group of languages are thought to be distantly related, forming a Central Sudanic family together with Sara-Bongo-Bagirmi and the Ngiti-Lendu, Mangbetu-Asua and Membi-Mangbutu-Efe subgroups of the northeastern DRC (see Chapter 2 of the present volume). The Moru-Ma'di languages extend into DRC and Uganda, and comprise several languages with a sizable speaker population, such as Ma'di (300,000 speakers) and Lugbara (over a million speakers).

All over the area around the CAR, South Sudan and DRC tricrossing border, the Zande language prevails with over a million speakers. The Zande have been made famous by the British anthropologist E. E. Evans-Pritchard (1937) for their traditional beliefs in witchcraft.

1.2.6. Equatorial rain forest

The great equatorial forest is shared between nine countries: Angola, Cameroon, Central African Republic, Democratic Republic of the Congo, Republic of the Congo, Burundi, Rwanda, Tanzania and Zambia. Surviving in the forest is not easy (Vansina 1990: 35–46) and it is inhabited today by humans who have adapted and learned to live in it. Today the Bantu languages occupy most of the forest, but along the northern edge we find the small Ngbandi group and the Mundu-Baka

languages; inside the Bantu area in northern DRC, we find the small group of Mbaic languages; and finally, in the Ituri forest area of far northeast DRC we find three coordinate groups of Central Sudanic languages, the Ngiti-Lendu, the Mangbetu-Asua and the Membi-Mangbutu-Efe.

We know that the Bantu are relatively recent arrivals into the rain forest area. First, the Bantu carry with them a farming culture and the archeological record shows such a distinction entering from the northwest some 5,000–3,000 years ago (Phillipson 2005: 201–202, 245–269; cf. Bahuchet 1993: 104; Oslisly et al. 2013). Second, the earliest split-offs of Bantu, e. g., Bube on Fernando Poo island, as well as the closest outside relatives of the Bantu languages, are found successively outside the Bantu area to the northwest. It thus stands to reason that the Bantu entered from the northwest. Exactly when and how the forest area was settled is a much more difficult question to answer (Vansina 1990; Lupo et al. 2014). One approach is to model the expansion of Bantu languages as a tree where every internal node is located in time and space. Given some modeling assumptions, such a tree can be built on lexical data on Bantu languages using their present locations and a few temporal calibration points. Grollemund et al. (2015) find that the backbone expansion starts out going southeast to the mid-southern Congo, where subsequent diversification takes place to the east and south. This result is inconsistent with earlier suggestions that had emphasized migrations straight south along the coast and straight east along the northern border of Congo. Concerning the penetration of the forest area, a significant finding is that a majority of ancestral locations in the backbone migration coincide in time and space with paleoenvironmental data that indicate a temporary retraction of the Congo rainforest at its periphery and that the rate of migration slows down when moving from savanna into rainforest.

Like its congeners, the Bantu languages are known for their large concordial noun class systems whose existence has proven to be remarkably stable. Out of upwards of 500 Bantu languages only Mbati-Pande (Maho 1999: 137), the Bira group (Kutsch Lojenga 2003) and Nzadi (Crane et al. 2011) are known to have lost the noun class system (in the sense of not showing agreement in the noun or verb phrase).

The largest of the languages of the Congo rain forest area are Lingala, Luba-Kasai and (the many varieties of) Kongo. Lingala is spoken natively by some 15 million speakers and another 10 million second language speakers (Meeuwis 2013: 25). It has its origins in the Bangi language, which was used as a riverine trade language on the western part of the Congo River before the European occupation in the 1870s and 1880s. Europeans officers and workers recruited from various other parts of Africa acquired a simplified version of the Bangi trade language and expanded its sphere of influence, including the important state post Bangala (later Nouvelle-Anvers, now Mankanza). At Bangala the language underwent significant influence from local (closely related Bantu) languages such as

Boko, Mabaale, Libinza, Boloki and Lusengo and various missionary attempts to standardize or even set a prescriptive standard for its form. Given its association with the Bangala station it soon acquired the glossonym Bangala, and spread east, northeast and south as far as Leopoldville (now Kinshasa). The name Lingala was later introduced by missionaries on the analogy of the regionally common pattern with a *ba-* prefix for the ethnonym and *li-* for the glossonym. Luba-Kasai (or Western Luba) is spoken in the center of the DRC in an area extending along the Kasai River (Burssens 1946). Luba-Kasai has some 6.3 million L1 speakers and almost one million more L2 speakers. The present-day Kongo varieties reflect the dispersal of the kingdom of the same name at the mouth of the Congo River (de Schryver et al. 2015). Given its strategic location, the kingdom had early contacts with European powers and thus the oldest known dictionary of a Bantu language (de Gheel 1652) was compiled at the mission station of San Salvador. Simplified varieties of Kongo spread up the river and are now widely spoken as second languages on both sides of the river (Mufwene 1997). Under the bend of the Congo River we find the Mongo people with the language Lomongo (aka Mongo-Nkundu). Excepting languages with a dedicated academy, Lomongo is the most extensively described language on the planet, thanks to the work of especially Gustaaf Hulstaert. Hulstaert authored a grammatical description totaling almost 2,000 pages (Hulstaert 1966, 1988), a dictionary of over 2,000 pages (Hulstaert 1957, 1985) and an extensive dialectology (Hulstaert 1999).

Most of the people who inhabited the Central African rain forest are fisher-farmers, with a significant proportion of hunting. Curiously, some of the important crops such as the banana (from the east) and maize (from the New World) were introduced relatively late, such that it is possible to trace their spread through linguistic data (Bahuchet and Philippson 1998). But also, all across the forest area, interspersed with the farmers, we find forest specialists who exploit the forest's resources by foraging. The foraging groups are always in a patron-client relationship trading forest produce with a farming community. Most of the forest specialists have significantly shorter stature (Bahuchet 1993: 89–90), and are commonly called Pygmies, while other groups appear to be mixed with the taller farming populations and are called Pygmoids. While size is just one physical attribute, the Pygmies are genetically extremely different from the farming neighbors (Verdu et al. 2009). The current Pygmy population is estimated to be at least (several) hundred thousand but could potentially be closer to a million judging from the environmental carrying capacity (Olivero et al. 2016).

One would expect with such genetic and ethnographic differences that the Pygmies would either have vanished as distinct ethnicities or that they would speak language(s) unrelated to, or at least genealogically far removed from, the their present farming neighbors. Yet the ethnolinguistic conundrum is that all attested Pygmy languages are rather closely related to a farming language in their vicinity (see Table 5). The inescapable conclusion is then that the Pygmies shifted

Table 5: Pygmy languages with family classification, relation to neighboring farming languages and data sources.

Pygmy Ethnic Group	Country	Language	(Sub)family	Main Source(s)
Gyeli	Cameroon	Borderline intelligible to the neighboring Kwasio language	Bantu A80	Rénaud 1976
Baka-Gundi-Ganzi	Cameroon and CAR	Closely related to or even intelligible with the fishing-farming communities of Limassa and Ngundi neighboring to the east	Mundu-Baka	Ouzilleau 1911
Aka-Mikaya	Congo Republic and CAR	A language (or dialect chain) unintelligible to all other groups	Bantu C10	Klieman 2003
Bofi Pygmies	CAR	Variety of the neighboring farming Bofi language	Gbaya	Fouts 2002
Babongo	Gabon and Congo Republic	Varieties of the respective farming groups	Bantu B	Raponda Walker 1937; Mayer 1987; Klieman 2003; Medjo Mvé 2011
Asua	DR Congo	Variety of the neighboring Mangbetu	Central Sudanic (Mangbetu-Asua)	Larochette 1958; Démolin 1992; Harvey 1997
Efe	DR Congo	Variety of the neighboring Lese	Central Sudanic (Membi-Mangbutu-Efe)	Schebesta 1952; Vorbichler 1974
Kango	DR Congo	Borderline intelligible to the (non-neighboring) Komo	Bantu B20	Schebesta 1952; Harvey 1997
Mbuti Pygmy Bila	DR Congo	Intelligible with neighboring Forest Bila	Bantu D30	Turnbull 1965; Harvey 1997
Rundi Kitwa	Rwanda-Uganda	Borderline intelligible to neighboring Rundi	Bantu D60	van der Burgt 1902

language, not once, but on multiple occasions. Only in the case of Bofi did the shift happen recently enough to make it into living memory (Fouts 2002: 44; this shift was from Aka to Bofi). In the case of Aka, the shift must have happened at least a millennium ago, as no other present population speaks (a language intelligible to) Aka, let alone an adjacent people. Particularly interesting is the case of Aka and Baka, two adjacent Pygmy populations, one speaking a Bantu language and one speaking a Mundu-Baka language. Bahuchet (1989) has shown that the two nevertheless share a significant portion of vocabulary relating specifically to forest foraging (such niche vocabulary may not even exist in farming languages) and attributes this to a period of ancient shared history.

1.2.7. Eastern savanna

The Bantu languages are also omnipresent in East Africa. The largest of all is Swahili, a Bantu language with a very large proportion of Arabic loans, betraying its origin in coastal settlements with Arab trade. In the last centuries, the coast-based trade intensified into the interior of Africa, and this way Swahili spread to become the lingua franca all the way from the coast to eastern Congo. For a briefer period, another Bantu language, Sukuma, was used as a lingua franca in the interior of Tanzania, before Swahili took over. The chief items of export trade from eastern Africa were ivory, horn and skins, as well as slaves. Beads, pottery, glass, cloth and other luxury manufactures were the principal imports.

Swahili has some 15 million L1 speakers and at least 50 million L2 speakers. It is the medium of instruction in countries like Tanzania and Kenya and spoken as an L2 by most of the inhabitants of these countries. In post-independence Tanzania it is the express policy to make the (non-European) Swahili the language unifying the nation (Blommaert 2014), for instance by enforcing Swahili in elementary school instruction, even in areas where the younger pupils do not yet understand Swahili. The success of Swahili as the national language naturally comes at the expense of the over 100 smaller, mostly Bantu, languages of rural Tanzania, intensifying their endangeredness. With the rapid spread of Swahili as a lingua franca in the last century, the high proportion of L2 speakers in DRC appears to have had some leveling effect on the Swahili spoken in the DRC (Mwamba Kapanga 1993). There are also pidgin Swahili varieties attested among settlers (Mutonya and Parsons 2004) as well as in the army (Vitale 1980). One African community of those brought to what is now India and Pakistan used a form of Swahili (Burton 1851: 372–374) in the mid-19th century but no longer do so (Lodhi 2008).

The largest other Bantu languages are Kinyarwanda-Rundi (totaling some 20 million L1 speakers) in the fertile highlands of Rwanda and Burundi and Kikuyu (over 6 million L1 speakers), the native language of the area around Kenya's capital Nairobi.

Apart from the relatively late-arriving Bantu languages, other lineages are

found in East Africa, namely the South Cushitic subfamily, the Nilotic languages, and the language isolates Hadza and Sandawe. Hadza is spoken by a hunting and gathering community of less than a thousand individuals who live near Lake Eyasi and are famous among anthropologists for their disinterest in accumulating individual material wealth (Woodburn 1982). Many Hadza are monolingual and Hadza is still being transmitted to children, though there are now many Hadza who speak Swahili and/or other neighboring languages. Hadza is a language with phonemic clicks and its grammar has been studied, though we are still lacking an extensive grammatical description (Sands 2013). Sandawe, also in Tanzania, is a much larger language with some 40,000 speakers. It also has phonemic clicks and now has two extensive grammatical descriptions (Eaton 2010; Steeman 2012). The Sandawe are a farming community, though elements in their culture has led Newman (1970) to argue that they adopted farming only in the last centuries.

Four South Cushitic languages, Burunge, Alagwa, Iraqw and Gorowa, are still spoken in Tanzania by farming communities. Kw'adza, Aasax and Ma'a are another three languages often subsumed with South Cushitic. Kw'adza and Aasax went extinct before extensive data could be gathered (Kohl-Larsen 1943; Petrollino and Mous 2010). The Aasax were a hunting and gathering community submerged among the pastoral Maasai (Merker 1910: 229–269). The Ma'a language represents one of the world's most curious cases of language mixing, which was finally clarified thanks to the fieldwork of Mous (2003). The ethnic group speak two different registers, one, which we may call Mbugu, is a pure Bantu language closely related to Pare (aka Asu), while the other, which we may call Ma'a, is identical to Mbugu in grammar but has a divergent core vocabulary, a large section of which has Cushitic parallels. Different scenarios have been proposed to account for this situation. The strongest case can be made for a Cushitic community who shifted to a Bantu language, but consciously decided to stop, or even reverse, the shift when it was already nearly complete (Mous 2003).

In Kenya three traditionally hunting and gathering communities, Yaaku, Elmolo and Dahalo, speak (or spoke until recently) Cushitic languages. In both the Yaaku (Carrier 2011) and Elmolo (Tosco 2015) communities the last fluent speakers have now passed away following a long process of cultural assimilation, but there are individuals in both communities who are actively engaged in reviving the languages. Although the traditional lifestyle is no longer practiced, Dahalo still has fluent speakers. Dahalo, uniquely for its family, contains about 40 words with phonemic clicks, presumably traces of contact with or shift from now vanished northernmost click languages (Tosco 1991).

The Nilotic languages are spoken over a wide, vertically oriented area, stretching from mid-Sudan through to northern Uganda, western Kenya and adjacent areas in Tanzania. The Nilotes have a distinctive physical type and a decidedly pastoral lifestyle. The importance of cattle can hardly be underestimated in the classic Nilotic ethnographies. Cattle is a source of food, wealth, marriage and religious

fulfilment through sacrifice (Evans-Pritchard 1940; Ocholla-Ayayo 1980; Burton 1987) and the Nilotic languages typically have large vocabularies to describe the color and pattern of their livestock (Coote 1994). The largest Nilotic languages are Dholuo in Kenya and Tanzania with four million speakers and Maasai with over a million. The Western Nilotic languages are famous among researchers for being exceedingly difficult for an untrained European ear, with three vowel lengths as well as tone in Dinka (Remijsen 2014). Some of the Western Nilotic languages of the Northern Lwoo subgroup exhibit another rarity in that they have OVS basic constituent order and are ergative (Andersen 1988). This unusual state of affairs was captured early on by Westermann (1911: 27) as "the Shilluk prefers to speak in the passive voice" but, perhaps because of the absence of a specific terminology, later researchers assumed ergativity and OVS to be absent from the African continent (Andersen 1988: 289–290, 320). Two Southern Nilotic languages, Okiek (Blackburn 1971) and Akie (Kaare 1996), are spoken by hunting and gathering communities interspersed with other Nilotes with sizable cattle herds.

1.2.8. Madagascar

Madagascar, situated in the Indian Ocean some 400 kilometers off the coast of Mozambique, is the world's third-largest island. The Swahili sphere once reached the northern parts of Madagascar (Nurse and Hinnebusch 1993: 14, 22, 559) but the language is no longer spoken there (except by the older generation of a relatively recent Zanzibar offshoot on the small island of Nosse Be, see Gueunier 1989). On the contrary, it has been known since the early 17th century that the affinities of the languages of Madagascar lie not with the languages of the African mainland but with the large family of Austronesian, comprising some 1,200 languages found in an area stretching from Madagascar in the west to Easter Island in the east, and from the Formosan Islands in the north to New Zealand in the south. More specifically, as famously shown by Dahl (1951), the Malagasic languages belong more precisely to the Greater Barito subgroup of Austronesian, whose languages are spoken in Borneo. On the basis of careful study of the Malagasy lexicon and the issue of loanwords involving datable indirect borrowings from Sanskrit and Arabic, Malagasy is now thought to have arrived in Madagascar in the 7th century AD, brought by a Malay-speaking maritime economy (Adelaar 1995). There is also evidence of lexical interaction with Bantu languages, but this is likely to have occurred afterwards, and involved the Comorian Swahili varieties Ngazidja and Ndzwani (Dahl 1988), spoken on the islands northwest of Madagascar. Phenotypically, Malagasy populations today reflect the spectrum from African to Indonesian physical appearances not least due to the presence of the slave trade off the African coast in the last millennium.

Malagasy subsequently diversified in situ into a small family comprising 12 different languages in the count of Lewis et al. (2015), traditionally divided

amongst 18 named ethnic groups. The largest ethnic group in terms of numbers is the Merina in the northern central mountains (hence counted as Plateau Malagasy, 7.5 million speakers), the Betsimisaraka (1.8 million and 1 million speakers for the southern versus northern division) along the east coast and the Betsileo in the southern central mountains (also counted as Plateau Malagasy, 7.5 million speakers). The Malagasic peoples in the interior and east of the island, e. g., the Merina, are predominantly agriculturalists whose principal crops are rice, maniok and yams. In contrast, the traditional subsistence of the Antakarana in the north, the Sakalava in the west and the Bara, Mahafaly, Antandroy and Karimbola in the south is herding, in addition to agriculture (Schomerus-Gernböck 1975). Vezo is a predominantly fishing population living on the southwest coast (Astuti 1991), and close to them are traditionally hunting and gathering groups variously called Vazimba, Beosi and Mikea (Birkeli 1936; Stiles 1991) who have now largely abandoned their presumed ancestral way of life. Birkeli (1936) was able to record a scattered array of vocabulary items of Beosi, which he insisted was not only a language different from its neighbors but also contained non-Malagasy items, possible relics of an aboriginal population. Later researchers have found no language particular to the traditionally foraging ethnic groups (Tucker 2001) and find unproven the idea that these groups reflect a pre-Malagasy aboriginal population.

Until the 19th century Malagasy was rarely written, but an Arabic script was used not least by the Antemoro in the south (Dahl 1983) from the 15th century until the introduction of a Roman script for various Malagasy varieties by missionaries in the 19th century.

1.2.9. Southern tip

The indigenous languages of the southern tip of Africa fall into two sharply distinct layers: click languages and Bantu languages. Again, the Bantu layer can be inferred to be the last one. The click languages belonging to the Kx'a and Tuu families, spoken by hunting and gathering communities now confined to the Kalahari Desert, probably represent the oldest layer. The remaining non-Bantu click language family is the Khoe-Kwadi family. Güldemann (2008) argues that they entered southern Africa from East Africa, traveling with livestock herds through the narrow corridor with a sparse distribution of the Tsetse fly (Leak 1999: 79–90). If pastoralism was brought to southern Africa by the proto-Khoe-Kwadi speakers, some groups must have shifted subsistence or, alternatively, some hunter-gatherers shifted language, as there are Khoe-Kwadi languages presently spoken by traditionally hunter-gatherer communities. The largest non-Bantu click language, Namibian Khoekhoe (also known as Nama-Damara, of the Khoe-Kwadi family, 250,000 speakers), is spoken in Namibia and adjacent regions in Botswana and South Africa. In Namibia it is used in radio broadcasts, in the public administration and for teaching up to the university level.

Little remains of the click languages once spoken in the country of South Africa. Traill (1996) explains in detail how the Tuu language ǀXam, once spoken in the northern Cape area and beyond, was exterminated within the span of a century, as their ancestral lands were taken over and the population shattered into farm laborers or outright killed. Nevertheless, the ǀXam language is amply recorded through the work of Wilhelm Bleek and Lucy Lloyd, who interviewed Bushman prisoners beginning in 1870. For N‖ng, another Tuu family language of South Africa, the speakers were similarly dispersed and the language ceased to be used, and was declared extinct, until a series of aged speakers became known to researchers in the 1990s (Crawhall 2004).

The Bantu languages cover the remaining savanna territory. In Zimbabwe several dozen dialects commonly subsumed under the label Shona account for over 10 million speakers. The spread of Shona is likely related to the ancient empire of Zimbabwe (1220–1450), which boasted impressive stone structures and trade links to the east coast (Wieschhoff 2006). Gold was the trade item most demanded at the coast, while finds of beads and pottery from Asia in the Zimbabwe ruins testify to some of the reciprocal goods. Tswana has five million speakers in Botswana and South Africa. Although it is the largest indigenous language of Botswana, there are more speakers in South Africa. In the Caprivi area of Botswana and Namibia, one Bantu language, Yeyi, has adopted a large number of click consonants (Seidel 2008). A few other Bantu languages in the vicinity have clicks, but only in a small portion of their vocabulary (Bostoen and Sands 2012).

Though there are a number of large reference grammars and dictionaries produced mostly by missionaries, the Bantu languages of Angola and Zambia are among the least-known areas of Bantu languages. Two large Angolan languages are the similarly named Kimbundu, with 4 million speakers, and Umbundu, with 6 million speakers. The Bantu peoples of the Angolan and Zambian savannas are agropastoralist, save for the Kwisi (Estermann 1976: 20–30) and the Gciriku (Gibson 1981), who led a hunting-and-gathering-oriented lifestyle until recently, and the Ambo and Herero clusters, who are pastoralist.

The southernmost Bantu subgroup is the traditionally herding Nguni dialect cluster (Ownby 1985), with the principal languages being the mutually intelligible but sociopolitically separate Zulu (11 million speakers) and Xhosa (8 million speakers). Both Zulu and Xhosa have clicks, undoubtedly diffused from the click languages in situ. However, the words containing clicks are not confined to loanwords, but permeate the vocabulary more generally. In the case of the Nguni languages, there is a cultural practice called *isihlonipho sabafazi* that likely facilitated the replacement of vocabulary. According to *isihlonipho*, ‘women’s language of respect’, when a woman is married and moves into her husband’s family, she is taught new vocabulary by her sisters-in-law (and whenever necessary, advised by her mother-in-law). This new vocabulary is to replace words that contain syllables occurring in her husband’s family’s names which she may no longer use (Finlay-

son 1995). In this way, clicks entering the vocabulary may have been facilitated, especially if the wife is marrying in from a non-Bantu click-speaking ethnolinguistic group (Herbert 1995).

Also in southern Africa, warfare in the past centuries has altered the linguistic landscape. The Ngoni originate from Northern Zululand and spoke the corresponding Zulu dialect in the early 19th century. Due to the military expansion under Shaka Zulu, the Ngoni were pushed northeast. By that time, the Ngoni had military techniques and weapons superior to those of the local peoples and could establish themselves in the lands to the northeast, reaching present-day Malawi and finally southern Tanzania. As a result, ethnic groups called Ngoni are found along this route, but the languages they speak have assimilated to the local languages so that they are gradually more similar to them than to their original Zulu variety (Miti 1996; Ngonyani 2001).

1.3. Summary and outlook

The 2,000 languages of Africa manifest a vast range of typological, sociolinguistic and genealogical diversity, and undoubtedly more remains to be discovered. Despite centuries of interest, lack of documentation continues to be the main obstacle towards a full understanding of the languages of Africa. As a continent, Africa is the least-known area of the world, second only to the greater Melanesian area. With the advancing frontier of language endangerment, documentation and description are of the highest priority. Most African countries harbor un(der)documented and endangered languages, though Nigeria, especially the Hausa-dominated northern parts, stands out as the country with the largest numbers. Similarly urgent is the documentation of languages or registers relating to vanishing subsistence modes (e. g., hunting and gathering), professions (e. g., blacksmiths), ritual practices (e. g., initiation languages) and cultural expressions (e. g., drummed languages) as well as the study of sign languages.

All of the classic linguistic preoccupations such as undeciphered scripts, historical philology, language contact, multilingualism, language urbanization, areal typology, and comparative reconstruction can be found on the African continent. In many of these areas, the African data appear to be underutilized, either for their global linguistic significance or with respect to their value for other disciplines. The reconstruction of the Niger-Congo and Afro-Asiatic families (see Güldemann, this volume, Chapter 2) presents the greatest challenge of historical reconstruction in terms of the number of languages and presumed time depth. The quadrimillennial written record of Egyptian-Coptic represents the longest recorded vertical history of any language on the planet. The human genetic diversity of African populations is maximal and can be used to study the covariation between genes and languages (e. g., van der Veen et al. 2009; Dediu 2010). Africa provides ample

grounds for modeling the global emergence of lingustic diversity and its correlation with geophysical features, population density and state formations (cf. Nettle 1999; Coupé et al. 2013; Axelsen and Manrubia 2014). Fine-grained linguistic data can be profitably used to trace the spread of domesticated livestock and plants (Blench 2000) as well as technologies such as iron smelting (Lesage 2016) or pottery (Bostoen 2005).

Hopefully, all the abovementioned lines of research can be enhanced with more data, better access to data and computational support as African linguistics enters the digital age.

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2. Historical linguistics and genealogical language classification in Africa[1]

Tom Güldemann

2.1. African language classification and Greenberg (1963a)

2.1.1. Introduction

For quite some time, the genealogical classification of African languages has been in a peculiar situation, one which is linked intricably to Greenberg's (1963a) study. His work is without doubt the single most important contribution in the classification history of African languages up to now, and it is unlikely to be equaled in impact by any future study. This justifies framing major parts of this survey with respect to his work.

The peculiar situation referred to above concerns the somewhat strained relationship between most historical linguistic research pursued by Africanists in the

[1] This chapter would not have been possible without the help and collaboration of various people and institutions. First of all, I would like to thank Harald Hammarström, whose comprehensive collection of linguistic literature enormously helped my research, with whom I could fruitfully discuss numerous relevant topics, and who commented in detail on a first draft of this study. My special thanks also go to Christfried Naumann, who has drawn the maps with the initial assistence of Mike Berger. The Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology Leipzig under Bernhard Comrie supported the first stage of this research by financing two student assistents, Holger Kraft and Carsten Hesse; their work and the funding provided are gratefully acknowledged. The Humboldt University of Berlin provided the funds for organizing the relevant International Workshop "Genealogical language classification in Africa beyond Greenberg" held in Berlin in 2010 (see https://www.iaaw.hu-berlin.de/de/afrika/linguistik-und-sprachen/veranstaltungen/greenberg-workshop). I would also like to express my gratitude to colleagues who kindly offered their expertise and/or furnished unpublished data, namely Colleen Ahland on Baga, Pascal Boyeldieu on Bongo-Bagirmi, Bruce Connell on Ijoid, Ines Fiedler on Gbe and Guang, Jeffrey Heath on Dogon, Angelika Jakobi on Nubian, Ulrich Kleinewillinghöfer on a number of Adamawa groups, Raija Kramer on Fali, Manuel Otero on Koman, Mechthild Reh on Nilotic, Lameen Souag on Songhay, and Valentin Vydrin on Mande. Their information and material did not always come to be used here but nevertheless helped me to get a better picture about the genealogical status of individual families. It goes without saying that I am solely responsible for any shortcomings in the interpretation of such data. Last but not least, this chapter has benefitted immensely from the effective and skillful proofreading by Heather Weston. The abbreviations recurring in examples, firgures and tables are: A Animate, ABSTR Abstract, ACC Accusative, ADJ Adjective, ANTICAUS

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post-Greenbergian era and the perception of this work by the general discipline, which considers Greenberg's classification to be "badly in need of major reinvestigation and reworking" (Campbell and Poser 2008: 128). It is no coincidence that the fundamental split in opinion became particularly apparent from two papers that emerged in the same context, namely the conference "Language and prehistory in the Americas: a conference on the Greenberg classification" held in 1990 at the University of Colorado, Boulder. On the one side was Thomason (1994) – an attempt by a non-Africanist to make sense of the apparent contradiction between the almost universal acceptance of Greenberg's (1963a) African classification and the lack of equal success of his later, methodologically similar works on the Pacific (1971) and the Americas (1987). On the other side was Newman (1995) – an Africanist's vigorous defense of Greenberg (1963a) and its methodological underpinnings.

This conflict resurfaces in the indirect exchange between Dixon's (1997) "outsider" assessment of the genealogical classification on the continent and the response to it on the occasion of the 32nd Annual Conference on African Linguistics held in 2001 at the University of California Berkeley. Dixon (1997: 32–34) wrote:

> One finds statements like, '[Greenberg's] major conclusions have by now become the prevailing orthodoxy for most scholars' … However, one searches in vain for proof of this 'genetic relationship'. Africanists tend to respond to queries about this matter from outsiders by saying that only Africanists can judge such matters. Maybe. But after reviewing the available literature an outsider is forced to conclude that the idea of genetic relationship and the term 'language family' are used in quite different ways by Africanists and by scholars working on languages from other parts of the world. …
> The hypothesis of a 'Niger-Congo family' was first put forward almost fifty years ago. During the intervening period no attempt has been made to prove this hypothesis by the criteria used for I[ndo-]E[uropean], Uralic, Algonquian, etc. in fact, … it appears that Sub-Saharan Africa is characterized by an overlapping series of diffusion areas …

Anticausative, APPL Applicative, ASSC Associative, AUX Auxiliary, BEN Benefactive, C Consonant, CAUS Causative, COP Copula, CONC Concord, CPET Centripetal, DAT Dative, DEF Definite, DEM Demonstrative, DI distal, DIR Directional, E Exclusive, EXT Extension, F Feminine, FUT Future, GEN Genitive, HAB Habitual, I Inclusive, IMP Imperative, INCH Inchoative, INSTR Instrumental, IPFV Imperfective, ITER Iterative, ITR Intransitive, LOC Locative, M Masculine, MID Middle, N Nasal, NEG Negative, NEUT Neuter, NOM Nominative, NOMZ Nominalizer, NUM Numeral, O object (in word order schema), OBJ Object, OBL Oblique, P Plural, PASS Passive, PERF Perfect, PFV Perfective, PLUR Pluractional, POSS Possessive, POSSR Possessor, PR Proximal, PST Past, RCPR Reciprocal, REFL Reflexive, REL Relative, REPT Repetitive, RSLT Resultative, S Singular or (in word order schema) Subject, SBJ Subject, SEPR Separative, STAT Stative, TR Transitive or Transnumeral (in gender or declension system), V Vowel or (in word order schema) Verb, X Other (in word order schema).

> The Niger-Congo situation is a classic example of taking the IE-type family tree as the only model of linguistic relationship, and employing it willy-nilly, without proper care and criteria.

The organizers of the African linguistics meeting in Berkeley reacted to Dixon by posing the following questions in their conference announcement:

> Has proof of genetic linguistic relationships in Africa been as elusive as Dixon claims? If so, is it our [the Africanists'] fault or "theirs"? (i. e. the languages'?)

Suffice it to say here that Dixon's "reviewing [of] the available literature" was rather superficial, missing in particular the pre-Greenbergian research on Niger-Congo languages that made specialists confident about at least parts of Greenberg's scheme. At the same time, it is argued here in line with Dixon that most parts of Greenberg's classification are indeed not based on evidence according to mainstream criteria of the general discipline, and that this is hardly the "languages' fault". It is the prevailing contradiction between the general and the philological approach to language classification that justifies the seemingly disproportionate size of this contribution compared to other chapters of this book.

Greenberg's (1963a) classification is not only entrenched deeply among Africanists, however. This is reflected by the reluctance of non-specialist linguists to take into account relevant and publicly available findings that question important parts of Greenberg's scheme. For example, the fact that many specialist linguists have never followed his Khoisan hypothesis has been obvious since early on (cf., e. g., Westphal 1962a, 1962b, 1971; Sands 1998b; Güldemann and Voßen 2000). Nevertheless, such major linguistic survey works as Haspelmath et al. (2005) and Lewis, Simons, and Fennig (henceforth Ethnologue), at least until its 17th edition of 2013, have continued to perpetuate Greenberg's non-specialist assessment of this[2] and other African language groups, while simultaneously discarding similar lumping classifications for language families in the Pacific and the Americas.

2.1.2. The pre-Greenbergian background

In order to understand Greenberg's work itself as well as its later impact, it is useful to briefly consider some historical background of the genealogical classification of African languages (see Cole [1971] and Köhler [1975] for relevant overviews). The crucial points can be illustrated by a typical pre-Greenbergian classification, as given in Figure 1.

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[2] Admittedly, this perception is still transmitted by some specialist publications as well, notably Voßen (2013) within the Routledge *Language Family* Series [emphasis mine].

Sudanic
Bantu
Hamitic (including also Fula, Maasai, Khoekhoe according to Meinhof [1912])
Semitic
Bushman

Figure 1: General pre-Greenbergian classification of African languages

One point comes out clearly in Figure 1, namely that the research history of African languages had been shaped by then by highly lumping classificatory schemes, often even just a tripartite one. According to Wolff (1981), this was largely determined by the three major geographical thrusts of the early European interaction with and colonization of Africa and the associated linguistic research. These were a) the academic Orientalist tradition interested in North(east) Africa, which was also responsible for the early unfortunate academic separation in African linguistics between scholarship dealing with "oriental" vs. sub-Saharan languages; b) the economic interests, including the slave trade, on the Atlantic coast and its hinterland populated in western Africa by the so-called "Sudanic" languages; and c) the early colonial expansion at the Cape of Good Hope confronted with "Khoisan-" and Bantu-speaking groups.

Another crucial point, intimately associated with the above scheme, is the strong evolutionary overtone of genalogical classifications in that the modern highly diverse linguistic profile in Africa was modeled in terms of an emergence from a very limited set of ancient, idealized population types defined primarily by nonlinguistic criteria, the most salient component of which was the "Hamitic theory" (Lepsius 1880; Meinhof 1912, 1938). This largely nonlinguistic approach still transpires in the late pre-Greenbergian classification by Westermann when he writes (1940: 375):

> Diese Einteilung schließt sich den Rassenbenennungen an und weist somit darauf hin, daß ein ursprünglicher Zusammenhang zwischen Rasse und Sprache bestanden hat und daß heute noch Züge dieser Gemeinsamkeit vorhanden sind. Es braucht aber kaum betont zu werden, daß dies nur in beschränktem Maße der Fall ist: Wanderungen, Schichtungen und andere Vorgänge haben in eigenständigem Wachstum, in Sprachmischung und in Übernahme ganz neuer Sprachen vielfache Änderungen hervorgebracht. [This classification follows the racial designations and hence indicates that race and language were originally linked and that traces of this connection are still in existence today. Of course, it hardly needs to be stressed that this is only the case to a limited extent: migration, stratification and other processes have yielded multiple changes through autonomous growth, language mixing and the adoption of completely new languages.]

Table 1: The development of Greenberg's African language classifications

Greenberg (1950d: 394)	**Greenberg (1954: 409)**	**Greenberg (1963a)**
1. Niger-Congo	1. Niger-Congo	1. Niger-Kordofanian
12. Kordofanian	10. Kordofanian	
2. Songhay	2. Songhay	2. Nilo-Saharan
3. Central Sudanic	3. Macrosudanic	
5. Eastern Sudanic		
14. Berta		
15. Kunama		
4. Central Saharan	4. Central Saharan	
8. Maban	7. Maban	
9. Mimi (of Nachtigal)		
10. Fur	8. Fur	
11. Temainian	9. Temainian	
13. Koman	11. Koman	
16. Nyangiya	12. Nyangiya	
6. Afroasiatic (Hamito-Semitic)	5. Afroasiatic	3. Afroasiatic
7. Click	6. Click	4. Khoisan

2.1.3. The evolution of Greenberg's classification

In addition to the background of Greenberg's work, it is necessary to review the gradual emergence of his major contribution itself. That is, his view on language classification in Africa evolved over more than a decade and in the beginning differed quite drastically from the last proposal that linguists commonly associate with him – a fact that is little-known or at least not appreciated sufficiently by many scholars today. Table 1 presents an overview of three continental classification hypotheses advanced by Greenberg in a period of less than 15 years, the most striking aspect of which is the different degree of syntheticity.

Contrary to the perception that Greenberg's approach had to overcome universal resistance from his predecessors, it is significant that his first classification of 1950 was received very positively by such a central figure of African linguistics as Westermann (1952: 256):

> Greenberg is the first linguist who has attempted to give a classification of the whole range of African languages. He has not contented himself with a general survey, as all his predecessors, including myself, have done, but has gone into considerable detail; in each single case he gives his proofs in word-lists, in tabulated formative elements, and also on sketch maps; he does not quote all his sources, which would have been practically impossible; nor is it essential, since they are known to the expert. He confirms many findings of those who have worked before him, he corrects a number of errors; although many of these had been refuted by others, it had seldom been done with such clarity and definiteness as here. It is quite possible that some of his statements and classifications may prove to be not sufficiently clarified, or that he has overlooked a language which cannot be shown to be related to any other in Africa; he will be criticized, and some of his classifications may be rejected; but all this does not detract from the value of his study, for which all of us have to thank him.

Some of Westermann's points are worth being made explicit. For one thing, he refers to the special merits of Greenberg's approach concerning in particular the concrete nature of the empirical evidence provided, the first exhaustive and compact continental coverage, and the novel theoretical clarity in presenting and arguing for the proposed classification and its conceptual background. At the same time, most of Greenberg's "corrections of errors" can be shown to be based on work preceding his own, although he does not completely refer to it; while this was not problematic for his contemporaries, who would have been familiar with the same literature, later Africanist scholars would not necessarily see its influence (see below).

Berry's (1956: 395) review of Greenberg's (1955b) pre-final classifications, reprinted in one compact volume, refers to another important point that would resurface in the reception of the final classification of 1963, namely considerable deficiencies in data handling:

> It is always distressing to find mistakes in matters of fact in what purports to be a work of scholarship. It is especially distressing to find them in this work which claims so much itself and for which so much is claimed, sometimes in language highly critical of its predecessors. To whatever cause the mistakes are attributed (rather clearly it is the magnitude of the task, not, in the instances cited, any inadequacy in the documentation available), in the long run they can only weaken confidence in the articles as a whole and cause judgment to be suspended on their findings. In the meantime, admirers of Professor Greenberg's other work, like the reviewer, will no doubt look forward to any further contributions he may make to these studies. It would be preferable that these be on a less ambitious scale which would permit him to observe precautions normal to everyday scholarship.

As shown in Table 1, while Greenberg's first comprehensive African classification of 1950 still displayed 16 indigenous language families on the continent, this was to change eventually to a scheme with just four supergroups, which Boyd (1996: 15) ascribes to what he aptly calls a

> "clean-up" procedure which does away with isolated units so that nothing will be left over which is not grouped with something else until macrounits are obtained, none of which can be considered sufficiently to resemble another to warrant further merger (the "highest [genealogical] level") …

In my view, this is the most enigmatic part of Greenberg's entire classificatory enterprise in Africa, also given his own convincing argumentation (1950d: 393–394) according to which a low number of independent genealogical units on this continent is in principle unlikely (see section 2.9 for more details).

Figure 2 gives Greenberg's classification as commonly known today. It also presents on the right side a correspondance with my set of primary classificatory units (see section 2.3.2 for more details) that are recognized in this survey and presented in section 2.4–7. It should be noted that this different inventory contains additional units that are not dealt with by Greenberg (1963a) and are thus also lacking in Figure 2, namely U10 Pere, U14 Bangime, U25 Shabo, U32 Meroitic, U47 Ongota, U49 Laal-Laabe, and U50 Kujarge; these are mostly single languages that were still unknown at the time of his research and remain isolated until today.

I Congo-Kordofanian (aka Niger-Kordofanian)
- A Niger-Congo
  - 1 West Atlantic = U11 ATLANTIC
  - 2 Mande = U12 Mande
  - 3 Voltaic = U15 GUR + U13 Dogon
  - 4 Kwa = western part of U6 BENUE-KWA + U8 Ijoid + U9 KRU
  - 5 Benue-Congo = eastern part of U6 BENUE-KWA
  - 6 Adamawa-Eastern = U16 ADAMAWA + U17 UBANGI + U7 DAKOID
- B Kordofanian = U18 KORDOFANIAN + U19 Katlaic + U20 Kadu

II Nilo-Saharan
- A Songhai = U23 Songhay
- B Saharan = U27 Saharan
- C Maban = U28 Maban
- D *Fur* = U26 Furan
- E Chari-Nile
  - 1 Eastern Sudanic = U21 Kuliak + U29 Taman + U30 Nyimang + U31 *Nara* + U33 Nubian + U34 Dajuic + U35 Temeinic + U36 Nilotic + U37 Surmic + U38 Jebel
  - 2 Central Sudanic = U22 Central Sudanic
  - 3 *Berta* = U39 *Berta*
  - 4 *Kunama* = U24 *Kunama*
- F Koman = U40 Koman + U41 Baga (earlier Gumuz)

III Afroasiatic

A	Semitic	= U42 Semitic
B	*Egyptian*	= U43 *Egyptian*
C	Berber	= U44 Berber
D	Cushitic	= U45 Cushitic + U46 OMOTIC
E	Chad	= U48 Chadic

IV Khoisan

A	South African Khoisan	
	1 Northern	> U2 Kx'a
	2 Central	> U3 Khoe-Kwadi
	3 Southern	= U1 Tuu
B	*Sandawe*	= U4 *Sandawe*
C	*Hatsa*	= U5 *Hadza*

Note: GENEALOGICAL/AREAL POOL, Language family, *Single language*

Figure 2: Classification of African languages by Greenberg (1963a: 177)

2.1.4. The history of Greenberg's final classification

In section 2.1.1 I have referred to the disparity between the almost universal acceptance of Greenberg's classification in Africanist circles and the critical voices against it among general historical linguists. For the second group of linguists as well as for Africanists not adhering to the classification as a whole, this presents a puzzling situation, one which has been addressed, for example, from a non-Africanist perspective by Thomason (1994) and Campbell and Poser (2008: 120–145). In the following I also discuss this question and argue, in highlighting in particular the Africanist research background and the evolution of Greenberg's hypotheses as outlined above, that the success of his African study is due to factors other than its linguistic merits and comprehensiveness.

Two crucial but widely overlooked circumstances relate to the previous Africanist research history, namely the poor state of language classification before Greenberg and the related difficulty of leveraging research results that contradicted the then prevailing canon. Regarding the first point, African linguistics, which up to the middle of the 20th century had been largely practiced in Europe, was in several respects in a situation of "intellectual crises and contradictions and thus […] ripe for a scientific revolution," despite Newman's (1995: 3–4) statement to the contrary. Ideologically all previous classifications were clouded by multiple stereotypes related to the purported "un(der)developed state" of Africa and its peoples that were deeply entrenched in European academic discourse far beyond historical linguistics. The non-linguistic background had, in turn, led to a serious

and tenacious methodological shortcoming in historical linguistics in that, based on these sterotypes, language classification beyond the more obvious relationships strongly tended to be influenced by argumentation that was non-linguistic and lacked the rigor imposed by canonical historical-comparative standards, despite the fact that these had already proved to be so successful in Africa, notably in Bantu studies. In light of this context, it must not be underestimated that Greenberg, who not only stood outside this scholarly tradition but was also free from any concerns about having an academic career in Europe, was able to show a scientifically clear and comprehensive way out of the prevailing cul-de-sac. He called for robust methodological principles, notably: a) linguistic evidence rather than nonlinguistic arguments (concerning in particular anthropological features of subsistence type and human biology or, as with Bantu, the demographic importance of languages and the resulting strength of the research tradition); b) grammatical elements in addition to the lexicon; and c) diagnostic sound–meaning resemblances rather than simple and superficial typological similarities. He also established clearer concepts about historical language relationships, notably a rigorous distinction between affinities due to inheritance and those due to contact (which also concerned the recurrently considered but diffuse concept of "mixed languages") as well as the "transitivity principle" of genealogical relation in the case of irregular retention of diagnostic features across an assumed family. I venture that the historical coincidence of the existing state of research and Greenberg's "liberating" and in large parts methodologically sound approach is the single most important factor for the success of his overall framework.

The second related point is that Greenberg's apparently novel proposals that remain robust today had mostly been prefigured by previous work that he could build on within the framework of his comprehensive and more rigorous approach to language classification. This even holds for some hypotheses where he felt compelled to make the point that his proposal came first and/or was independent (cf. 1963a: 38–39, fn. 6 and 12 on Fula and Saharan, respectively). As mentioned above, his texts are not studded with citations of previous work by others that we have come to expect based on today's academic standards. Hence, an uninformed readership may well fail to understand that the research he had at his disposal was in important areas rife with results that called for changes of two types, namely a) abandoning the Hamitic theory, particularly in the form of Meinhof's classificatory proposals, and b) establishing new genealogical relationships based on reliable linguistic criteria. The older hypothesis on the core of Afroasiatic aside, some relevant works concerning the former point are Klingenheben (1925) on Fula and Atlantic, D. Bleek (1927) on Khoekhoe and Khoe, and Köhler (1948) on Maa etc. and Nilotic, and concerning the latter point Westermann (1927b, 1935) on Niger-Congo, Lukas (e. g., 1936b: 333–341, 1939) on Saharan, partly Lukas (1936a, 1937/38) on Hausa and Chadic, and Tucker (1940) on Ubangi and Central Sudanic. The possible reliance on previous scholarship on these language groups

and the lack thereof on others corresponds to the fact that Greenberg was able to successfully defend his larger Afroasiatic and Niger-Congo proposals against the attacks from "conservative" Africanist circles, while he simply ignored critiques of his genuinely novel hypotheses, namely the existence and composition of Nilo-Saharan and Khoisan, for example, Westphal's (1956, 1962a, 1962b, 1971) adverse but well-founded position regarding the latter.

Newman (1995: 1) has characterized the reception of Greenberg's classification as ranging "from adulation to highly emotional rejection". It is possibly true that in the beginning there was a certain polarization of opinions that also prompted some scholars to take an "all-or-nothing" approach to Greenberg's scheme. This in turn impeded an engaged attempt to separate the wheat from the chaff regarding both the robustness of individual hypotheses and the real yield of different methodologies. Given the comprehensiveness of the classification, this was compounded by the sheer lack of specialist knowledge on and/or interest in the language units Greenberg subsumed under one or another super-group, notably Nilo-Saharan and Khoisan. This unfortunate situation would be further aggravated in subsequent years as certain political events led to a period of decreased interest in Africa and, consequently, its languages. Already Welmers (1963: 413) wrote:

> … new contributions in this revision of Greenberg's classification – primarily the inclusion of a number of small groups into larger families – will probably not be vigorously criticized in themselves. Few people know much about the languages in question, and it is interesting that adverse criticism seems generally to come from sources that are associated with some kind of vested interest. Crudely, no one cares enough about Songhai or Koman or Fur to get involved in a dispute with Greenberg as to his conclusions or the methodology that underlies them.

There are other short- and long-term circumstances outside African linguistics that favored the enduring success of Greenberg's (1963a) classification. One is mundane rather than scientific, but important nonetheless: the post-war period was marked by the United States taking on a globally leading role in all kinds of domains, including many parts of academia, which is aptly characterized by Wolff (1981: 27) with respect to the present topic: "damit betrat die US-amerikanische Afrikanistik etwas provokant die Bühne" [with (Greenberg's classification of 1949–1954), a North American brand of African linguistics somewhat provocatively entered the stage].

The new orientation toward US scholarship was also associated with a shift in general linguistic paradigms that, generally speaking, implied a decreasing interest in historical questions and the associated traditional linguistic methodology, which once formed a cornerstone of the discipline. This concerns especially generative syntax marginalizing typological and historical linguistics and lexicostatistics as a nonorthodox historical method.

Lexicostatistics would come to play a particular role in that it entered the scene as the seemingly missing scientific tool to effectively put into practice what

Greenberg repeatedly advocated, multilateral or mass comparison in the domain of lexicon, which in its original form is widely condemned in non-Africanist circles for not providing probative evidence (see, e. g., Pawley [2009: 165–168] regarding Greenberg's little-known Indo-Pacific hypothesis). The appeal of lexicostatistics is also embedded in the contemporary positivist trend toward quantitative data analysis, which today tends again to be seen as directly yielding answers instead of being a crucial supplement to qualitative approaches to some larger scientific question. For post-Greenbergian African linguistics, it can be said that mass comparison and lexicostatistics celebrated a coincidental but enduring marriage that came to marginalize the traditional historical-comparative method.

The last approach only continued to thrive in a few places, primarily in France and Germany, which had a relatively dense Africanist infrastructure that could incorporate this research despite it being time-consuming and having relatively little impact in the short term. A reduced application of the more rigid method also correlates with a decrease in general standards in historical comparison, which is discussed in section 2.2.

In summary, the apparent contradiction between the negative reception of Greenberg's language classifications in other geographical areas and the success of the same approach in Africa is not all that surprising. The latter can be argued to be the net result of various coinciding factors and cannot be reduced to the merits of a fresh and sound linguistic approach. That is, all the points made above are not meant to diminish the enormous achievement made by Greenberg but to better comprehend why his overall scheme has enjoyed such a good reputation despite its well-known drawbacks.

There is yet another circumstance of Greenberg's classification work that also relates to how scholars should deal with it today. At least in the beginning, Greenberg himself had pointed out that the nature of his work places it more in the realm of creating rather than testing hypotheses, for example, when writing (1950d: 393) that his proposals remain to be substantiated by the comparative method: "Further investigation, particularly the reconstruction of parent forms within each language family, is necessary before these and other similarities can be adequately evaluated." This important point was rightly reiterated by other scholars, for example, Heine (1992: 32):

> Although Greenberg's work represents considerable progress over that of previous writers, it leaves a number of questions open. His approach is largely inadequate for the PROOF of genetic relationship; it can do little more than offer initial hypotheses, to be substantiated by more reliable techniques like the comparative method. In a number of instances, languages or language groups have been placed in a given family solely on the basis of a handful of 'look-alikes', i. e. morphemes of similar sound shape and meaning.

Thus, one major problem of post-Greenbergian scholarship is that historically oriented Africanists have not succeeded in, or worse, bothered with converting most of the new hypotheses into more robust frames of reference by standard methods of hypothesis testing in the discipline. What Childs (2003: 47) says about the research history of the apparently spurious Atlantic family, the language group he happens to specialize in, must be extended to the African continent as a whole, namely "that scholarly inertia reinforces mistakes, which are thereby perpetuated indefinitely, effectively forestalling any re-examination of the facts".

A reorientation within African language classification is relatively recent. Emanating from the long-standing dissatisfaction with Greenberg's Khoisan hypothesis on the part of language specialists (cf., e. g., Sands 1998b, 1998c; Güldemann 1998; Güldemann and Voßen 2000), serious doubts were reaffirmed through the repeated reference to the inadequacy of his four-family scheme for typological comparison (cf. Güldemann 1998, 2003b, 2005a, 2008c, 2008d), and have culminated so far in continental surveys that argue for the recognition of a greater linguistic diversity in Africa, including the discourse about possible isolate languages (Dimmendaal 2008b, 2011; Sands 2009; Hombert and Philippson 2009). All these works agree that a number of Greenberg's proposals still stand and others may well be confirmed in the future by more convincing evidence.[3] Thus, it is not Greenberg's enterprise as a whole but more specifically his last highly synthetic classification of 1963 that must be questioned today.

2.2. Evidence supporting genealogical classifications

2.2.1. Introduction

In the context of this book it is not possible nor necessary to give an introduction to historical linguistics in general and genealogical classification in particular (for recent overviews see Joseph and Janda [2003] and Campbell and Poser [2008]). However, the history and current state of historical linguistics on African lan-

[3] It is of secondary concern whether there is scientific merit in proposing an ultimately correct hypothesis for the wrong reasons. At the time, most of the proposals on distant genealogical relationships, notably the maximal groups like Khoisan, Niger-Kordofanian, and Nilo-Saharan, had to have been the result of rather unsystematic trawling through large amounts of data and resulted from Greenberg pressing his subjective interpretations into a single historical explanation, namely genealogical inheritance. When, so to speak, one overhastily casts the widest possible single-type net, it is simply inevitable that some of the initial catch will turn out to be replicated by later, more systematic searching.

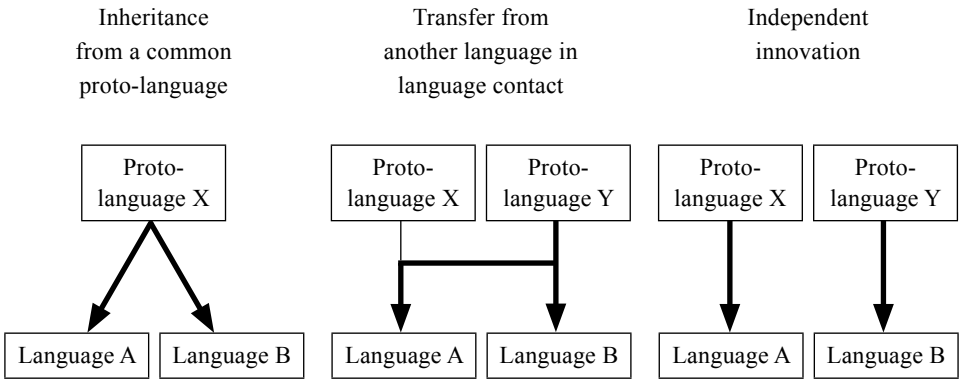


Figure 3: Three major scenarios that lead to shared linguistic features among languages

guages make it necessary to go into some details about the problem of establishing linguistic genealogical relationships.

Generally speaking, grouping languages into a lineage, understood as any group with a common descent in the sense of Nichols (1992: 25), can be seen as a kind of "discovery procedure" that consists in the exclusion of all other possibilities that can explain shared linguistic features according to an accepted methodological framework. In other words, the real challenge in language classification is not to find isoglosses for the sake of establishing genealogical relationships but rather to identify the multifold patterns of differently caused isoglosses and interpret them adequately.

Figure 3 displays a basic typology of scenarios in which two languages may come to share an isogloss. The right-most scenario, independent innovation, differs from the other two in lacking any known causal historical event that can be located in space and time. The presence of a feature in two or more languages in this basic scenario can be explained by such diverse factors as coincidence, parallel universal drift, and, only becoming more popular in the recent past, parallel environmental drift. The two scenarios on the left of Figure 3 differ from independent innovation in that the presence of a modern isogloss is explained historically. Here a basic distinction between two types of historical explanations is recognized, namely contact-induced innovation vs. shared genealogical inheritance.

In many cases where similarities between languages and language groups are observed, the major challenge in language classification is to disentangle these two historical scenarios. This undertaking requires the use of criteria that are as systematic and constrained as possible. The heavy interference of language contact in the modeling of genealogical language relationships has been observed and discussed recurrently, particularly so in the recent past (cf., e. g., Noonan 2010; McMahon 2013). Two Africanist contributions to Aikhenvald and Dixon (2001),

addressing the problem of areal diffusion and genetic inheritance from a global perspective, come to partially different conclusions for the African continent. Heine and Kuteva (2001: 393) write: "The conclusion reached is that contact-induced language change and the implications it has for language classification in Africa are still largely a terra incognita." Dimmendaal (2001a: 387–388), who is largely confident about Greenberg's genealogical classification, concludes with reference to the wider Gulf of Guinea coast area in West Africa that "… important from a methodological point of view, areal diffusion did not obscure the original genetic relationship". On Dimmendaal's (2011) own current account, Ijoid (U8) – one group in the area sharing numerous structural features and lexical items with the neighboring Niger-Congo languages – should, however, no longer be viewed as belonging to this lineage. In section 2.4–8 below I mention in fact quite a few cases other than just Ijoid where isoglosses can be interpreted ambiguously and thus require deeper and more sophisticated investigation than heretofore applied in order to come to robust classificatory conclusions, thus siding with the more cautious position by Heine and Kuteva (2001). I have argued in Güldemann (2010) that genealogical and areal signals are especially prone to ambiguous analyses on higher-order levels involved in Greenberg's (1963a) long-range comparisons, and this is supported by Nichols's (2010) survey of macro-families and macro-areas on a global scale (cf. also Güldemann this volume, chapter 3.2).

In order to tackle this and similar issues, the linguistic evidence mustered for any genealogical relationship should comply with certain standards. In the ideal case, evidence should be "individual-identifying" in terms of Nichols (1996) and at the same time unlikely to be transferred by language contact. Three principles that are widely accepted (cf., e. g., Newman 2000) but, I argue, too often disregarded in Africanist circles that adhere to Greenberg's classification, are briefly discussed in the following, namely a) morphological evidence over lexical evidence, b) paradigms over atomic items, and c) lineage history over data quantity.

2.2.2. Morphological evidence over lexical evidence

Several prominent historical linguists, such as Meillet (1958: 91, 97) as cited in Nichols (1996: 47), have made demands for grammar to take primacy over lexicon:

> Grammatical correspondences are proof, and only they are rigorous proof, provided one makes use of the material detail of the forms and that it is established that particular grammatical forms used in the languages under consideration go back to a common source.
>
> While one can initially establish vocabulary resemblances between two or several languages as an indication of where to do further research, this cannot furnish a definitive demonstration; vocabulary can only orient the research, and proof comes from elsewhere.

While some scholars may well debate this position, there are good reasons for adopting it, particularly because lexicon, as opposed to morphology, is not just subject to extensive change but more specifically to substitution, and the form of new semantic replacements is determined by many factors beyond language-internal processes. This problem becomes increasingly serious as the distance grows between languages that are purported to be genealogically related on the basis of lexical isoglosses. For one thing, the assumed proto-forms become phonetically ever more reduced and abstract, which makes it difficult to exclude not only sheer conicidence but also universally relevant sound–meaning correlations (see Blasi et al. 2016). Moreover, the temporal and geographical scale involved exponentially increases the multitude of diverse historical trajectories. Tucker and Bryan (1956: XVI, ADDENDA), while not adequately addressing Greenberg's overall approach that relies considerably on morphology, correctly comment on his controversial affiliations based on scattered vocabulary resemblances:

> The only conclusion which can be reached at this stage is that mere vocabulary comparison, unsupported by phonology [presumably referring to regular sound correspondences], may give rise to a variety of classifications, each as convincing as the other. … That is why, in the present work, the authors prefer to keep their classification down to the 'Larger Unit', in which the relationship of member Languages or Language Groups is indisputable, leaving the wider classification open for further research.

One major cause of vocabulary replacement is, of course, contact-induced borrowing (see Haspelmath and Tadmor (2009) and Tadmor, Haspelmath, and Taylor (2010) for recent survey discussions). Such lexical change can disguise the coherence of a genuine language family, as diagnosed by Pasch (1986: 412) for the Mbaic group (U17.C):

> Die Tatsache, daß die lexikostatistische Untersuchung auf die vier Mba-Sprachen beschränkt geblieben ist, ist mit dafür verantwortlich, daß das obige Ergebnis zustande kam. Wären andere Sprachen, insbesondere das Zande und das Lingala in die Untersuchung einbezogen worden, hätte es wahrscheinlich ein dergestalt verschiedenes Ergebnis gegeben, daß die Mba-Sprachen keine geschlossene Sprachfamilie mehr bilden würden. [The fact that the lexicostatistic analysis was restricted to the four Mba[ic] languages is one reason why the above result [of a certain amount of lexical unity] was obtained. Had other languages, in particular Zande [Zandic, Ubangi] and Lingala [Bantu, Benue-Kwa], been included in the investigation a quite different result might have emerged to the effect that the Mba[ic] languages would not have formed a coherent language family.]

In fact, Greenberg's (1963a: 9) wider survey within his Eastern (aka Ubangi) group failed to detect the close linguistic relationship among the three Mbaic languages he considered. This was only discovered later by looking at morphological data concerning noun classification, which brings home the point that morphological evidence is a more reliable indicator of genealogical relationship than any superficial inspection or measurement of lexical proximity.

A yet more worrying concern relates to regular sound correspondences, even in more stable lexicon, which is viewed by some to be the non plus ultra for the acceptance of a language family. That is, such correspondences can be the result of intensive language contact, for example, if such contact was relevant for the ultimate emergence of a synchronically attested lineage. Here, I do not claim that a linguistic history coming close to a "mixed-language" or "creole" origin should be hypothesized with the same ease as normal transmission producing canonical genealogical relationships – a facile assumption that was recurrent in early African scholarship as well as among Greenberg's critics; at the same time, individual cases may require further investigation before this possibility can be excluded.

There is another cultural reason why inherited lexicon can be subject to increased substitution, and thus why vocabulary data, when used on their own, may be unsuitable for ascertaining genealogical relationships, namely linguistic taboo. Just to mention one example, Kleinewillinghöfer (1995, 2001) views this as a major factor in such Adamawa languages as Longuda, Cham, and Tso, which in Cham goes hand in hand with heavy lexical substrate interference, here of the replaced language Jalaa (see section 2.3.3).

In view of all the above phenomena, it is in fact surprising how heavily historical linguistics, both in Africa and outside this continent, has been and still is relying on lexical evidence for elucidating genealogical relationships on high and low classificatory levels. Greenberg's original approach of using largely isolated lexical items attested in single modern languages has developed over time toward ever more unconstrained forms of long-range comparisons. Their fate can be seen in such works as Blench (2008): the data he presents started out as evidence for one or the other of Greenberg's four macro-groups, then turned into "Pan-African roots", but, when expanding the search, end up recurrently as "global etymologies".

As mentioned in section 2.1.4, an even more prominent role in post-Greenbergian African linguistics has been played by lexicostatistics. It is still used today for classification despite its well-known problems (cf., e. g., Elugbe and Bankale [2004] as just one recent example discussing the many controversial issues arising from lexicostatistics in the Benue-Kwa pool of Niger-Congo). In view of the renewed trend toward using only quantitative lexical data for reconstructing linguistic and nonlinguistic history, now in combination with phylogenetic methods (cf., e. g., Holden [2002] or Currie et al. [2013] on Bantu; and Kitchen et al. [2009] on Semitic), it remains to be seen whether this research will take concerns and ideas of historical linguistics on board. That the computer-assisted analysis of quantitative lexical data is as such a highly promising enterprise should not be questioned (see Heggarty [2010] for an example of a linguistically sophisticated approach).

2.2.3. Paradigms over atomic items

The second principle of preferring paradigmatic data is partly related to the first principle in that suitable morphological elements also frequently come in structured sets. Isoglosses combining morphology and paradigmaticity most easily meet the requirement of being individual-identifying, explaining why pronominal and similar elements have proved to be so attractive for testing hypotheses of genealogical relations. Such evidence makes multiple independent development and transfer by means of contact simultaneously unlikely – although these two scenarios still cannot be excluded automatically. For instance, Campbell (2003: 276) brought to attention that sheer coincidence accounts for the strong similarity of a set of verbal person suffixes in Early Indo-European and Proto-Eastern Miwok in northern California, and Seifart (2012) shows that paradigm borrowing is in fact recurrently attested under certain circumstances. However, these data do not minimize the elevated diagnostic value of morphological paradigms in comparison to other types of evidence but rather serve as a reminder that even this evidence should preferably exist in more than a single case.

Nevertheless, paradigmaticity is a preferred criterion in its own right. On the one hand, it is a crucial requirement even for morphology, because comparing only single isolated markers, which has been pursued extensively by Greenberg and other scholars working on remote relationships, is in fact quite problematic. This is because morphological forms generally tend to be both short in form as well as drawn from a restricted unmarked subset of the phonological inventory, which are both factors that increase the possibility of chance resemblance. On the other hand, paradigmaticity also significantly improves the diagnostic value of lexical data. Indeed, the relevant domain of numerals presents a prime case of using structured groups of lexemes for assessing historical-comparative questions. Greenberg (1963a) himself made this point by means of the short paradigm of lower numerals in eight languages, reproduced in Table 2, which indeed gives a first indication about their correct genealogical affiliation to two distinct language families (assumed cognates within each lineage are printed in boldface and left-aligned).[4]

[4] At the same time, the data also demonstrate the risks of such superficial comparisons. For example, the apparent cognate in Kotopo aka Peere of the series for ‘two’ does not seem to reflect an old inherited form. First, forms with *Ba seem to be more restricted in Niger-Congo. Second and more importantly, the more likely proto-form of the lower-order family Samba-Duru to which Kotopo belongs does not reflect a potentially inherited *Ba. (See Table 27 for the empirical data.)

Table 2: Lexical comparison of numeral paradigms (after Greenberg 1963a: 4)

No.	Language	Genealogical classification		'one'	'two'	'three'
1.	Berti	Saharan		*sang*	***su***	*soti*
3.	Tedaga			***toro***	***ču***	*agozo*
6.	Kanuri			***tilo***	*ndi*	*yasko*
8.	Zaghawa			*lakoi*	***sw.e***	*we*
2.	Kotopo	Niger-Congo	Samba-Duru, Adamawa	*wate*	***i.ba***	***ta.ti***
4.	Ahlõ (aka Igo)		Ka-Togo, Benue-Kwa	*ili*	***i.wa***	***i.ta***
5.	Proto-Bantu		Bantoid, Benue-Kwa	*mwe*	***ba.****li*	***ta.to***
7.	Efik		Cross River, Benue-Kwa	*kiet*	***i.ba***	***i.ta***

For some language groups, it is shown below that already a superficial survey of numerals in reconstructed form, even if preliminary, can give a more transparent picture regarding proposed genealogical hypotheses as well as the possible identification of new ones. While this is already evident for the lower numerals up to 'five', the potential of such research is even greater when also looking at higher numerals like 'six' through 'nine' and 'eleven' through 'nineteen', because these are often petrified compounds with lower numerals as their components and thus potentially retain old lexical items for an even longer period of time, as recognized by previous research (cf., e. g., Boyd 1989b; Zelealem 2004; Blažek 2009a).

Unfortunately, numerals, too, can undergo enormous change, to the extent that they may not be useful in certain families and/or on some genealogical levels; for example, this holds for deeper relations in Afroasiatic according to Wenger (2002). Moreover, and more seriously, there are recurrent instances of shared elements in a coherent segment of the paradigm, even in lower numerals, that do not reflect common inheritance but rather language contact. A representative case is the Berber languages, investigated in detail by Souag (2007), where Arabic numerals were borrowed very frequently and in variable degrees up to the replacement of inherited items like 'three,' 'four,' and 'five.'

While in the case of Berber the pressure toward borrowing even lower numerals was ultimately caused by a difference in sociolinguistic prestige, some contact settings involve circumstances in which numeral borrowing even has straightforward structural reasons. That is, languages with restricted numeral systems, a feature recurrent among but not limited to foragers, are likely to borrow numerals from 'three' upwards and retain them once their use has become regular. Such a scenario, which will have been frequent in prehistory, has to be excluded before a modern case of a shared numeral set is interpreted in terms of genealogical inheritance. Such a suspicious case is Ijoid (U8): its forms for 'one' and 'two' are

unique, and for ‘one’ not even uniform across this small lineage, while ‘three’, ‘four’, and ‘five’ are suspiciously similar to forms in neighboring Benue-Kwa languages (see Table 27 in section 2.5.2.2). Given that other diagnostic evidence for Ijoid’s Niger-Congo membership is so far lacking, this picture could in fact reflect language contact.[5]

In addition to numerals, suitable genealogical evidence can be sought in other lexical paradigms. A case in point is sets of suppletive lexemes correlating with certain grammatical categories. This is shown, for example, by the case of number-sensitive verb-root suppletion that supports the establishment of the Kx’a family (U2) in southern Africa. According to Honken’s (2004) data collation, the Ju complex and the ǂHoan variety of ǂ’Amkoe share among other things close to ten verb roots that are organized language-internally in a lexeme pair that varies, depending on the valency, with the number of the subject or object, including two complete sets for such basic verbs as ‘stand’ and ‘sit’. This not only supports the unity of Kx’a but also helps to sort out other languages: the grammatical phenomenon as such is also found in the geographically close but genealogically unrelated Tuu language Taa but the verb lexemes are not etymologically related. This is shown in Table 3 (if one of the number counterparts is not listed, the relevant synchronic forms are not cognate across the two branches of the Kx’a family).

Table 3: Verb root suppletion in Kx’a and Taa (after Honken 2004: section 2.1.3.2)

Gloss	Ju (Kx’a)		ǂ’Amkoe (Kx’a)	Taa (Tuu)
	!Xuun	Jul’hoan	ǂHoan	East !Xoon
stand (S)	*ˀ!ŋũ̃*	*ŋ!ṹ*	*!ṹi*	*ǁhûũ*
stand (P)	*gǁà*	*gǁà*	*gǁã̀*	*ˀǁnù̯hã*
sit (S)	*ˀ/ŋĩ́ŋ̃*	*ŋ/áŋ́*	*ˀ/ŋ́á*	*ʦʰûu*
sit (P)	*g!ʰó*	*g!ʰòó*	*!q͡ʰău* ‘recline’	*!ˀáã*
arise (S)	*ʦáó*	*ʦáú*	*cű́*	*kxˀâba*
drop (P)	*tàˢm*	*tàˢm*	*(tʃáˢm)*	*ǁˀãli*
take (P)	*ŋ/ùʱí*	*ŋ/ŋ̀ùì*	*kĭ̋-ŋ/ùi*	*ᵑ̊/ʰàõ*
take out (S)	*g!xà*	*g!χ̌à*	*kĭ̋-!χào*	–
kill (S)	*!ʰṹ*	*!ʰṹ*	*!ʰõ̌*	–

[5] Of course, a similar situation with numerals can also hold in a language (group) that does display additional genealogical evidence (cf. such a potential case with Bennett and Sterk’s [1977: 253–254] so-called Nyo group within Kwa based on the numeral for ‘two’, cf. Table 27 below). This picture could reflect an inverse historical scenario whereby a population originally speaking a language with a restricted numeral system underwent language shift but retained its lowest numerals for ‘one’ and ‘two’.

While cases of root suppletion are possibly too rare and restricted in order to be important on a larger scale, another domain worthy of future systematic investigation may be kinship vocabulary, whose paradigmatic size is larger and has structured patterns of morphological complexity like affixation and compounding.

Table 4: Shared kinship vocabulary in Mundu-Baka and Ndogoic

Family	'mother'	'man/male'	'maternal uncle'	Source
Mundu-Baka	*na~*ɲa	*mɔ.**kɔ**.(sɛ)	*nɔ.kɔ	Winkhart (2015)
Ndogoic	*nà	*Dā.**kò**	*nù.kù	Moñino (1988: 118, 122, 127)

An example from the Ubangi pool can illustrate the phenomenon of compounding. Table 4 shows that Mundu-Baka (U17.D) and Ndogoic (U17.G) not only share roots involved in the words for 'mother' and 'man/male' but also combine the two in the expression of 'maternal uncle'. The type of compound is semantically not unique in Africa nor are the two lexical roots (the one for 'mother' is widespread in Niger-Congo, and that for 'man/male' is shared at least by other Ubangi families). The entire pattern of the three lexemes and their relations to each other warrants, however, a more concrete historical explanation for the relation between the two groups.

2.2.4. Lineage history over data quantity

The third principle of giving primacy to an interpretation of data in terms of a plausible lineage history relates to the very core of historical linguistics. There are two models accounting for historically induced isoglosses, "vertical" genealogical inheritance within a phylogenetic family structure and "horizontal" contact-mediated transfer across languages. The genealogical family-tree model in particular entails straightforward principles regarding the trajectories of linguistic inheritance within this structure, which have been ignored too often in major proposals on African language classification, for example, that by default modern language items can only be the reflex of one proto-form, that proto-languages are unlikely to have multiple forms for basic semantic concepts, etc.

One of the major drawbacks in this respect has been the widespread but particularly detrimental practice of basing historical comparisons predominantly on the attestation of presumably diagnostic linguistic characters in individual modern languages rather than on plausible proto-forms of larger language sets. The first approach is a direct continuation of Greenberg's quantitatively oriented mass comparison, while the second is qualitative, providing not only probative evidence but also plausible phylogenetic histories. Sasse (1974: 621–622) sounded the following note of caution, without much effect, however:

> … würde uns zum Beispiel lehren, die Vergleichung von einzelsprachlichem Material ohne Berücksichtigung von genetisch zusammengehörigen kleineren Einheiten endlich aufzugeben. Niemand bildet sich ein, Aufschlüsse über die Verwandtschaftsverhältnisse des Indogermanischen zu erhalten, wenn er die Oberpfälzer Mundart mit dem Kurdischen vergleicht. … Unsere Aufgabe besteht also zuerst in der Etablierung kleinerer Gruppen, deren genetische Verwandtschaft in sich klar und einwandfrei beschreibbar ist. [(… the recognition of and cooperation with already successful philologies) would teach us, for example, to abandon once and for all the comparison of material of individual languages without taking into account smaller genealogically related units. Nobody expects to gain insight into the genealogical relationships within Indo-European by comparing the (German) dialect of the Upper Palatinate with Kurdish. … Our task thus consists first in the establishment of smaller groups, the genealogical relation of which can be described clearly and unambiguously.]

The danger of the facile interpretation of "dense" lexical isogloss distribution in terms of inheritance is illustrated by Güldemann and Loughnane (2012) with respect to the Khoisan hypothesis. The work shows that body-related lexicon that is widespread across modern languages of all three relevant families in southern Africa is not good evidence for their higher-order relationship, because as soon as lineage-internal reconstruction is pursued, the majority of cross-family isoglosses can be shown to ultimately originate in one lineage and thus their presence in others turns out to be better explained by language contact, or the proto-forms become more dissimilar, no longer justifying a historical interpretation. This study does not yet provide solid reconstructions, and above I have deliberately referred in general to "plausible" proto-forms. Clearly, if one were to await the painstaking establishment of final reconstructions, any investigation of non-obvious genealogical relationships would be unduly deferred. Thus, there is a positive role of what has been called "quasi-reconstructions" or "pseudo-reconstructions", because they give a better picture about whether modern attestations of a linguistic form in a comparison are likely to go back to the proto-language of the relevant lineage.

In some sense, there is a counterpart of the above procedure concerning lexicon that deals with structural linguistic features. Greenberg (e. g., 1977: 103) initially called it the "diachronic process approach"; today it is better known as "diachronic typology" and includes the results of grammaticalization research, as proposed by Greenberg (1995). It entails at least two requirements. First, individual proto-stages within a language family are reconstructed as systems supported by global cross-linguistic diversity. Second, the differences among them and between synchronically attested stages can be explained by plausible morphosyntactic changes (see, e. g., the overview by Harris and Campbell [1995]) *and* these are in compliance with the phylogenetic history assumed for a given lineage. While Greenberg (1963a and later works) provided support of this kind in connection with parts of his Niger-Kordofanian and Afroasiatic hypothesis (see section 2.5 and 2.7),

he failed to account for the modern diversity within Khoisan and Nilo-Saharan (see section 2.4 and 2.6). A few laudible exceptions aside, such as the discussion revolving around word order and grammatical relations in Nilotic and Surmic (cf., e. g., Andersen 1988; Hieda 1991; Dimmendaal 1998a, 2005), African historical linguistics today is still characterized by the neglect of diachronic typology and similar techniques in the establishment of plausible phylogenetic histories.

2.3. The present classification survey

2.3.1. A typology of evidence for genealogical hypotheses

From the outset it must be said that the following African language survey is not intended as a new genealogical classification in the traditional sense, for example, comparable to Greenberg's (1963a) framework. Instead, it is meant to enable readers to reach their own well-founded conclusions about the entirety of genealogical relationships that have been proposed up to now, and to do so according to the criteria they deem sufficient/necessary.

For this purpose, I classify evidence claimed for genealogical relationships into basic types, as listed in Table 5, and will assign these types to the indivdual proposals in Africa to be discussed below. Individual decisions necessarily entail subjectivity on my part but due to the exhaustive coverage and the unitary criteria this survey is nevertheless hoped to provide both a balanced picture of comparative research across the entire continent and, particularly for non-specialists, a better understanding about the nature and reliability of particular hypotheses. (Obviously, this typology cannot cover works that just claim a relationship without at least pointing to some concrete data.)

Since the classification in Table 5 should be intuitively clear for the historically-interested linguist, only a few short clarifications are in order. The types A, reconstructed morpheme paradigms, and B, regular sound correspondences in the lexicon, are straightforward in that they comply with the traditional requirements

Table 5: Types of linguistic evidence for genealogical hypotheses

Code	Characterization of evidence type
A	Morphological reconstructions of a paradigmatic nature
B	Vocabulary reconstructions with regular sound correspondences
C	Recurrent obvious resemblances in vocabulary and/or morphology with bona fide reconstructibility
D	Scattered resemblances in vocabulary and/or morphology
E	Lexicostatistic calculations
F	Typological-structural similarities

within the historical-comparative method, established in the late 19th century and described since then in a number of textbooks, collective volumes, etc., for example, Anttila (1989), Hock (1991), Durie and Ross (1996), Campbell (1998), and Joseph and Janda (2003), to mention some more recent ones. Both types of evidence involve the potentially problematic issue of quantity. In principle, the more evidence is submitted the better the proof for a proposed relationship, but some types of data when assessed in terms of Nichols (1996) can attain "individual-identifying" quality despite limited quantity (see section 2.2 above). An important caveat, when applying the criteria laid out in standard methodology, is that not all works on African language classification invoking "regular sound correspondences" actually supply them in any canonical sense and will thus not be assigned a type-B evaluation. This holds, for example, for the studies by Ehret on Nilo-Saharan (2001) and South African Khoisan (2003: 68–71), because his "correspondences" are not supported by sufficient etymologies or even are not substantiated by any data – this quite apart from the possibility that lexical isoglosses, even regularly related ones, may have explanations other than inheritance.

The assessment of an assumed lineage in terms of type C is based on what Nichols (1996) and earlier authors like Meillet (1958) call "self-evidence of relatedness", for example, in such Indo-European subfamilies as Slavic, Germanic, and Romance. Their family status is obvious or at least easily recognizable even for outsiders and is often accompanied by a consciousness of common descent ingrained in the oral and/or written memory of the speakers as well as the fact that knowing one group language immensely facilitates learning a related one. However, only with the systematic presentation of data according to the criteria of A and B can the relevant lineage be fully accepted.

Evidence of the types A, B, and C is commonly held to be reliable for accepting a genealogical relationship, provided, of course, that non-specialists can in fact inspect the necessary data in a sufficiently compact form. This is not the case with evidence of the types D, E, and F. According to mainstream historical linguistics, these can certainly contribute to hypothesis creation but do not justify the assertion of a genealogical link, even if extensive data are provided. While evidence of type D is intricately related to that of A and B in the sense that all involve similar linguistic data and analysis, the former lacks the systematicity and regularity required within the latter. Sometimes it is hard, though, to make a categorical distinction in terms of quantity and quality, so that particularly in such borderline cases my decision for judging some evidence as A/B or as D is inevitably subjective.

While both E, lexicostatistics, and D, scattered lexical resemblances, may involve a large amount of data, what distinguishes them is that the compared items in the former are systematically collected across the entire comparative space while in the latter they are taken opportunistically from diverse classificatory entities according to suitable comparisons, up to the point of assembling isolated look-alikes with lax semantic association.

When, in a certain case, I consider type-E evidence to be a central argument in an hypothesis, this does not just mean that lexicostatistic calculations exist but that their values are elevated, suggesting at least the likelihood of historical connectivity across a given group. There are many more lexicostatistic studies in African linguistics that are not recorded here because they involve such low proximity values that a historical interpretation is unwarranted. Moreover, satisfying lexicostatistic calculations are no longer mentioned if A- or B-type evidence exists.

Finally, typological similarity – type F – can and often does inform the plausibility of a hypothesis but may also be potentially misleading, as the history of African language classification amply shows. As mentioned above, typological indications can also be strong if an assumed lineage is structurally diverse but arguments of diachronic typology make the existence of a single original profile plausible. Again, existing type-F evidence is only mentioned in cases that are not already justified by A- and/or B-type evidence.

2.3.2. Basic classificatory units

As has been recognized by previous scholars, including Greenberg (1963a) himself, robust evidence for his four super-groups has yet to be identified using historical-comparative methodology; in other words, none of his groups have been proven to exist in the form in which he has presented them. Given the current state of knowledge, Niger-Kordofanian and Afroasiatic contain doubtful members, while Khoisan and Nilo-Saharan remain inconclusive with respect to their very existence. As will be discussed below, until quite recently a major contributing factor has been the insufficient amount of descriptive research on quite a number of basic language groups, and for some units this still holds today. In such cases, this alone indicates that a classification within Greenberg's scheme is premature.[6] For all these reasons, Greenberg's four groups serve here primarily as pragmatically oriented reference points for the reader and are from now on called "domains" in a genealogically noncommittal sense.

Instead of focusing on these four groups, this survey looks at far smaller entities called here "basic classificatory units". They are intended to serve as robust low-level groups upon which higher genealogical relationships can be built that require more extensive and sophisticated argumentation, including the supergroups already proposed. In the following presentation, these units receive an identification code: "U" followed by consecutive numbering that covers the entire

[6] I regularly indicate below which of the basic classificatory units still lack a modern and publicly available description today, or did so before 2000, when more serious and concrete reservations against Greenberg's general genealogical four-way scheme resurfaced after 30 years of little-contested acceptance (cf. Güldemann 1998, 2003b, 2008b, 2008c, 2008d; Sands 1998b, Sands 2009; Dimmendaal 2008b).

continent. This amounts to an inventory of 50 such units indigenous to Africa and the Arabian peninsula. Since these are far from uniform in terms of size, internal structure and genealogical profile, I distinguish four unit types. These are given in Table 6, including their special graphic representation used at appropriate places.

Table 6: Four types of basic classificatory units

No.	Unit type
1	*Single language*
2	Language family
3	GENEALOGICAL (LANGUAGE) POOL
4	AREAL (LANGUAGE) POOL

The first type are "single languages" without any obvious closer relation to another language (group); when referred to as a basic classificatory unit the language name may be written in italics. They have the status of being isolated or at least unclassified on different genealogical levels up to the extreme of being language isolates on a global scale.

The second type of unit, a "language family", written in plain type, comprises at least two languages. The genealogical relationship between member languages, whatever their number, is required to be either "self-evident" in the sense of Nichols (1996) or to have been substantiated for precisely this unit by robust historical-comparative evidence that has not been publicly and authoritatively contradicted.

These first two concepts of single language and language family are viewed here to be "lineages" in the sense of Nichols (1992: 24–25) – a term for any set of languages that form a genuine genealogical entity irrespective of its age, complexity and classificatory level. For example, Afroasiatic, Semitic, Ethio-Semitic and Egyptian are all lineages but on different levels of observation: an independent family, a subgroup within Afroasiatic, a subgroup within Semitic of Afroasiatic, and an isolated language of Afroasiatic, respectively.

Importantly, the listing of single languages and families as basic lineages does not imply that there is no robust evidence for higher-order genealogical relations between some of them. Just to mention one example, this is the case for the core of Niger-Kordofanian. Since Westermann's (1935) decisive study on noun classification systems there can be no doubt that numerous languages in western and central Africa form a large and old lineage. His study dealt with Mel, Gur, Ghana-Togo Mountain, Potou-Akanic, Edoid, Yoruboid, Igboid, and Bantoid, which except for the first two groups are all subsumed under Benue-Kwa (U6). The reason for dealing here with these and other groups separately is twofold. First, most works presenting the relevant evidence, like Westermann (1935), have not argued that their set of language groups forms a family under the explicit exclusion of other

groups. Second, the larger group, here Niger-Kordofanian, cannot be considered to be an undisputed lineage on the basis of the evidence provided. Such a situation differs from that in other groups listed below as basic lineages. For example, the evidence for the relationship between Khoe and Kwadi of the Khoe-Kwadi family is certainly less extensive and, some may even argue, less compelling than that for the relationship between, say, Bantu and Gur. However, the Khoe-Kwadi family does not contain (groups of) languages for which the adduced genealogical evidence does not hold, and it has not been disputed so far.

There is a third type of basic classificatory unit employed here, "genealogical (language) pool", written in appropriate contexts in capital letters. This concept is primarily relevant for the Niger-Kordofanian domain, notably for Benue-Kwa, Kru, Atlantic, Gur, Adamawa, and Ubangi, so that a more detailed discussion of empirical data can be found in section 2.5.3; here, only a few general remarks are made. Genealogical pools are not established lineages in the above sense but rather pragmatically useful/necessary entities that mostly arise from the history of African language classification. They can be characterized as sets of languages that are commonly and often quite plausibly associated with a higher-order group but whose internal genealogical coherence against the rest of this lineage has not been demonstrated or is altogether doubtful. If a genealogical pool has neighbors assumed to belong to the same higher-order group, a recurrent factor for its justification is a certain amount of typological unity. For example, Ubangi comprises a geographically compact set of language groups north of the Bantu area in which the noun classification system typical for Niger-Congo is completely absent, except for the small Mbaic family (U17.C). The reverse situation holds for Atlantic: this group consistently displays noun classification but is geographically sealed off from other similar Niger-Congo languages by the Mande family, which lacks this feature. An arguably more crucial albeit not necessarily consistent factor for the original establishment of a genealogical pool is that its languages are found in a relatively compact geographical area.

It should be clear that the characterization of a group as a genealogical pool implies the possibility of various genealogical interpretations in the future in addition to a more satisfactory demonstration of its family status. That is, individual subunits may a) only be genealogically close to parts of the pool, b) be closer to units outside the pool, and c) even represent independent units on a higher genealogical level. This implies that each subgroup of a pool must be evaluated independently with respect to its higher-order relationship.

What language families and genealogical pools have in common is that they both comprise two or more languages that are viewed here as going back demonstrably or with all likelihood to a common proto-language at some historical stage. They thus differ from the fourth and last type of basic classificatory unit, the "areal (language) pool", also written in capital letters and additionally underlined. These share many characteristics with the genealogical pool but crucially their genealog-

ical status is far more uncertain. That is, in addition to the inconclusive genealogical coherence of an areal pool, it is even possible that one or more of its groups may have to be removed from the higher-order lineage they are currently assigned to, either by aligning it with another lineage or treating it as an isolate lineage. Possible areal pools are Kordofanian (U18) and Omotic (U46).

The last three types of basic classificatory units are of variable complexity. It goes without saying that the larger they are, the more likely it is that they can themselves be composed of real lineages and genealogical pools. For example, Benue-Kwa, the largest genealogical pool in Niger-Kordofanian, contains itself groups that are not yet conclusive families, notably Bantoid, Cross-River, Kainji-Platoid, Ghana-Togo Mountain, and Lagoon.

A few final words are in order on some terminological principles applied here for classificatory units and the changes arising from them in comparison with previous usage. This is also relevant because there still exists terminological variation or even confusion for a considerable number of language groups in Africa.

The central requirement for a term to be used here is unique identification. This often results from such useful conventions as naming a group after a specific geographical landmark or, even better, after a recurrent or reconstructable word for 'people', as is the case with such families as Tuu (U1), Khoe (within Khoe-Kwadi, U3), Bantu (within Benue-Kwa, U6), etc. Such established and unambiguous terms, in particular, if used by language specialists, have been adopted here. However, many language families are named after a major member language, owing to demographic factors, accidental research history, etc., so that the terms are ambiguous in that they refer to both the group and the relevant single language. This is particularly frequent in such incompletely documented genealogical pools as Adamawa, Ubangi, and Kordofanian. In order to ensure the necessary distinction can be made between different classificatory levels, I have created unambiguous group names based on the traditional single-language names by adding the suffix *-ic* according to the principles in Table 7.

Table 7: Present conventions for group names based on single-language names

Language name	**Rule**	**Examples**
Final consonant	add *-ic*	Kimic (Adamawa), Heibanic (Kordofanian)
Final *-a*	add *-ic*	Gbayaic (Ubangi), Katlaic (Niger-Congo)
Final *-e*	delete *-e*, add *-ic*	Mumuyic (Adamawa), Zandic (Ubangi)
Final *-i*	add *-c*	Ngbandic (Ubangi), Talodic (Kordofanian)
Final *-o*	add *-ic*	Kulangoic (Gur), Ndogoic (Ubangi)
Final *-u*	add *-ic*	Samuic (Gur), Dajuic (Nilo-Saharan)
Single open syllable	retain vowel, add *-ic*	Mbaic (Ubangi)

Another principle is to keep terms as simple as possible. In particular, I use some bipartite names but avoid tripartite ones (e. g., Bongo-Bagirmi rather than Sara-Bongo-Bagirmi).

These conventions do not necessarily represent final terminological proposals but rather serve the purpose of providing a simple and unambiguous reference system until language specialists can create and agree on names that are suitable for and better reflect the nature of a given group.

2.3.3. Scope and structure of the survey

Given the present primary focus on basic classificatory units as defined above, it should be clear from the outset that the following discussion does not attempt to result in any new all-comprising genealogical classification of African languages. Obviously, this would be in between Greenberg's four super-groups and the present list of 50 basic classificatory units, which are conceived of as the principal building blocks for more conclusive genealogical hypotheses. Instead, the aim of this study is to present the current state of research in the field so that it can be related more easily to the different approaches of establishing genealogical language relationships in historical linguistics, in particular the standard historical-comparative method. In other words, this survey serves primarily to give non-specialists the opportunity to evaluate for themselves the different classification proposals for African languages, depending on what evidence they deem sufficient and/or convincing. Thus, I try to report and discuss all the important proposals on genealogical relations beyond the 50 units, including, of course, Greenberg's four large domains.

Another general point regarding this survey is that it does not deal with all languages spoken in Africa and the adjacent Arabian Peninsula today or in the recoverable past. Instead, it focuses on the genealogical classification of the relevant languages that are:

a) spoken (rather than signed, drummed, whistled, etc.),
b) used by a canonical speech community,
c) indigenous to the area (to be specified below), and
d) sufficiently attested.

The first two criteria exclude non-spoken languages and special-purpose languages, respectively. The criterion under c) motivates the exclusion of a third major group of languages spoken in Africa today, namely those known to have an at least partial origin, and thus genealogical alliance, outside the area of interest. This comprises in particular the non-indigenous languages that have taken root in Africa and Arabia over the last three millennia, as listed in Table 8. Other sources like Sands (2009) and Hammarström (this volume) give some more information about all three groups of languages.

Table 8: African languages not treated in the present classificatory survey

Language (group)	**Origin**
Malagasy complex (Austronesian)	Immigration to Madagascar from Indonesia
Indo-Aryan and Dravidian languages	Immigration from South Asia
European languages	Immigration during European colonization
Pidgins, creoles, urban youth languages	Local emergence in late language contacts

A final set of cases is not treated in the main survey for another reason. There are a number of single languages, or ethno-linguistic communities that are assumed to have (had) a separate language, which have a unique classificatory status on the level of the continent in the sense that previous scholarship has not assigned any genealogical status to them or their status is to some extent equivocal.[7] In line with Köhler's (1975: 338–344) practice, such cases should be dealt with in a comprehensive genealogical classification, either by integrating them according to appropriate standards or by discarding them for one or the other principled reason.

A typical assessment of such languages has been that by the Ethnologue, which treats them as unclassified or, far more rarely, as isolates. The assumption of genealogical isolation has only recently become more fashionable, as in Hombert and Philippson (2009), although these authors leave it entirely unclear which of the 28 languages they list are currently likely candidates for such a status. The Ethnologue's initial evaluation of "unclassified" turns out to be appropriate for the majority of cases – due primarily to a paucity of data. If a language is assumed to be extinct, so that the lack of data for classification is irremediable, it is not just unclassified but effectively unclassifiable.

I list the relevant candidate cases in Table 9 and subsequently provide a brief discussion of various subtypes. I am very grateful to Harald Hammarström who commented on an initial draft and added a number of cases and relevant sources to the final list below. It goes without saying that there may well be additional cases that have escaped our attention. The table gives the name(s), the ISO code (if there is one), the country where encountered, the language's status with the target of language shift, if relevant and known, the major source(s), and genealogical hypotheses entertained in the literature. Languages that are listed in Table 9 but that are spoken today and/or have been subject to detailed research informing their classification are taken up again in later sections, as indicated in the second-last column.

The 43 entities in Table 9 are now discussed in some more detail according to different subtypes. Five still extant languages are covered by the discussion in the main sections below. Two languages have been misclassified in the Ethnologue, because they belong to other established lineages. Kara aka Fer has been shown

[7] Given the focus on a continental scope, this is not the place to deal with any problematic cases on lower classificatory levels.

Table 9: African (speech) communities with unclear linguistic-genealogical status (Ethnologue; accessed 30 June 2016)

No.	Language	ISO	Country	Status and shift target	Source(s)	(Assumed) classification
1	Bung[1]	bqd	Cameroon	† > Kwanja	Connell (1998c)	(Benue-Kwa, Adamawa)
2	Centúúm~Jalaa[2]	cet	Nigeria	† > Cham	Kleinewillinghöfer (2001)	(Isolate)
3	Dama	–	Sierra Leone	† > Mende	Dalby (1963)	(Mande)
4	Dima of Bottegò	–	Ethiopia	†	Conti Rossini (1927: 251)	–
5	Duli[3]	duz	Cameroon	† > Fula	Kleinewillinghöfer (2014b); Hammarström (2015: s42–43)	(Adamawa)
6	Funj	–	Sudan	† > Sudanese Arabic	Spaulding (1972, 1973)	–
7	Gail[1]	gic	South Africa	spoken as L2	Cage (2003)	Speech register
8	Gey[3]	guv	Cameroon	† > Fula	Kleinewillinghöfer (2014b); Hammarström (2015: s42–43)	(Adamawa)
9	Gomba	–	Ethiopia	† > Nyangatom	Sommer (1992: 346)	–
10	Guanche	–	Spain	† > Spanish	Wölfel (1965); Vycichl (1987); see also section U44	(Berber)
11	Gule	gly	Sudan	† > Sudanese Arabic	Seligmann (1911/12); Bender (1983a); see also section U40	(Koman)
12	Hamba	–	Tanzania	† > Makonde?	Maho and Sands (2002: 399); Hammarström (2015: s45)	–
13	Irimba	–	Gabon	?	Hombert and Philippson (2009)	–
14	Kara[1]	kah	CAR	spoken	Boyeldieu (1987, 2000)	Central Sudanic

No.	Language	ISO	Country	Status and shift target	Source(s)	(Assumed) classification
15	Kazibati-Mongoba	–	DRC	?	Costermans (1938); Bulck and Hackett (1956: 104)	(Ubangi)
16	Kujarge[1]	vkj	Chad	spoken	see section U48	(Chadic)
17	Kwisi	–	Angola	†	Estermann (1956: 39–50); Westphal (1965: 135)	–
18	Laabe	–	Chad	† > Laal	Boyeldieu (1977: 190); see also section U49	(Adamawa, Chadic, Isolate)
19	Laal	gdm	Chad	spoken	see section U49	(Adamawa, Chadic, Isolate)
20	Lufu[1]	ldq	Nigeria	spoken	Prischnegg (2010); Blench (2012a)	Benue-Kwa
21	Luo~Kasabe[1]	luw	Cameroon	† > Mambila	Connell (1998c)	(Benue-Kwa)
22	Mangio	–	Ethiopia	† > Kafa	Cerulli (1951: 11–21)	–
23	Mangree	–	Ivory Coast	†	Fodor (1975: 162–164)	–
24	Mawa~Marawa[1]	wma	Nigeria	†	Temple (1922: 271, 430); Gunn (1956: 13)	(Benue-Kwa)
25	Meroitic	–	Sudan	† > some Nubian?	see section U32	(Nilo-Saharan)
26	Mige	–	Chad	?	Tucker and Bryan (1956: 53)	–
27	Mimi of Decorse	–	Chad	†	Gaudefroy-Demombynes (1907); Starostin (2011)	(Maban, Isolate)
28	Mimi of Nachtigal	–	Chad	†	Lukas and Völckers (1938); Starostin (2011)	(Maban, Isolate)

29	Mpra	–	Ghana	† > Gonja and Dukulbi	Cardinall (1931); Goody (1963); Blench (2007c)	(Niger-Kordofanian, Isolate)
30	Nimbari	nmr	Cameroon	† > Fali	Strümpell (1910); Kastenholz and Kleinewillinghöfer (2012)	(Adamawa)
31	Numidian	–	Algeria/ Tunisia	†	Rössler (1958, 1979b); see also section U44	(Berber)
32	Oblo	obl	Cameroon	† > Fula?	Dieu and Renaud (1983: 98); Ayotte and Ayotte (2002)	(Adamawa)
33	Okwa	–	?Ghana	†	Fodor (1975: 165–166)	–
34	Oropom	–	Uganda	† > Karimojong	Wilson (1970); Souag (2004)	(Isolate)
35	Rer Bare[1]	rer	Ethiopia	† > Somali	Bender (1975c: 74–75)	–
36	Serengeti Dorobo	–	Tanzania	† > Maa	Baumann (1894: 167–168, 366); ASLIP Staff (2009: 205–207)	(Nilotic)
37	Shabo[1]	sbf	Ethiopia	spoken	see section U25	(Nilo-Saharan)
38	Tamma	–	Ethiopia	spoken	Dessalegn (2013: 5–6)	–
39	Vazimba-Beosi	–	Madagascar	† > Malagasy	Birkeli (1936); Blench (2010c)	–
40	Wavu II	–	?Ghana	†	Fodor (1975: 131–137)	–
41	Weyto[1]	woy	Ethiopia	† > Amharic	Cohen (1939: 357–371); Darmon (2010)	(Cushitic, Nilo-Saharan)
42	Wutana	–	Nigeria	–	Temple (1922: 367, 431); Blench (2012a)	–
43	Yeni[1]	yei	Cameroon	† > Mambila	Connell (1998c)	(Benue-Kwa)

Note: [1] = "unclassified" according to Ethnologue; [2] = "isolate" according to Ethnologue; [3] = apparently one language, Duli-Gey; (…) = suggested but inconclusive membership according to present basic classificatory units or Greenberg domains

by Boyeldieu (1987, 2000) to belong to Bongo-Bagirmi within Central Sudanic (U22.A). Lufu is a Jukunoid language within Benue-Kwa (U6.C) according to Prischnegg (2010), and the Ethnologue reports that it is close to Bete, another Jukunoid language. Kujarge, Laal, and Shabo are still of indeterminate status and are treated later as separate units, as indicated in the table.

Gail should be excluded from a genealogical scheme because of its sociolinguistic profile. It is a speech register used by parts of the South African gay community who speak English or Afrikaans as a first language (cf., e. g., Cage 2003). Like numerous other similar cases, the status of Gail as a marked register without first language speakers precludes its canonical treatment within the present classification survey.

Most of the remaining 37 languages in Table 9 are best characterized as unclassified or even unclassifiable in line with the Ethnologue, because the limited quantity and quality of the data available makes their genealogical assignment at best tentative and at worst meaningless. The information on such languages ranges from limited lexical and grammatical material to short vocabularies (typically containing numerals but without diagnostic structural data) to no data at all. This situation is mostly beyond remedy because the languages were already (virtually) extinct when the material that exists today was recorded. A recurrent additional problem concerns the reliability and authenticity of the data, because they were often collected by insufficiently trained people from consultants whose ethnolinguistic and personal background was not well understood. In some cases, the data may stem not from a separate language but rather from a variety of an existing one spoken by a special social group, as with the Mangio, Vazimba-Beosi, and Weyto[8] foragers, or even from a hoax, as possibly with Oropom (see Souag 2004).

Such assumed languages as Gomba, Hamba[9], Irimba, Kwisi, Laabe, Mawa~Marawa, Mige, Oblo, Okwa, Rer Bare, Tamma (not to be confused with the Taman language Tama), and Wutana currently exist in name only; there is practically no data that can be inspected. For Centúúm (aka Jalaa), Dima, Gule, Kazibati-Mongoba, Mangio, Mangree, Mimi of Decorse, Mimi of Nachtigal, Mpra, Oropom, Vazimba-Beosi, Wavu II, and Weyto, there are variable amounts of lexical data and occasionally a little grammatical information, while for Funj and Serengeti Dorobo there is in addition a short but so far uninterpretable text. However, the chances

[8] While these hippo-hunters are said by the early observer James Bruce to have had a separate language, this is not attested directly. It can only arguably be inferred from the specialized vocabulary that is part of the variety of Amharic reported for them in later sources. See also Taine-Cheikh (2013) for the apparently similar cases of the Nemadi and Imeraguen foragers of Mauritania who today speak Hassaniyya Arabic.

[9] This entity should not be equated with the Bantu variety Ndonde Hamba, although a historical relation between the two most probably exists, as they are reported in the same area.

of genealogically classifying this second set of cases are only slightly better than for the first, because the languages are also (likely to be) extinct and their research context is highly fragmentary.

The general problem discussed in section 2.2.2, namely that language classification based primarily on lexical material cannot be fully reliable, is compounded in most cases by the restricted quantity and quality of such data. Sometimes the word list does not even contain a full set of pronouns and numerals, whose lexical paradigmaticity could serve as better classificatory diagnostics. The notorious difficulties of interpreting the presumable origin of individual lexical items, and particularly of correctly identifying what is borrowed and what is inherited vocabulary, are amply testified in some recent classificatory treatments like Souag (2004) on Oropom, Blench (2007c) on Mpra, and Starostin (2011) on the two Mimis. This can also be discerned from the fact that different scholars arrive at contradictory interpretations for given languages based on the same restricted material. A case in point is the evaluation of the two data sets for languages called Mimi. Doornbos and Bender (1983: 62–66) conclude that Decorse's material represents a Maban language while the language in Nachtigal's corpus remains unclear. Starostin (2011), who applies a more sophisticated methodology, has the opposite assessment: if anything, the Maban language is Nachtigal's Mimi and Decorse's lect is a possible isolate within Nilo-Saharan. Some of the above cases, including the possible Oropom hoax, may even be mere oddities of the history of science and thus have no place in a genealogical classification of African languages.

In some cases, the available data in conjunction with historical and geographical information can make a proposed classification stronger. This is the case with Bung, Luo~Kasabe, and Yeni as Mambiloid languages; Dama as a Mande language; and Duli~Gey and Nimbari as generic Niger-Congo languages in the Adamawa pool. Finally, three language complexes, namely Guanche, Meroitic, and Numidian, are special in that they are attested in written documents from the precolonial period involving predominantly toponyms, personal names, titles etc. These have been the subject of sophisticated philological research embedded in a wider multidisciplinary context that can contribute to more specific genealogical hypotheses to be taken up in section U32 for Meroitic and in section U44 on Berber for Guanche and Numidian.

However restricted the data basis for the cases in Table 9 may be, it is clear that a realistic and principled linguistic assessment is needed for them, particularly because they tend to incite some scholars to come up with far-fetched hypotheses that are in turn frequently cited by non-linguists, who likely lack the linguistic knowledge necessary to make an informed judgement about the validity of such proposals. Consider, for example, Blench's (2012b: 21) brief treatment of Centúúm~Jalaa:

> Nigeria has a single language isolate, the Jalaa or Cen Tuum language, spoken among the Cham in the Gombe area of NE Nigeria (Kleinewillinghöfer 2001). Jalaa, like Laal in Chad, has a significant proportion of loanwords from a scatter of neighbouring languages, but a core of lexemes without etymologies. Analysis so far suggests that it is unrelated to any other language in the world and thus may be a survival from the pre-agricultural period, when West Africa would have been occupied by small bands of foragers speaking a diverse range of now disappeared languages. Other comparable language isolates in West Africa are Laal (Chad) and Bangi Me (Mali) … It is assumed that there was once a family of languages related to Jalaa, named 'Jalaaic' …, and that this is now the last remaining representative of a putative now-vanished language family [spoken by unidentified foragers]. Evidence from Mali (Onjougou), Birimi (Ghana) and Shum Laka (Cameroon) puts the settlement of West Africa by modern humans to at least ca. 40,000 BP.

For one thing, it is unclear why Blench couples the potential status as an isolate language with a forager subsistence without any indication for it from anthropological or other data. It is also clear that an unidentified vocabulary component in an extinct and poorly known language variety, even if found in the basic lexicon, may have explanations other than reflecting an entire isolate lineage, and thus this assumption is equally speculative. Obviously, historical hypotheses on this and similar cases have to be scaled to the quality and quantity of the available language material if historical linguistics is to maintain its credibility for other scientific disciplines.

The remaining sections of this chapter deal with African languages that do not pertain to any of the above cases. Since Greenberg (1963a) has been and still is the major reference in the discipline, their genealogical classification is treated according to his four proposed super-groups, with the important caveat that they should not be understood here as "families" but rather as pragmatically handy domains that do not involve a claim about a genealogical relationship. The order will be geographical from south to north: Khoisan, Niger-Kordofanian, Nilo-Saharan, and Afroasiatic.

Several languages that are not obvious members of any of Greenberg's (1963a) four units were identified only after his research, for example, Pere in the Niger-Kordofanian domain. Although they do not find a straightforward place in his classification, they are integrated in the domain they are associated with either based on previous hypotheses or on geographical grounds, again without necessarily implying that they belong there in a genealogical sense or even that they have been claimed to do so. This solution does not distort his overall scheme, because all four domains already contain languages or families that may have been assigned to a group based on geography and, resulting from this, possible contact-induced similarities to other languages of a super-group rather than a true genealogical relationship. Obviously, all such cases are potential candidates for isolated African lineages.

Within each domain the presentation follows a unified outline. I start with presenting a short classification history and an inventory of the basic classificatory units, whereby the inventory tables follow the same outline in containing the unit code, the unit name used here, the number of member languages, largely according to Hammarström et al. (2016, henceforth Glottolog), some information on the state of documentation, and the approximate geographical location. This is followed by a discussion of the diagnostic evidence that has been proposed for a given domain and that serves as the background before which the membership of lower-order units should be evaluated. In the third central part, the basic classificatory units, which are the more secure building blocks for establishing any non-obvious higher-order relations, are presented and discussed individually with particular reference to their internal coherence and external relationships. Due to the nature of genealogical and areal pools explained above and relevant in Niger-Kordofanian and Afroasiatic, the potential importance of their subunits imposes an additional substructure on the relevant sections. The presentation of each domain closes with a discussion of proposed genealogical entities above the basic-unit level, including Greenberg's four super-groups themselves.

Differences in the presentation arise, however, from the considerably diverse nature of the diagnostic evidence across the four domains. That is, it is more straightforward to determine whether assumed members of Niger-Kordofanian and Afroasiatic meet the crucial criteria or not, because these domains possess a majority core that is characterized by individual-identifying features in terms of Nichols (1996). These two chapters thus revolve more around the question as to which basic units are robust members of the assumed lineage core. Membership in Khoisan and Nilo-Saharan, on the other hand, can hardly be evaluated, because both domains lack such a well-defined genealogical core. Accordingly, basic classificatory units here are discussed predominantly on their own and the question of their possible posistion vis-à-vis any other unit(s) is deferred to the summary discussion, which focuses on the genealogical status of the entire domain and some subsidiary hypotheses.

The presentation of the four domains is followed in section 2.8 by a brief discussion of proposals on genealogical higher-order groups that go against and/or beyond Greenberg's (1963a) scheme and in section 2.9 by a summary outlook on genealogical language classification in Africa and its significance beyond the field itself.

2.4. The Khoisan domain

2.4.1. Classification history and lineage inventory

The smallest of Greenberg's (1950c, 1963a) supergroups is Khoisan, formerly known as "Bushman and Hottentot". This set of languages had been thought to be a family by earlier scholars like Schapera (1930) and Westermann (1940). Greenberg's internal subgrouping was largely based on the pioneer work by Dorothea Bleek (1927, etc.), and later comparativists who followed his hypothesis did not dramatically change it other than using possibly more up-to-date terminology. There are several linguistic Khoisan surveys dealing, among other things, with classificatory issues, most importantly Westphal (1971), Köhler (1981), Winter (1981b), Güldemann and Voßen (2000), and Honken (2013a). The most recent treatment of genealogical and other types of linguistic classification is Güldemann (2014a).

Somewhat unexpectedly given its small size in terms of number of languages and geographical spread, the group has been problematic as a lineage from the very beginning for a number of reasons. Up to and at the time of Greenberg's (1950c, 1963a) proposal, the crucial reason was arguably the limited quantity and quality of data available. This factor was and partly still is all the more serious because the languages concerned are among the most unusual and complex ones on the globe, not just in terms of phonetics and phonology but in certain other linguistic domains as well.

Although this detrimental situation has changed tremendously since then, a more convincing case for such a language family has not been made so far. For a long time, the research situation was characterized by a marked dichotomy in approach. Some language specialists, who were interested in the genealogical question, (partly) rejected Greenberg's family concept (Westphal 1962a, 1962b, 1971; Sands 1998c; Güldemann 1998, 2008b; Güldemann and Voßen 2000) or at best took it as a possible working hypothesis (Köhler 1981; Traill 1986; Sands 1998a, 1998b). Other scholars, most of whom were interested primarily in long-distance comparison and worked exclusively with secondary data (Honken 1977, 1988, 1998; Ehret 1986, 2003; Ruhlen 1994; Starostin 2003, 2008; Plessis 2009), accepted Greenberg's proposal, albeit without mustering more support for it among historical linguists. Moreover, Honken (2013a) and Starostin (2013) seem to have backed away from their earlier views. Hence, Plessis (2009) aside, who tries to substantiate narrow Southern African Khoisan, albeit without any new or more convincing methods and data, the family concept of Khoisan today no longer appears to have any supporters who actively engage with and contribute to historical scholarship.

The terminology within the Khoisan domain varied (and may still vary) considerably (see Güldemann 2014a for some discussion). Its internal constituency,

however, has changed little since Greenberg's work, in spite of the later discovery of two crucial languages, Kwadi and ǂ'Amkoe (which, until recently, was mostly known under a dialect name as ǂHoan). These two languages have since been added to different, previously established genealogical groups: Kwadi has joined Khoe (formerly called Central South African Khoisan) to form Khoe-Kwadi, and ǂ'Amkoe has joined Ju (formerly known as Northern South African Khoisan) to form Kx'a (see below). The basic lineages currently recognized are given in Table 10.

Table 10: Basic classificatory units in the Khoisan domain

No.	Unit	1	2	3	4	Geographic location
U1	Tuu	7		X		southern Kalahari Basin
U2	Kx'a	2				northern Kalahari Basin
U3	Khoe-Kwadi	12				entire Kalahari Basin
U4	Sandawe	1		X		northern Tanzania
U5	Hadza	1		X	X	northern Tanzania

Note: 1 = Number of languages; 2 No grammar sketch before 1965; No comprehensive modern published description: 3 = before 2000, 4 = today

2.4.2. Diagnostic evidence

Greenberg (1950c, 1963a) could not build on previous studies containing extensive historical-comparative argumentation and his own evidence for Khoisan turns out to be very limited. Moreover, one of the major goals of his treatment was to show that "Hottentot," as Khoekhoe was known then, was related to "Central Bushman," or Kalahari Khoe, rather than proving the unity of the "Bushman" (San) languages, which he merely took for granted based on his superficial inspection of Bleek's (1929, 1939/40) comparative surveys.

2.4.2.1. Morphology

Greenberg (1950c, 1963a) entertained 30 comparisons of morphological markers, which Güldemann (2008b) assessed critically, concluding that they are insufficient and/or spurious for a number of reasons, namely:

> inaccurate or at best doubtful data partly aggravated by his sloppy use thereof, his disregard of basic principles of historical-comparative reconstruction and diachronic typology, insufficient representation of the individual groups, probably coincidental resemblances, and possible borrowing across different families. (Güldemann 2008b: 145–146)

Other morphological comparisons, for example, Honken (1977) on pronominal elements and Sands (1998a) on possible "noun class" suffixes, have equally failed

to come up with plausible concrete traits of a Proto-Khoisan language. Hence, the most promising way to advance the field is to concentrate on the historical assessment of lower-order groups, which is currently underway. It is noteworthy that the first relevant results regarding pronoun systems (Güldemann 2004a, 2004b, forthcoming b) render the different family reconstructions even more dissimilar, which further weakens the Khoisan hypothesis. Sands' (1998a) idea that the second mora of lexical roots in the languages of southern Africa may harbor old classifiying suffixes is not promising in principle, *pace* Campbell and Poser (2008: 141). This is because the only concrete evidence to this effect is found in a rather inconsistent fashion in just a single language complex of the Tuu family, and the existing formal similarities in this position across the area are equally well explained by the universal phonotactic lexical template of the Kalahari Basin.

2.4.2.2. Lexicon

As mentioned, Greenberg merely assumed, and did not argue for, the lexical unity of the languages in southern Africa, and thus he was content to propose only scattered isoglosses between the southern languages on the one hand and Sandawe and Hadza on the other. Sands (2016) gives a detailed account of why the older Khoisan material by Bleek (1956), which comprised Greenberg's database, is extremely unreliable and thus largely inappropriate for use in in-depth historical linguistics.

Later studies focusing on the lexicon were able to incorporate more up-to-date material but they still suffered from an incomplete and genealogically unbalanced representation of the different lineages. The last problem has been particularly serious for Tuu and Kx'a, whose lexical profile is still too often inappropriately derived from the two dialects that happen to be documented in more detail, East !Xoon of Taa (Traill 1994) and Tsumkwe Jul'hoan of Ju (Snyman 1975; Dickens 1994), respectively. Apart from largely uncommented lists of juxtaposed words similar to Greenberg's original study, such as Ehret (1986) and Ruhlen (1994), lexical Khoisan research differs widely in methodology. It ranges from positing abstract consonant correspondence charts without any data (Ehret 2003) over lexicostatistic approaches (Sands 1998b; Starostin 2003) to genuine and multi-faceted attempts to identify regular sound patterns (Honken 1988, 1998; Sands 1998b; Starostin 2008, 2013). However, none of these works have managed to produce Proto-Khoisan reconstructions that are supported by robust sound correspondences. Some recent lexical studies like Starostin (2013) effectively conclude with the abandonment of the all-comprising genealogical hypothesis.

Nevertheless, there is a consensus that one can observe "dense" lexical distributions across the Kalahari Basin, which becomes particularly clear from Traill (1986). Güldemann and Loughnane (2012) addressed this issue for the important lexical domain of body part vocabulary, concluding that a more rigorous approach

of bottom-up reconstruction does not favor a genealogical interpretation, because many superficial isoglosses can be alternatively explained by a complex history of linguistic convergence and diffusion.

2.4.2.3. Typology

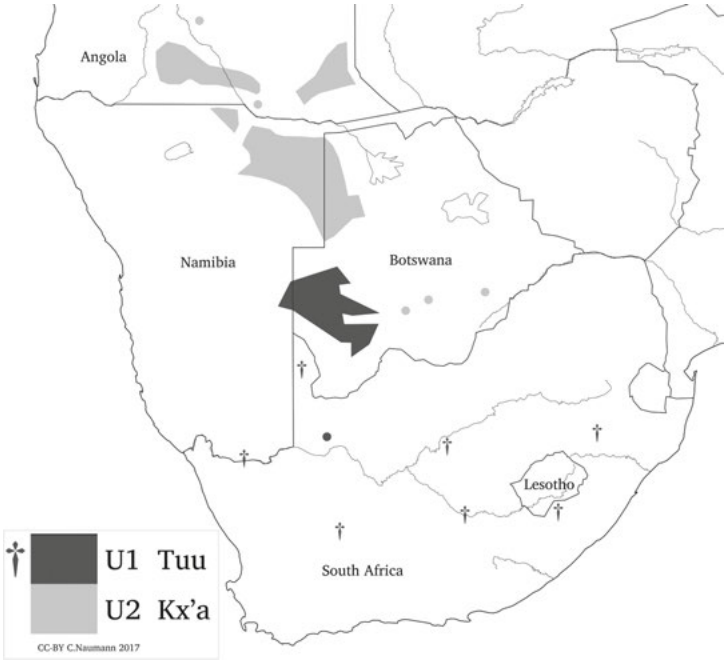
Beyond referring to the well-known phonetic-phonological commonalities, there is little discussion by Greenberg (1963a) about some structural homogeneity across Khoisan or the possible historical relations between the different modern structure types. Although he explicitly rejects typological features as arguments for genealogical relationships, one wonders in the case of his Khoisan assessment whether he was misled by the extreme rarity of clicks and other quirks of sound structure, given that other more robust and suitable isoglosses are so scarce. Indeed, later studies pointed out the considerable diversity of the group even in terms of phonetics and phonology (cf. Traill 1980; Güldemann 2001).

Table 11: Typological split between Khoe-Kwadi and Non-Khoe

Feature	Khoe-Kwadi	Non-Khoe (=Tuu+Kx'a)
Dominant transitive alignment	accusative	neutral
Transitive word order	SOV	SVO
Head position in noun phrase	final	initial
Preposition	no	yes
Default relational marker	no*	yes
Verb serialization	no	yes
Verb compounding	no*	yes
Verb derivation morphology	yes	no
First-person inclusive	no*	yes
Gender-agreement class ratio	< 1	≥ 1
Number marking on noun	regular (+ dual)	irregular (no dual)
Number-sensitive stem suppletion	no	yes

Note: * exceptions due to language contact with Non-Khoe

Table 11 presents the comparison of certain features across language groups in southern Africa alone that bring Güldemann (1998, 2013c) to recognize a major grammatical split between Khoe-Kwadi and "Non-Khoe" (which subsumes Tuu and Kx'a). At the same time, Khoe-Kwadi shows typological affinities with Sandawe in eastern Africa (Heine and Voßen 1981; Güldemann 2013c). Hadza, the second eastern African language, is typologically isolated. So far, no attempt has been made to reconcile the three different structural profiles by means of diachronic typology.



Map 1: Geographical location of Tuu (U1) and Kx'a (U2)

2.4.3. Basic classificatory units

U1 Tuu

The Tuu family (formerly Southern South African Khoisan) can be assumed to have been distributed over the larger portion of South Africa and the adjacent areas in southern Namibia and Botswana (see Map 1). Since most Tuu languages are now extinct, the family only survives in the form of two language complexes, namely Taa, spoken in Botswana and a small area in Namibia, and the moribund N‖ng in South Africa, often called N|uu after the name of the western dialect. Both are seeing better and better documentation and description (see, e. g., Collins and Namaseb [2011] on N‖ng and the morpho-syntactic contributions by Güldemann in Voßen [2013] on Taa). An extensive if outdated documentation also exists on the extinct |Xam once spoken predominantly south and west of the Orange River, for which Voßen (2013) also contains a modern analysis by Güldemann.

Due to this research situation, the internal reconstruction of the Tuu family is hampered by the scarcity of reliable modern data and the insufficient state of analysis of the partly rich archival material on its extinct languages. As such, its internal and external classification has varied considerably after Bleek's (i.a., 1927,

1956) initial work was taken over by Greenberg (1963a). For instance, Westphal (1971) separated the group into two and even questioned the membership of the extinct ǀXam language in the southern !Ui branch. Köhler (1981) enlarged Bleek's unit by a language only recognized in the 1970s (see section U2 on ǂ'Amkoe). All these classifications were presented with hardly any discussion of linguistic data.

A few comparative remarks in Traill (1975) aside, the first dedicated attempts at demonstrating the unity of Tuu are Hastings (2001) and Güldemann (2005b). The last work argues for the structural unity of the family and presents grammatical reconstructions, notably a full pronoun paradigm repeated in Table 12 from Güldemann (2014a: 32) as well as more numerous lexical proto-forms, including a few dimly emerging sound changes.

Table 12: The pronoun system of Proto-Tuu

Person	**Singular**	**Plural**
1st inclusive	*i	
1st exclusive	*N	*si
2nd	*a	*u
3rd	*ha, *hi	

At the same time, lexical diversity within Tuu can be considerable in certain domains, as evidenced by the impossibility of reconstructing the few numerals and quantifiers that make up the restricted system universally seen in the family (see Güldemann forthcoming a).

Recent work has refined the dialect classificaton of the large Taa cluster (Naumann 2014) and determined its genealogical position relative to other Tuu languages (Güldemann 2014b). This has led to a revised classification in which the poorly known Lower Nossob varieties are affiliated with the Taa complex in the north rather than the !Ui branch in the south, a grouping that is in line with Westphal's (1971) earlier assessment.

U2 Kx'a

The recently established Kx'a family comprises two entities (see Map 1). One is the language complex Ju (formerly known as Northern South African Khoisan, and currently also called !Xu(u)n by Bernd Heine and Christa König), which spreads from southern Angola deep into the northern half of Namibia and northwestern Botswana. The other is the far smaller and already moribund dialect cluster ǂ'Amkoe (formerly ǂHoan) in south-central Botswana, which was only discovered in the early 1970s (cf. Traill 1973) and was thus unknown to Greenberg (1963a).

As mentioned, both units are dialect clusters whose internal complexity is not yet fully documented and understood. The most recent subclassification of Ju dialects based on sound changes is Sands (2010b), while Heine and König (2015) present extensive grammatical information from a comparative view. New insights into ǂ'Amkoe-internal diversity can be found in Collins and Gruber (2014) and Gerlach (2016).

The unity of the two entities had been prefigured by Westphal (1974), Sands (2010b, presented as a talk in 2003), most importantly Honken (2004), and Güldemann (2004a). By means of a substantial amount of shared lexicon, involving regular sound correspondences and a preliminary proto-phoneme system, Heine and Honken (2010) have provided the most solid and extensive evidence for what they have come to call the Kx'a family (replacing the earlier preliminary term "Ju-ǂHoan"). Further supporting lexical data are discussed by Gerlach and Berthold (2014) and Sands and Honken (2014). The comparative evidence for pronouns is less compelling than in Tuu but still involves arguably up to five cognate items discussed in Güldemann (2004a: 33), four of which are given in boldface in Table 13.

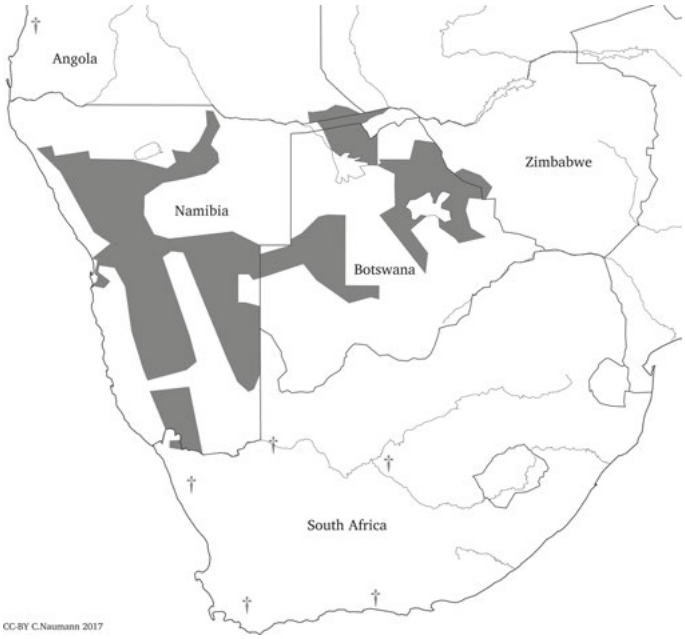
Table 13: The pronoun systems of Proto-Ju and ǂ'Amkoe

	Proto-Ju			ǂ'Amkoe	
Person	**Singular**	**Dual**	**Plural**	**Singular**	**Plural**
1st inclusive			*m̀		*qa''a*
1st exclusive	*mí ~ ***ma***	–	***è**	***ma***	*n-**!**ka'**e***
2nd	*à	–	*ì	*u*	*dji*
3rd (Proto-Ju: Human)	***hà**	*sa	*sŋ̀ ~ ***si***	***ya***	***tsi***

Note: Ju reconstructions are restricted to simplex forms without number suffixes.

U3 Khoe-Kwadi

The Khoe-Kwadi family comprises around ten languages and dialect clusters spread widely across southern Africa, from southern Angola over Namibia and Botswana to the wider Cape region of South Africa (see Map 2). Its profile and research history is somewhat similar to the Kx'a family in that it comprises a larger, well-established group on the one hand and an only recently discovered, geographically isolated language on the other.



Map 2: Geographical location of Khoe-Kwadi (U3)

Its primary component Khoe (formerly Central South African Khoisan) has been regarded as a valid genealogical entity as soon as Greenberg (1950c) successfully refuted Meinhof's (1912) misguided approach to classifying Khoekhoe aka "Hottentot" as "Hamitic". After such pioneering studies as Maingard (1961, 1963), Köhler (1962, 1966, 1971), and Winter (1981a, 1986), Voßen embarked on a detailed historical-comparative reconstruction of the family (cf. Voßen 1984, 1986, 1988, 1991b, 1992, 1994, 1998, 2006, 2010, 2011). Voßen (1997) in particular establishes regular sound correspondences, contains close to 500 lexical proto-forms, and reconstructs considerable portions of the verbal, nominal, and pronominal morphology of Proto-Khoe. Moreover, recent research by Elderkin (2004, 2008, 2013, 2016a, 2016b) and Honken (2008) focused on yet more fine-grained tonal and segmental reconstructions.

Another important historical aspect of Khoe has been proposed before the background of increasing research on language contact in the area, namely that the family as a whole and the Khoekhoe branch in particular were subject to considerable substrate influence from indigenous languages of the Kx'a and Tuu families (Güldemann 2002, 2006, 2008a).

The second half of the 20th century witnessed the linguistic recognition of the isolated and then moribund language Kwadi of southwestern Angola, which accordingly was not dealt with by Greenberg (1963a). The restricted empirical data collected primarily by Ernst Westphal have only recently been subject to a

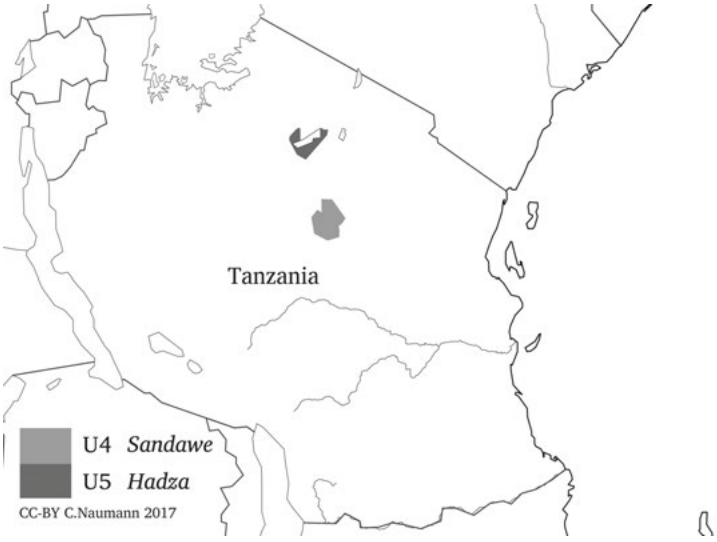
more systematic analysis and description (see Güldemann 2013a). On this basis, Güldemann (2004b) develops a detailed scenario of how the pronominal systems of Kwadi and Proto-Khoe can be traced back to a full reconstructed pronoun system of the minimal-augmented type given in Table 14.

Table 14: The pronoun system of Proto-Khoe-Kwadi

Person and gender	**Minimal**	**Augmented**
1st inclusive	*mu	?
1st exclusive	*ti ~ ta	?
2nd	*sa	*o ~ u
3rd masculine	*pronoun base-(?)-*V[front]	*pronoun base-(?)-*u
3rd feminine	*pronoun base-*(s)V[front]	*pronoun base-(?)-*V[front]

Note: pronoun base like deictic *xa or generic noun *kho 'person'

Additional historical analysis by Güldemann and Elderkin (2010) provides evidence for the genealogical relation between Kwadi and Khoe in the form of ca. 50 lexical correspondences. As restricted as the data on Kwadi are, there are promising signs that even more grammatical isoglosses can be identified in the future once all the material is analyzed exhaustively. Thus, Güldemann and Fehn (2014) propose an additional Proto-Khoe-Kwadi feature in the form of a non-symmetrical multi-verb construction, *[[ROOT-(a)Ra]$_{DEPENDENT}$+ROOT$_{HEAD}$], that is similar to typologically recurrent periphrastic structures in which the first verb is a syntactically dependent non-finite form, marked here by *(a)Ra.



Map 3: Geographical location of *Sandawe* (U4) and *Hadza* (U5)

U4 Sandawe

Sandawe, spoken in north-central Tanzania (see Map 3), is one of three East African languages with phonemic clicks. As opposed to the other two languages with clicks outside of southern Africa, Hadza (U5) and Dahalo (Cushitic, U45), Sandawe is spoken by a relatively large population with around 50,000 speakers, who have undergone a subsistence change from foraging to food production in the recent past (Newman 1970; Ten Raa 1986). The language has no obvious linguistic relative but is now well documented (see, e. g., Elderkin 1989; Eaton 2002, 2010; Eaton, Hunziker, and Hunziker 2007; Steeman 2011; Ehret and Ehret 2012), which is beneficial for serious historical comparisons. The hypothesis of linking it more closely to Khoe-Kwadi is dealt with in section 2.4.4.2.

U5 Hadza

Hadza is a second isolated click language but is spoken by only around 1,000 people in northern Tanzania in the Rift Valley around Lake Eyasi (see Map 3); a sizable portion of the community still follows a traditional foraging lifestyle. While the Hadza are one of the anthropologically most intensively studied people, the documentation and description of the language are still insufficient. Several researchers have embarked on a detailed linguistic study but no modern comprehensive description has been produced so far; much of the available information is distributed over shorter treatments of specialized topics. Sands (2013) is the most compact linguistic source on Hadza, and Sands (2010a) reviews the other relevant literature.

The amount of literature concerned primarily with the genealogical classification of Hadza (cf. Greenberg 1950c, 1963a; Tucker 1967a, 1967b; Elderkin 1982, 1983; Fleming 1986; Sands 1998b, 1998c) is in fact disproportionate to that dealing with its actual linguistic description. This situation is also surprising in view of other problems to be faced when trying to classify it. Sands (2016) is a telling demonstration of the fact that early treatments suffered from the use of not only insufficient but, even worse, highly defective data. Another relevant issue is the large amount of likely borrowing layers in the language (cf. Elderkin 1978), which even concerns expectedly stable elements like kinship terms (Miller 2016).

Two major competing hypotheses exist for assigning Hadza to another language group. The mainstream view according to Greenberg, Fleming, and others was that it is part of Khoisan. Another idea proposed by Tucker was that Hadza belongs in a wider concept of Afroasiatic. Sands (1998b, 1998c) was the first to express a systematic critique of the equivocal methodology and evidence found in the Khoisan-related works, and thereby heralded a growing skepticism about classifying this language as a whole. Sands (2010a) is a detailed justification for

treating Hadza as an isolate – an assessment that by now seems to be shared by the general linguistic public.

2.4.4. Higher-order hypotheses and summary

2.4.4.1. Tuu and Kx'a

As briefly discussed in Güldemann (2014a), there are currently two hypotheses about genealogical relations in the Khoisan domain worth pursuing beyond the five lineages described above. Still equivocal and little investigated is the idea about a larger lineage subsuming Tuu and Kx'a. At least since Güldemann (1998) the two families have been associated with each other on account of their shared and typologically marked structural profile, which has been differentiated from the Khoe-Kwadi-Sandawe type under the purely typological label "Non-Khoe" (see also Güldemann and Voßen 2000). Since serious historical-comparative research on both families has only begun recently, it is still worth testing whether this considerable structural unity may be the result of a common inheritance. Similar pronominal elements given in Table 15 make this a viable line for future study.

Table 15: Affinities between pronoun elements in Tuu and Kx'a

Pronoun element	**Proto-Tuu**	**Proto-Kx'a or Proto-Ju**
1st person singular pronoun	*N	*mi ~ ma (Proto-Kx'a)
2nd person singular pronoun	*a	*a (Proto-Ju)
3rd person	*ha	*ha ~ ya (Proto-Kx'a)
3rd person	*hi	*yi ~ hi (Proto-Ju)
Exclusive plural	*si (1st person)	*tsi (3rd person own-group, Proto-Kx'a)

Collins and Honken (2016) have made a much stronger genealogical claim to the same effect by referring to the partial segmental similarity of other grammatical elements across the Tuu and Kx'a families. Before the background of typologically idiosyncratic traits in nominal number marking entertained already by Güldemann and Voßen (2000: 112–113), the authors reconstruct a common plurality prefix *kí- (which is possibly rather a plural word), based on *kí-* in ǂ'Amkoe (Kx'a), *ka-* in Taa-Lower Nossob (Tuu), *ka-* in the western N‖ng dialect N|uu, and *gi-/ge-* in ‖Xegwi (both !Ui, Tuu). Collins and Honken fail to recognize the presence of plural *ka* in the eastern N‖ng dialect and of a *ka* in |Xam – yet another !Ui language – that turns up in plural derivational compounds – data that make a Proto-Tuu form *ka far more likely. This in turn weakens an etymological link to the so far single Kx'a element *kí* of ǂ'Amkoe, because the only common denominator is an initial velar plosive – a historically non-diagnostic segment in the languages of the area,

even more so in grammatical items. For the record, a similar situation applies with respect to multipurpose oblique prepositions with initial *k* found across Kx'a and Taa-Lower Nossob of Tuu. In general, without wanting to exclude a possible historical relation, such hypotheses are at this stage premature and require a deeper synchronic and diachronic understanding of the constructions and markers involved.

Another research approach also proposes a specific genealogical connection between Tuu and Kx'a. Starostin (2008) has joined the two families under a single lineage called "Peripheral Khoisan", based on a purely lexical comparison that necessarily draws heavily on the more extensive data of just two unrelated but geographically close language varieties, namely the Ju dialect Tsumkwe Juǀ'hoan of the Kx'a family and the Taa dialect East !Xoon of the Tuu family. This biased data basis is highly problematic for drawing any far-reaching conclusions (see Honken [2013b] for more discussion). Indeed, the ongoing more detailed research on the internal and external relations of the Taa language complex reveals that East !Xoon in particular is not fully representative of Taa, nor is Taa representative of the Tuu family. On the contrary, there are strong indications that a good portion of the lexical material of East !Xoon and other Taa varieties that is shared with Juǀ'hoan and other unrelated but neighboring languages like Naro, Gǀui, and ǂ'Amkoe is due to intense lexical convergence in the Central Kalahari area (cf. Traill and Nakagawa 2000; Güldemann and Loughnane 2012; Gerlach 2016). Refuting Starostin's lexical argument for his "Peripheral Khoisan" does not mean, however, that lexical isoglosses between Tuu and Kx'a languages cannot reflect inheritance. Güldemann and Loughnane (2012: 243–245) show that some intriguing similarities exist in body part vocabulary on various reconstructed levels of the two families. These point into the same direction as the pronominal data, namely that the hypothesis of a single family joining Tuu and Kx'a is worth pursuing.

Traill (2001) entertained yet another striking affinity between the above two dialects, namely a highly similar frequency of consonant types across the lexicon, without this distribution being tied to particular lexical items. While Traill's hypothesis to view this phenomenon as a historically significant fact is likely, it can not yet be evaluated conclusively, because no systematic comparison of this phenomenon has been undertaken beyond the two speech varieties. A first pilot study in this direction by Güldemann and Nakagawa (forthcoming) indicates that universal trends and sub-areal signals in the Kalahari Basin are also involved so that genealogy could only be a partial explanation for this type of similarity.

2.4.4.2. Khoe-Kwadi and Sandawe

Given that Sandawe has no obvious linguistic relatives, much of the earlier attempts to classify the language focused on possible links to other languages with click phonemes and/or other linguistic isolates in the geographical vicinity. A link to

"Khoisan" in southern Africa, in particular with Khoekhoe, has been popular since the first data were analyzed from a historical perspective, notably by Dempwolff (1916), Drexel (1929/30), and Tucker (1967a: 21, 24). Both lexical similarities and a shared sex-based gender system including a few individual markers played a role in this proposal. This hypothesis also informed Greenberg's (1950c, 1963a) framework for his all-comprising "Khoisan" family. Other Sandawe comparisons by Ten Raa (1969), Elderkin (1983), and Fleming (1986) focused on eastern Africa with a view on Hadza (U5), Dahalo (Cushitic, U45), Oropom (section 2.3.3), and the Kuliak group (U21).

With the availability of more extensive information on Khoe languages in southern Africa, and having himself collected new up-to-date Sandawe data, Elderkin (1986, 1989) revived the concrete genealogical link of Sandawe to the now larger family (see also Köhler 1973/74: 190). Today, this hypothesis appears in yet a different light due to the newly proposed relation between Khoe and Kwadi, whereby the general typological affinity between all relevant languages, mentioned in section 2.4.2.3, is compatible with this idea. Güldemann and Elderkin (2010) present the most recent discussion of the relevant grammatical and lexical data. Among other things, they list several pronominal forms that might be cognate between the two entities, as given in Table 16.

Table 16: Affinities between pronoun elements in Proto-Khoe-Kwadi and Sandawe

Pronoun element	**Proto-Khoe-Kwadi**	**Sandawe**
1st person singular pronoun	*ti (Kwadi *tʃi*)	*tsi*
2nd person singular pronoun	*sa	*ha-*
3rd person pronoun base	*xa- (Kwadi *ha-*)	*he-*
3rd person masculine singular suffix	*-V[front] (Khoe *-bV[front], *-mV[front])	*-w(e), -m*
3rd person feminine singular suffix	*-V[front] (Khoe *-sV[front])	*-su*

Weighing all the evidence for and against such a unit, the authors conclude that it is a promising but not sufficiently proven hypothesis, so that it is still safest to treat Sandawe as an isolated language, *pace* Dimmendaal (2008b: 841).

2.4.4.3. Summary

As outlined in section 2.4.1, all the evidence proposed so far for a Khoisan family has been refuted by linguists working on the relevant languages. Greenberg's "Macro-Khoisan" involves hardly more than the commonality of clicks, which cannot serve as a genealogical argument (see, e. g., Güldemann 2007a; Güldemann and Stoneking 2008). The other, more restricted idea about a South African Khoisan unit appears to have been inspired primarily by geographical considerations. Today it must be evaluated against the competing hypothesis about a

pre-Bantu linguistic area called the Kalahari Basin, which provides an alternative explanation for the isoglosses shared by the three lineages Tuu, Kx'a, and Khoe-Kwadi (cf., e. g., Güldemann 1998; Honken 2006; Güldemann and Fehn 2017; see also Güldemann, this volume, chapter 3.2). Since no new versions of or evidence for a Khoisan hypothesis have grown out of any more recent scholarship, there is little empirical ground left for currently propagating such a family. Based on the above discussion, the Khoisan domain comprises five lineages, whereby there is some chance for further consolidation in the future to four or even three genealogical units. This summary is also given again in Table 75 of section 2.9.

2.5. The Niger-Kordofanian domain

2.5.1. Classification history and lineage inventory

It may have been noticed that I stick to Greenberg's original terminology. This is because the classification of and accordingly the terminology for the entire Niger-Kordofanian domain is in flux. Following major works like Bendor-Samuel (1989), many post-Greenbergian publications have settled on replacing the highest-order term with the name of its earlier main branch Niger-Congo and creating/using new terms for the latter such as "Volta-Congo" (Stewart 1976), "Central Niger-Congo" (Bennett and Sterk 1977) and the like. It is unclear to me which of the later hypotheses will prevail, including the optimistic assessment of Kordofanian as a phylogenetically deeper clade by Williamson (1989b: 19) and other scholars. I thus prefer to follow Greenberg's unambiguous usage of Niger-Kordofanian as the highest assumed lineage and Niger-Congo as its major branch.

The Niger-Kordofanian family has been accepted in Greenberg's extension by most scholars working after him on this topic, but has been subject to a large amount of reanalysis regarding its internal setup (cf., e. g., Bennett and Sterk 1977; Schadeberg 1986; Bendor-Samuel 1986; Williamson 1989b; Williamson and Blench 2000). All of these newer proposals, provided they give any evidence at all, are based on lexical data, whereby lexicostatistics and/or the assessment of supposedly diagnostic single lexemes play a particularly prominent role.

There are two types of major change. First, while Greenberg has just two main branches, Kordofanian and Niger-Congo, with six coordinate groups in the latter branch, subsequent schemes normally display a well-articulated genealogical tree structure. Second, certain subgroups have been successively moved up the tree to become more peripheral to, or in genealogical terms, "earlier offshoots" from, the core. Kordofanian and some previously unknown languages aside, this development concerns Mande, Ijoid, Dogon, Atlantic, and Kru. A representative case of such a later classification is given in Figure 4. It reproduces the assumed family tree structure to the extent necessary in this context and is keyed on the left to the basic classificatory units recognized here (see Table 17 below).

NIGER-CONGO [= Greenberg's NIGER-KORDOFANIAN]
U18+19 Kordofanian
Mande-Atlantic-Congo
U11 Atlantic
U12 Mande
Ijo-Congo
U8 Ijoid
Dogon-Congo
U13+14 Dogon
Volta-Congo
West
U9 Kru
Clade without name
U10 ?Pre
U15+16+17 Clade without name
U6+7 East (= Benue-Kwa)

Figure 4: Niger-Kordofanian after Williamson and Blench (2000: 18)

Despite the wide acceptance of the genealogical hypothesis, there exist serious issues that have led to more critical assessments of Niger-Kordofanian. Early skeptical positions like that of Dalby (1965: 16) anticipated the need for my present recognition of something like genealogical pools by rejecting the common approach of accepting and working with several unproven lineages:

> In the classification of West African languages, there is a need for some of the larger so-called 'genetic' groupings to be broken down into more coherent and scientifically established units, in order that the *interrelationships* of these closer groupings may be examined in detail. If this is done, then there is hope that the classification of West African languages may one day make a valid contribution to our knowledge of African pre-history.

A later example of a more reserved evaluation of the state of Niger-Kordofanian after 40 years of research is Olson (2006). This author argues that research practice commonly suffers from the insufficient presentation of empirical data and their sources, which enables other scholars to more easily replicate research results, and from a deficient historical methodology, which involves primarily superficial resemblances, lexicostatistics, and cherry-picked lexical diagnostics. The following questions are identified as particularly problematic: the relationship between Kwa and Benue-Congo, the exact definition of what a Bantu and/or Bantoid language is, and the internal and external status of Adamawa-Ubangi. Babaev (2011) is a short description of the current state-of-the-art in Niger-Kordofanian historical research that also points out the enormous gaps in the field.

Table 17: Basic classificatory units in the Niger-Kordofanian domain

No.	Basic unit	1	2	3	4	Geographic location
U6	BENUE-KWA (>20)	1065				Ivory Coast to southern Africa
U7	DAKOID	5	X	X	X	northwestern Nigeria
U8	Ijoid	10		X	X	Niger delta (Nigeria)
U9	KRU (2)	39				Liberia, southern Ivory Coast
U10	Pere	1	X	X	X	northern Ivory Coast
U11	ATLANTIC (7)	64				western Atlantic coast (except Fula)
U12	Mande	75				western half of West Africa
U13	Dogon	19	X	X		Bandiagara escarpment (Mali)
U14	Bangime	1	X	X		Bandiagara escarpment (Mali)
U15	GUR (7)	97				central interior West Africa
U16	ADAMAWA (14)	86				western Nigeria to southern Chad
U17	UBANGI (7)	72				Cameroon to South Sudan
U18	KORDOFANIAN (4)	21		X		Nuba Mountains (Sudan)
U19	Katlaic	3		X	X	Nuba Mountains (Sudan)
	Approximate total	1500				

Note: GENEALOGICAL/AREAL POOL; (n) = Number of potentially separate subgroups; 1 = Number of languages; 2 = No grammar sketch before 1965; No comprehensive modern published description: 3 = before 2000, 4 = today

In view of these problems, my treatment works with a more fine-grained inventory of basic classificatory units and their constituent parts, including the concept of genealogical pools applied to some purported lineages. This is shown in Table 17. As can be seen, several groups are also still in need of far better documentation.

Before addressing the current state of historical linguistic comparison for assumed member groups of Niger-Kordofanian as well as for the unit as a whole, one important aspect of previous methodology should be mentioned. It concerns the exceptional role accorded to a single subgroup, namely Bantu – an approach that has been relevant throughout the research history in the domain at issue. It is comparable to the situation in other fields where, due to demographic and sociopolitical circumstances and the resulting research history, one important lineage of a larger group tends to determine research approaches, such as, for example, Sinitic for Sino-Tibetan, or in African studies itself, Semitic for Afroasiatic. A representative and possibly even formative statement about this special perspective on Bantu is the following quotation from Stewart (1976: 3–4):

> In the light of Greenberg's classification [with Bantu as a very low clade in the family tree] Guthrie's [1967–71] work on the Bantu languages takes on a new significance as an important advance toward the reconstruction of the history of the entire Niger-Kordofanian language family. One can even say that the reconstruction of proto-Bantu is a natural first step toward the eventual reconstruction of proto-Niger-Kordofanian, since for two reasons the Bantu group is particularly well suited to the application of the techniques of linguistic reconstruction: in the first place it includes a very large number of distinct languages …; and in the second place these languages are quite closely interrelated … In any case the ultimate goal, proto-Niger-Kordofanian, is almost certainly more similar to Guthrie's proto-Bantu than to any of the present-day languages or to any of the non-Bantu proto-languages which have so far been reconstructed.

There can be no doubt about the exceptional suitability of the Bantu family for historical-comparative reconstruction as well as its importance for Niger-Congo as a whole. However, the logic of Stewart's final claim is problematic at best, because he gives no reason for assuming that Proto-Bantu underwent so few changes that it could serve as a good model for reconstructing the earliest stage of Niger-Kordofanian. Its agreed-upon deep position in the family tree does not exclude but certainly also does not suggest such a hypothesis. Nor does Stewart's own subsequent discussion, according to which Proto-Bantu has plausibly lost four phonological features, namely ATR vowel harmony, nasal vowels, fortis-lenis consonant contrast, and labial-velar stops, that can be assumed to have been present in an earlier chronolect comprising at least Gur and other Benue-Kwa groups. Before Proto-Bantu can serve as a proxy for Niger-Kordofanian reconstruction, robust evidence in favor of this idea needs to be assembled. To consider another example, it is clear that Early Modern English and its numerous varieties spoken today across the globe are not a good starting point for assessing Proto-Germanic, leave alone Proto-Indo-European.

Despite this caveat, Bantu has been used recurrently as a reference point in addressing much older stages of the assumed lineage, also because the main identifying features for something like Niger-Kordofanian, namely the typical systems of noun classification and verb derivation, are so prominent in the family and also have been, and still are, described there in most detail. To mention one example, this approach recently created a controversy revolving around the question of whether (or to what extent) the morphosyntactic reconstruction of the Proto-Bantu predicate (e. g., by Meeussen 1967), which is itself biased toward highly fusional Savannah Bantu languages, should serve as a model for reconstructing earlier language states outside Bantu up to the level of Proto-Niger-Congo. While Hyman (2007b, 2011) opts for this hypothesis, Güldemann (2003a, 2011a, 2013b) does not view a reconstruction in line with Meeussen (1967) to be representative for traditional Bantu as a whole, and thus does not allow it such a central role for approaching far older chronolects.

2.5.2. Diagnostic evidence

2.5.2.1. Morphology

There exist occasional attempts to reconstruct individual morphological elements such as, for example, Welmers's (1963) bold proposal, based on very limited emprirical data, to reconstruct two Proto-Niger-Congo genitive markers. Most work proposing individual identifying evidence for such a proto-language focuses, however, on larger morphological paradigms, notably concerning verbal derivation, noun classification, and more recently pronouns. Since these three domains are assumed to involve partly elaborate marker sets, robust reconstructions should certainly satisfy historical-comparative linguists and are discussed subsequently.

2.5.2.1.1. Pronouns

Pronouns are generally assumed to be very reliable diagnostic markers of genealogical relationships. However, even here borrowing cannot be excluded and, more importantly, language-universal trends toward unmarked segments and closed-set phonosymbolism may lead to a considerable amount of chance resemblances (cf. Gordon 1995; Rhodes 1997; Nichols and Peterson 1996; Nichols 2001).

Until recently the dedicated study of Niger-Congo pronouns has been neglected, although individual reconstructions appear in Westermann (1927b) and Mukarovsky (1976/7). This situation changed during the last decade with the appearance of several studies by Babaev (2008, 2010a, 2010b, 2012a, 2012b) as well as a number of contributions in Ibriszimow and Segerer (2004) and Pozdniakov, Vydrin, and Zheltov (2010). These deal with various subgroup levels as well as issues of a family-wide scope, including more theoretical and methodological aspects that have to be taken into account when attempting pronoun reconstructions, notably Pozdniakov and Segerer (2004a), Pozdniakov (2010), and Segerer (2010b).

Güldemann (2017, see also 2011b), to which the reader is referred for more details, follows a different approach apart from a restriction to the forms for speech-act participants. According to the more fine-grained classificatory scheme implied in Table 17, including the subgrouping of the basic units, Niger-Congo is not viewed as being composed of half a dozen large lineages. The study starts out instead from elements in low-level groups that are mostly genuine families and compares them in terms of recurrent single characters as well as patterns of paradigmatic contrasts.

The paradigms compared are given in Table 18. A number of remarks on the data given in this table as well as in the following Tables 25–27 and 29 are in order. In general, I attempt to present data that reflect a character state that is as old as

Table 18: Speech-act participant pronouns across Niger-Kordofanian classificatory units

	Lineage	**1S**	**2S**	**1P(.E)**	**2P**	**Source**
(U6.A)	Bantoid: Bantu	*mi/ *-n-	*u-	*-cú-	*-ɲú-	Meeussen (1967: 105); Güldemann (2011b)
(U6.A)	Bantoid: Mambiloid	*mI	*wO	*(-)TV	*(-)NV	Connell (2010)
(U6.B)	Cross River: Lower	*-mɨ̌	*-fò	*-ɟɨ́.t	*-ɲi.n	Connell (1991: 344–345)
(U6.C)	Kainji-Platoid: Jukun	*-mi	*-wu	*-yE	*-nE(n)	Storch (1999: 370)
(U6.C)	Kainji-Platoid: Yukubenic	*-m(V)	*-(w)u	*-Ti	*-Ni	Prischnegg (2010: 118)
U6.D	Igboid	*-mí	?	*-`-nɪ̰́	*-nɔ̃Nɔ̃	Williamson, Blench, and Ohiri-Aniche (2013: series 560, 562–563)
U6.F	Nupoid	*-mi	*-wO	*-(y)i	*-Ni	Blench (2013d: 114–118)
U6.G	Edoid	*mhɛ	–	*-mhanhi	*bha(dh)ɪ	Elugbe (1986: 133, 203, 207)
(U6.H)	Akpes: *Ekiromi*	*-nV*	*-sV*	*-sì*	*-nì*	Agoyi (1997: 4-5)
U6.I	Ukaan	*dʒO	*(h)O	*ba	*mana	Abiodun (1999: 87, 79); Salffner (2009: 68, 69, 218)
U6.J	*Oko*	*-mẹ*	*-wọ*	*-tọ*	*-nọ*	Atoyebi (2010: 110)
(U6.K)	Owon-Arigidi: *Arigidi*	*min*	*rin*	*ò*	*mẹ́n*	Oshòdi (2011: 24–29)
(U6.L)	Ayere-Ahan: *Ahan*	*emi*	*ŋghọ*	*aa*	*ẹẹ*	Akanbi (2014: 78); Ogunmodimu (2015: 25, 26)
U6.M	Yoruboid	*-mĩ	*-b'V	*-b'a	*-b'ĩ	Akinkugbe (1978: 406, 409, 416, 442)
U6.N	Gbe	*mV/ *NE	*(-)o	*mì	*mi	Capo (1993:15)

(U6.O)	Ghana-T.-M.: Ka-Togo	*-mV	*-wó	?	?	Heine (1968: 235, 253)
(U6.O)	Ghana-T.-M.: Na-Togo	*-mV	*-wó	*-TV	?	Heine (1968: 235, 253, 249)
U6.P	Potou-Akanic: Akanic	*-mE	*wO/fO	*jɛ	*mO	Burmeister (1988: 103)
U6.Q	Ga-Dangme	*mi̱-	*bò	*wɔ̀	*nyɛ̰	Kropp Dakubu (2006: 46–49)
U6.R	Lagoon: *Abe*	*mə*	*fə*	*e-lə*	*e-ɲə*	Kouadio (1983: 34–35)
U6.S	*Ega*	*nÍ*	*Ó*	*wá*	*ŋÚ*	Bolé-Richard (1983b: 392)
(U7)	Dakoid: *Samba Daka*	*mèè*	*wèè*	*wòò*	*vèè*	Boyd (2004: 275)
U8	Ijoid	*i/ɛ	*ɪ/i	*ɔ/o	*wV	Williamson (2004b: 18, 36, 38)
U9.A	Kru	*ń/Ǐ	*ǹ/Ǐ	*à	*a	Marchese (1983: 228)
U9.B	*Siamou*	*ń*	*á*	*n̂*	*yíi*	Toews (2015: 40)
U10	*Pere*	*kV*	*m*U	*wó*	*ɲí*	Creissels (2010: 3)
(U11.A)	Atlantic: Cangin	*mɪ	*fʊ	?	*dO	Drolc (2005: 187)
(U11.B)	Mel: Temnic	*mi	*mO	*sV	*nV	Wilson (1961: 58)
U11.C	*Gola*	*mɛ̃*	*mọ̃*	*(s)e*	*ne*	Westermann (1921: 41)
U11.D	*Limba*	*yaṅ*	*yi*	*min*	*been*	Clarke (1922: 104, 147, 150)
U11.E	*Sua*	*meN-*	*mɔɔ*	*nrɔ*	*nɔɔ*	Wilson (2007: 209–210)
U11.F	*Nalu*	*mu-/ bee*	*yi*	*biye*	*Nee*	Wilson (2007: 209–210)
U11.G	Rio Nunez	–	–	–	–	Wilson (2007: 209–210)

	Lineage	1S	2S	1P(.E)	2P	Source
(U12)	Mande: Manding	*N	*i/*e	*aN	*a(i)	Davydov (2010: 36–37)
(U12)	Mande: Southwest	*ŋé	*í/*é	*mù	*wó	Babaev (2010a: 36, 44)
(U12)	Mande: Mani-Bandama	*N̄	*ī/*ē	*yī/*ō	*kā	Vydrin (2006: 406); Babaev (2010a: 36)
(U12)	Mande: Niger-Volta	*mo̰	*ʔî	*wó	*kó	Schreiber (2008: 327)
U13	Dogon	*mi	*O	*I	*E	Moran, Forkel and Heath (2016)
U14	*Bangime*	*mí*	*a*	*ndɛ*	*aa(ru)*	Hantgan (2013: 277
(U15.A)	Central: Oti-Volta	*mV	*bV/(f)V	*ʈV	*(n)yV	Manessy (1975: 175); cf. Miehe (2004)
(U15.A)	Central: Gan-Dogose	*mɪ	*mʊ	*a	*ĩ	Miehe (2004: 117)
U15.B	Kulangoic	*mI	*wO	*bI	*I	Miehe (2004: 117–118)
U15.C	*Miyobe*	*-m nV*	*(-)Po*	*(-)T-*	*(-)n-*	Pali (2011: 225)
U15.D	Tiefo	*nV	*mV	*e	?	Winkelmann (1998: 140); Heath, O. and H. (2017: 33)
U15.E	*Viemo*	*mə na*	*wo a*	*sa*	*ã(-)*	Prost (1979: 52)
U15.F	Tusian	*mE	?	?	*i/y	Prost (1964: 286); Zaugg-Coretti (2005: 18)
U15.G	Samuic	*n(i)	*mV	*Ti	?	Miehe (2004: 118)
U15.H	Senufo	*mI	*mO	*wo	*ye	Miehe (2004: 119)
U16.A	Tula-Waja	*mI	*mO	*nEn	?	Kleinewillinghöfer (2012c)
U16.B	Longuda	*nyI	*mO	?	?	Kleinewillinghöfer (2014c)
U16.C	Ɓəna-Mboi	*na	*(n)ga	*(n)da	*Sa	Kleinewillinghöfer (2011c)

(U16.E)	Samba-Duru (minus Samba)	*mI	*mO	?	*(-)I(N)	Boyd (1974: 97-8); Kleinewillinghöfer (2015c)
U16.F	Mumuyic	*mE/ *N	*mo	*rO/ wO	*noO	Shimizu (1979: 108–109)
U16.G	Maya	*m(E)	*mo	*tO	*no	Kato, Yoder, and Blench (n.d.: ix–xii)
U16.H	Kebi-Benue	*mì	*mO	*ru	*Bai	Boyd (1974: 97-8)
(U16.I)	Kimic: *Kim+Goundo*	*m(b)i	*mO	?	?	Mouchet (1954: 178); Roberts (2009: 4)
U16.K	*Day*	*-mà*	*-mɔ̀*	*-ɲā*	*-mɔ̄*	Nougayrol (1979: 167)
U16.L	*Baa~Kwa*	*-mi*	*-mu*	*iyi-(t)*	*íyì-n*	Kleinewillinghöfer (2011b, p. c.)
U16.N	*Fali*	*(-)mì*	*mu	*-to	*-no	Sweetman (1981: 74, 85, 88–89); Kramer (2014: 156)
U17.A	Gbayaic	*mí	*mé	*(-)l̩é	*(-)né	Moñino (1995: 648–649, 2010a: 88)
U17.B	Zandic	*mI	*mO	?	*-nE	Boyd and Nougayrol (1988: 71)
U17.C	Mbaic	?	*mO	?	?	Pasch (1986: 400–401)
U17.D	Mundu-Baka	*ma	*mU	*ʔa	*ʔI	Winkhart (2015: 66)
U17.E	Ngbandic	*mbɪ	*mɔ̀	*ʔè/(h)è	*ʔi̱/(h)i̱	Boyeldieu (1982c: 34, 45, 56)
U17.F	Bandaic	*mĒ	*MBʊ̄	*ʔā	*ʔē	Moñino (1988: 119, 125, 143, 146)
U17.G	Ndogoic: South	*ne/ *yɛ	*wo/ *ŋɔ	*dʊ̄	?	Tucker and Bryan (1966: 91); Santandrea (1961: 47)
U18.A	Heibanic	*ɲi	*ŋa	*-n(a)-	*-ɲ(a)-	Schadeberg (1981a: 182, 184)
U18.B	Talodic	*-iŋ	*-aŋ	*-nin	*-nɔn	Norton and Alaki (2015: 153–154)
U18.C	*Lafofa*	*ɲɛ́ɛ-*	*(ɲá)ŋɔɔ-*	*yɛ́ɛ-*	*ɔɔ-*	Schadeberg (1981b: 155)

	Lineage	1S	2S	1P(.E)	2P	Source
U18.D	Rashadic	*ŋi	*ŋɔ	*ni	*nɔ	Schadeberg (2013: 331–332); Alamin (2015)
U19	Katlaic	?	*ŋVŋ	*nEn	*nVn	Hellwig (2013: 240); Schneider-Blum (2013: 285)

Notes: (U…) = data disregard portions of a lineage; likely reflexes of proto-form are left-aligned; likely secondary reflexes of proto-to-form are center-aligned; non-cognates of proto-form are right-aligned; – = no form(s) given; *xxx* = single-language form; * = cited reconstruction; * = pseudo-reconstruction; ? = no single (plausible) reconstruction; (If there is evidence for an inherited clusivity distinction, it is the exclusive form that is given in the column where the single first-person plural form of units without such an opposition is listed.)

possible. Single-language units do not require a reconstruction but just the relevant form, given in italics. For families, I have tried to find reconstructions that can be cited from the literature, marked by the conventional *X. The reconstruction symbol may, however, still mask a so-called "pseudo-reconstruction," because the proposed form is not based on a sufficient historical-comparative procedure. Moreover, a cited reconstruction does not necessarily imply that it is the most likely one: for example, while Table 18 lists Meeussen's (1967: 105) *-N- as the first-person singular index of Proto-Bantu, a dedicated survey in this family and its close relatives reveals that a root *mI is a solid reconstruction for the principal person marker (Güldemann 2011b). For other families with sufficient comparative data but without proto-forms I have established pseudo-reconstructions myself through superficial data inspection, marked by a preceding subscript star ($_{*}$X). This may even hold for a few cases in which a data source includes a proto-form but I consider it to be deficient. In Table 18 (and Table 27 of section 2.5.2.2), the reader is asked to observe the alignment of forms within a feature column: similar elements that suggest cognacy are aligned with each other, mostly toward the left side of a cell; a few cases of restricted similarities are marked by mid-column alignment; dissimilar forms, hence likely non-cognates, are right-aligned. Last but not least, listing an individual form, reconstructed or not, in no way implies that I claim real cognacy; there may well be look-alikes. The major purpose of all these tables is to show that some forms are indeed recurrent across the domain and merit a reconstruction for an old genealogical entity even at this early stage of historical comparison.[10]

Table 19: Proposed pronoun paradigms of Proto-Niger-Congo

Source	**1S**	**2S**	**1P**	**2P**
Güldemann (2017)	$_{*}$**mV**$^{\textbf{front}}$	$_{*}$**mV**$^{\textbf{back}}$	$_{*}$**TV**$^{\textbf{close}}$	$_{*}$**NV**$^{\textbf{close}}$
Babaev (2012a)	***mi**/ *N=	*wU/*U=	***tI~*tU**	***nI~*nU**
Mukarovsky (1976/7: LXII, LXX, LXXI)	***(a)mi**/ *ni	***mu-**/ *-bhi-	***tiu**	***-ni(a)**/ *mui
Westermann (1927b: 256–257, 261, 264–265, 288)	***mì**/ *na~ni	–	***tí~*tú**	–

[10] Another convention in the tables is that capital letters symbolize abstract segments. They are: A, open (front) vowel; B, labial consonant b/v/w; DN, alveopalatal stop alternating with n; E, front vowel; J, j/z; K, k/g; N, nasal; O, back vowel; T, alveopalatal consonant t/d/l/r; ~~U~~, close vowel; V, indeterminate vowel.

My comparative methodology leads to a preliminary proto-paradigm given in the first line of Table 19. The table also shows that my proto-forms are overall compatible with those proposed by previous authors. The major difference is that such an early historical level does not strongly suggest a well-articulated difference of pronouns according to morphosyntactic context, as recurrently proposed in Babaev's work. Moreover, I assume that a first-person singular form with an alveolar~palatal nasal does not warrant reconstruction thus far, because attestations are too sporadic and have other possible origins. Finally, the original second-person singular form is assumed to have an initial bilabial nasal, so that forms starting with a non-nasal consonant or lacking a consonant entirely are innovations. Since such a feature significantly clusters in the Benue-Kwa pool, it may well represent a clade-specific development there.

Another recent development in pronoun reconstruction is the assessment of forms referring to the clause subject in relation to the verb. Focusing on the first-person singular, Anderson (2012) in particular proposes that preverbal pronouns fused at an early stage with other grammatical elements to form so-called STAMP (subject–tense–aspect–modality–polarity) portmanteau morphemes that originally encoded a binary aspect distinction and were (and in many languages remained) separate from the verb. The importance of STAMP grams as such would have been a general areal trend shared also by unrelated language families (cf. Güldemann 2003a, 2011a; Nurse 2007; Anderson 2011, 2015).

2.5.2.1.2. Verb derivation suffixes aka "extensions"

Bantu languages are widely known for their suffixal verb "extensions" that change verb roots primarily in terms of valency but may also alter other semantic aspects of the state of affairs, and Proto-Bantu can be reconstructed with an elaborate morphological paradigm of such elements (cf. Meeussen 1967; Guthrie 1967–71). Similar systems are also widespread in the Niger-Kordofanian domain and the fact that some of its assumed members show hardly any reflexes can be explained partly as the result of morphological attrition.

Voeltz (1977) is the first dedicated attempt to trace a Bantu-like system back to the oldest proto-language in the form of concrete reconstructions. Although his study is cited regularly in connection with the historical assessment of Niger-Kordofanian – indeed, to such an extent that outsiders may even view the question of the proto-system as settled – it has serious defects, of which only the most important methodological ones are mentioned here.

For one thing, the author imposes a strong bias on his analysis by taking the Proto-Bantu system as the baseline. Numerous suggestive affinities between Proto-Bantu reconstructions and forms of individual languages outside Bantu can indeed be found, and there is no doubt that a good number of them reflect common inheritance. A superficial comparison of Proto-Bantu and five non-Bantu lan-

guages is illustrated in Table 20; sources like McGill (2009) and Elders (2007a) explicitly make these and other etymological associations.

Table 20: Selective comparison of derivational verb suffixes across Niger-Kordofanian

Proto-Bantu	**Cicipu** (Kainji)	**Degema** (Edoid)	**Kulango** (Gur)	**Longuda** (Adamawa)	**Bijago** (Atlantic)
Schadeberg (2003: 72)	McGill (2009)	Kari (1995: 150)	Elders (2007a: 192)	B. Newman (1978)	Segerer (2002: 226)
*-i-/-ici- CAUS	*-is-* CAUS	*-VsV* CAUS	–	*-k-* TR	*-i* CAUS
*-ɪl- DAT (APPL)	*-il-* PLUR	–	*-lɪ* ITER-expertive	*-(di)r-* OBL	–
*-an- ASSC (RCPR)	–	*Vn* in *-VŋVnV* RCPR	–	*-n-* PLUR, RCPR	*-an* ASSC- RCPR
*-a(n)g- REPT	–	*Vŋ* in *-VŋVnV* PLUR	*-ga* PLUR	*-Ṽ* IPFV	–
*-ɪk- NEUT	–	–	*-sɪ* STAT	–	*-ɔk* MID
*-ʊl- SEPR (TR)	*-uw-* SEPR	–	*-tʊ, -ru* SEPR	–	–

In view of such a picture and Voeltz's general approach it comes as no surprise that nine of his ten verb extensions reconstructed for an early Niger-Kordofanian chronolect are very close in both form and function to the Bantu ones. However, while Bantu is a numerically and geographically large unit, it only represents a minor and genealogically young clade in the assumed family tree, so that it needs to be shown first that its proto-system can indeed serve as a good guideline for extrapolating far earlier language states.

The Bantu bias is compounded by the kind of empirical evidence offered from the hundreds of non-Bantu Niger-Kordofanian languages in support of the reconstructions. That is, the evidence largely comes from a restricted number of individual modern languages, as in Table 20, and worse, the comparative associations are primarily steered by superficially similar morpheme forms, neglecting recurrent differences in meaning. Given the general shortness of these suffixes, Voeltz's study cannot separate any truly inherited material from look-alikes arising through chance, independent innovation, or language contact.

The difficulty of correctly identifying inherited morphemes by comparing isolated elements from individual languages or even families can be easily illustrated. One case in point is the derivational suffix system of Waja. Thus consider (1b) and (1d), which exemplify its passive-intransitive suffix *-ụ-* (= *-w-* in the example) and its pluractional suffix *-Vŋ-*, respectively.

(1) a. *a dúm-ò*
3S bite-'DEF'
'he has bitten'

b. *a dúm-**w**-à*
3S bite-**PASS**-'DEF'
'he has been bitten'

c. *a gẹ́l-ị̀*
3S break-'DEF'
he has broken it

d. *a gẹ́l-**èŋ**-à*
3S break-**PLUR**-'DEF'
'he has broken many things/often'
(Kleinewillinghöfer 1996b: 35)

Formally and functionally similar morphemes that also occur between the root and a final vowel suffix are reconstructed for Proto-Bantu, namely the passive *ú and "pre-final" *a(n)g (cf. Meeussen 1967: 92, 110). Within the approach followed by Voeltz (1977) it is more than tempting to associate the Waja forms with those of Proto-Bantu and thus trace similar suffixes back to a very early language state.

Table 21: The Waja verb extensions in areal context (Kleinewillinghöfer 1996b: 35–36)

Waja	**Local Chadic**	**Proto-Chadic**
Destinative *-ń-*	'toward speaker' *-n-* (Tangale)	Destinative *in
Altrilocal *-we*	Grade 7 *-o* (Hausa)	Distant *(a)wa
Passive-intransitive *-ụ-*	Grade 7 *-u* (Hausa)	–
Plurality *-Vŋ-*	–	–
Relational-instrumental *-íy-*	–	–

However, as shown in Table 21, Kleinewillinghöfer (1996b) entertains equally good matches of the passive-intransitive *-ụ-* (and other suffixes) in neighboring languages from the Chadic family that are in intense language contact with Waja (cf., e. g., Jungraithmayr 1980; Kleinewillinghöfer 1990a). Hence, a possible genealogical interpretation is obviously ambiguous as long as it has not been shown that the Waja forms actually go back to proto-forms in, say, the Tula-Waja group or preferably in yet older language states.

Similar cases can be added, suggesting strongly that one is faced with a general rather than a language-specific problem. Thus, some Kru languages also possess a passive suffix *-o/ɔ* but Marchese (1983: 288–291) plausibly argues that it is a group-internal innovation. Late innovation of an item in certain languages or groups is a general possibility to be reckoned with in comparing synchronic forms, even though they do not look obviously different from ancient extension reflexes. This is also relevant for some suffixes in the languages dealt with in Table 20: the benefactive suffix *-ke* in Degema is possibly derived from *kɪjɛ* 'give' (Kari 1995: 150); repetitive *-pa* in Kulango could go back to *pá* 'again' (Elders 2007a: 192); and Segerer (2002: 226) even traces all but one of seven Bijago suffixes back to transparent and thus recent grammaticalizations, including the three items given in Table 20. It is clear that such late innovations cannot be reflexes of ancient Proto-Niger-Kordofanian verb extensions; however promising modern associations may be at first glance, they can nevertheless just as easily be look-alikes.

Clearly, the reconstruction of concrete verb derivation suffixes in Niger-Kordofanian is an extremely complicated issue that cannot be dealt with appropriately in an approach as followed by Voeltz (1977) but instead requires laboriously sifting through a huge amount of data. What Becher and Drolc (2007) summarize for a survey within the Atlantic pool, a relatively small set of languages, carries over to the historical-comparative picture across the entire Niger-Kordofanian domain: "Atlantic verb extensions are widespread, but varied and etymologies are mostly unknown. The establishment of cognates is obscured by sound and meaning changes, loss, merger and renewal processes."

The historical problem on the highest level of Niger-Kordofanian has been addressed most intensively by Hyman (e. g., 1993, 2004, 2007a, 2011, 2014). Due to his particular expertise in Bantu, he also took this group as his point of departure. Initially accepting Voeltz's (1977) work, he assumed "that the … Bantu/Atlantic verb-stem structure represents the Proto-Niger-Congo situation" (Hyman 2004: 71). This quite general claim was challenged by Güldemann (2011a: 119–123, 2013b). In particular, while the existence of an elaborate paradigm of verb extensions can be safely assumed for an early proto-language, it must be questioned whether Voeltz's reconstructions are valid (see above) and whether the specific complexity and morphotactics of the extension system in mainstream Bantu should be projected back to early Niger-Kordofanian.

As an illustration, in (2) I compare the so-called CARP (causative–applicative–reciprocal–passive) suffix-order template reconstructed by Hyman (2003) for Bantu and a largely matching structure in the Mel language Themne with the (simplified) verb stem structure of a selection of other languages (largely identical to that in Table 20) that also possess elaborate extension systems (/ separates different meanings of a single morpheme; […] signals morphemes after a final default vowel; (…) possible suffix stacking).

(2) a. "CARP" template in Early Bantu (Bantoid, Benue-Kwa) (Hyman 2003)
***ROOT-CAUS**-APPL-RCPR-PASS-**FINAL**

b. Themne (Mel, Atlantic) (Kanu 2004: section 1.4–1.5)
ROOT-CAUS/ITER-DIR/LOC-RCPR/INSTR/BEN~REFL-NEG

c. Cicipu (West Kainji, Benue-Kwa) (McGill 2009: 209, 221–232)
ROOT-PLUR-**CAUS-FINAL**-[ANTICAUS-APPL-PFV-CPET] (at least 6 of 9)

d. Igbo (Igboid, Benue-Kwa) (Ọnụkawa 1999)
ROOT-EXT1a-EXT1b-EXT2a-EXT2b-EXT2c-EXT2d-EXT2e (max. 6 of >30)

e. Degema (Edoid, Benue-Kwa) (Kari 1995: 164–166)
ROOT-RCPR/REFL/BEN/PLUR-**CAUS**-REFL-PLUR/HAB (max. 3 of 4)

f. Kulango (Kulangoic, Gur) (Elders 2007a)
ROOT-EXT1-EXT2-EXT3 (max. 3 of >15)

g. Longuda (Adamawa) (B. Newman 1978)
ROOT-TR-PLUR/RCPR-APPL-**FINAL**-[IPFV] (?4 of 4)

h. Bijago (Core, Atlantic) (Segerer 2002: 225)
ROOT-MIDorRSLT-INSTR-ASSC/RCPR/BEN**-CAUS** (max. 3 of 7)

Several observations can be made from the comparison in (2). First, restrictions on the number of suffixes are recurrent despite a larger suffix inventory, so that it remains unclear whether the inventory size goes hand in hand with a high degree of suffix stacking. Overall, there is no obvious correlation between the size of the suffix inventory, the possible number of suffixes on a verb, and/or the age of the overall system or individual markers. Regarding the last point, Igbo is a particularly dramatic case: the whole system, which at face value might be taken to support the assumption of a widespread and thus also early complexity, is with all likelihood of quite recent vintage, presumably emerging from the grammaticalization of verb root serialization and compounding. In a similar vein, the considerable differences between the complex verb-stem morphotactics across the languages, including CARP order in canonical Bantu, do not suggest that these patterns date back to an equally elaborate template in a very early language state. I will only mention two details in support of this view. For one thing, the causative suffix

occurs in very diverse positions: early in Bantu, Cicipu, and Themne; intermediate in Degema; and late in Bijago (and Moore of Gur, cf. Hyman 2011: 24). Moreover, only some languages and groups, namely Bantu, Cicipu, and Longuda, possess a so-called "final-vowel" segment, and its position in the suffix string differs immensely. The overall picture is certainly compatible with the alternative hypothesis that an elevated verb-stem complexity was an independent development after the break-up of the family.

Investigating the multiple challenges one faces when comparing verb extensions from more distant languages by roping in a wealth of language-specific and comparative data, Hyman (2014: 210) most recently makes a more reserved conclusion:

> Because of their distribution in Africa (and worldwide) and their ability to change, renew, and possibly be borrowed, I have not been able to find a reliable morphological property that uniquely indicates Niger-Congo. We therefore are dependent upon demonstration of cognacy, which is difficult because grammatical morphemes are so short and undergo natural reduction processes.

At the same time, he offers useful methodological pathways that can be used to tackle these problems in the future. These insights, together with the understanding that the comparison between single items of modern languages needs to give way to bottom-up reconstruction of entire systems in core groups of the family, promise advances that go well beyond the simple recognition that a typological feature is in principle reconstructable for an early proto-language.

2.5.2.1.3. Noun classification and gender

The hallmark of typical Niger-Congo languages is a system of noun classification involving both marking on the noun and nominal agreement, instantiating a canonical, though distinct, type of gender system in terms of Corbett (1991).

(3) a. ***m****-toto* ***yu****-le* ***m****-moja* ***a****-me-ni-pa* *cha-kula*
"1"-child 1-DI.DEM 1-one 1-PERF-1S.OBJ-give 7-food
*cha-****ke***
7:GEN-1:POSSR
'this one child gave me her/his food'

b. ***wa****-toto* ***wa****-le* ***wa****-wili* ***wa****-me-ni-pa* *cha-kula*
"2"-child 2-DI.DEM 2-two 2- PERF-1S.OBJ-give 7-food
*cha-****o***
7:GEN-2:POSSR
'those two children gave me their food'
(constructed)

The situation held to be typical is commonly illustrated by a Bantu language like Swahili. The examples in (3) show the following important features of such a system:

a) The marking normally involves overt exponents – in (3) in boldface – at the agreement trigger itself – in (3) the initial subject nouns *mtoto* and *watoto* – defining what is called here a noun form class as well as at the multiple agreement targets – in (3) demonstrative, numeral, verb, and possessor pronoun – defining an agreement class.
b) The exponents conflate gender and number and are predominantly dedicated to specific values in the system. Thus, the noun form class *m(u)* and the corresponding forms of the agreement class 1 in (3a) encode (reference to) a singular and human entity, while the noun form class *wa* and the corresponding agreement class 2 in (3b) encode (reference to) a plural and human entity.
c) The exponents of specific agreement and noun form classes normally stand in a one-to-one relationship, and moreover often have an identical form, as in (3)b. with an affix *wa* in both the noun form class *wa* and the agreement class 2 (the *o* in the last context derives underlyingly from *wa-o*), resulting in a highly alliterative system (the more complex case in (3a) is less typical). This recurrent phenomenon has led to the conceptual conflation of corresponding agreement and noun form classes under the philological notion "noun class" with a single numbering system, as in (3) with the two "noun classes" "1" and "2".
d) The system normally entails numerous such "noun classes" (in Swahili close to 20), most of which pair up for count nouns across the two number values, singular and plural, and form genders on account of the agreement behavior, paralleled by a typical number declension based on noun form classes (in (3), the gender is that of human nouns). The set of genders (and parallel declensions) is large, involving a wide range of semantic assignment features but notably excluding sex.

Already Westermann (1935) showed for many (but not all) such systems that they involve cognate markers in geographically widespread languages, notably from such important groups as the Gur pool; Mel in the Atlantic pool; and Ghana-Togo Mountain, Potou-Akanic, Edoid, Yoruboid, Igboid, and Bantoid in the Benue-Kwa pool. Later, similar evidence has been reported for additional groups, especially in the Adamawa pool. Such a situation meets the requirement for cognate paradigmatic morphology, reflexes of which are exemplified partly in Table 25 and section 2.5.3. Accordingly, the generalized skepticism by some non-Africanists like Campbell and Poser (2008: 130–132), who state that "reliance on the noun-classifier concord systems constitutes a serious problem for classification. The trait is not convincing as a 'genetic marker'," can only be understood if assuming their non-familiarity with the relevant, admitted widely dispersed literature.

Nevertheless, there are enormous problems in historically assessing this domain that have hampered a fuller reconstruction of a proto-system for the entire lineage. Some of them are discussed in the following. For one thing, Williamson's (1989b: 31) claim that "[t]he best-known grammatical feature of the Niger-Congo languages is undoubtedly their system of noun classification which, in a well-preserved, reduced or purely vestigial form, can be traced in every branch of the family, and hence must be reconstructed for proto-Niger-Congo", is robust with respect to the system's in-principle reconstructibility for an early language state but cannot be accepted so far regarding a "universal" distribution in the hypothesized lineage. Thus, some important assumed Niger-Kordofanian subgroups have not (yet) been shown to have (possessed) the noun classification system, so that their very family membership stands in question on account of this domain. This will also be documented in more detail in section 2.5.3. below.

A second major problem concerns the identification of what Williamson refers to above as "reduced or purely vestigial" forms of the proto-system. Given the large size, and accordingly the enormous time depth of the family, it comes as no surprise that a considerable synchronic diversity developed after it split up. Greenberg (1949a: 90–93, 1977, 1978) himself, as well as later works, for example, Demuth, Faraclas, and Marchese (1986), Williamson (1989b: 31–40), Dimmendaal (2001a: 377), and recently Good (2012), have charted parts of this diversity across Niger-Congo and outlined some of the historical dynamics leading to it. In so doing, they have also successfully disproved proposals by Westermann (1947: 15–16) and other earlier scholars claiming that certain phenomena in western Benue-Kwa languages, notably in number declension, are the result of contact interference with Bantu-like languages rather than the degradation and reduction of an inherited Niger-Congo system. All this research, however, does not give reason to identify in an easy manner noun class "vestiges" in all sorts of modern grammatical elements.

In cases where the language-/group-specific system displays close typological similarity to the proto-type, preferably in both agreement and noun form classes, the task of the comparison is primarily to establish cognate markers regarding both form and meaning. Such canonical historical research is complicated because the exponents across different families can diverge considerably in form. While in some languages noun form and/or agreement classes only display a thematic vowel (e. g., Edoid, Yoruboid, etc. in Benue-Kwa), in others they only have a thematic consonant followed by a default vowel (e. g., Cangin in Atlantic; Tula-Waja, Longuda, Bena-Mboi, and Kebi-Benue in Adamawa; and Mbaic in Ubangi). Before the general assumption that at least the larger portion of class markers, both on the noun trigger and on the agreement target, had a CV shape in the proto-language, this would imply the loss of the initial consonant and the neutralization toward an invariable vowel, respectively, which increases the possibility of chance resemblances. Nevertheless, comparison and reconstruction is a realistic

undertaking, once the data in the low-level groups are sufficient and are compared properly.

The necessity for an accurate and philologically informed historical analysis can be shown by several examples. Thus, the *k-class in some Cangin languages of Atlantic with the meaning of descendent and diminutive could certainly be connected in a superficial comparison with similar elements in other Niger-Congo languages, for example, the exponent of the Bantu class *7, which has a recurrent diminutive function. However, the diminutive meaning of Cangin *k- does not reflect any direct inheritance of such an old Niger-Congo class marker. It is shown in (4) that it results instead from the fact that the word for 'offspring', which starts with *k* and is for this phonological reason assigned to the *k*-class, is used as the initial head of compound nouns and passes on its agreement behavior to the complex nominal (cf. Drolc 2005: 126, 248).[11]

(4) Noon

kʊ	'offspring, child'
kʊ-baay	'puppy'
kʊ-dɔɔʔ	'little stick'

(Drolc 2005: 126)

Another case in point for an apparently old but spurious noun-class reflex is the human plural element *wa* specific to the Kru languages Godie and Bete. It could well be viewed as related directly to the Proto-Niger-Congo marker *ba of class *2. However, Marchese (1988: 325) proposes that it is a Kru-internal innovation, because it can be explained as the result of coalescence of the real human plural marker *ʊ of Proto-Kru and a defunct imperfective marker *a.

A yet more difficult situation for the historical comparison holds in all those languages that display very restricted agreement and/or noun form classes, or entirely lack one of the two components. Promising remnants of earlier agreement elements are recurrently found in third-person pronouns, notably elements that are the likely result of generalization of forms of the human gender classes *1/*2.

Once agreement is lost, any potential relation to the inherited system can only be discerned from nominal morphology in general and number declension in particular. Previous work has identified different types of marking that counts as a likely, or at least promising, reflex of an earlier Niger-Congo-type gender system. These are a) noun affixes, particularly in number-sensitive pairs (cf., e. g., Elugbe [1983] on Edoid and Boyeldieu [1983] on Buaic); b) lexicalized noun affixes on elements no longer functioning as nouns (cf., e. g., Miehe [1997b, 2001] on some

[11] Such cases must have happened multiply and at different historical stages. Kähler-Meyer (1971) argues for a very similar scenario within Bantu (or Bantoid) in that its diminutive class *19 derives from the widespread Niger-Congo stem for 'child'.

numeral stems in Gur); c) thematic elements on nouns that correlate with a specific class meaning (cf., e. g., Greenberg (1963a) referring to various languages with recurrent initial or final nasal segments on liquid and mass nouns indicating an earlier class *6A); and finally d) initial consonant alternation/mutation on nouns (cf., e. g., Klingenheben [1925] on Atlantic and Gerhardt [1988: 72] on Plateau).

At the same time, a number of phenomena can and have been associated with assumed Proto-Niger-Congo elements that have a (possibly) different origin and thus do not qualify as good evidence in favor of a family membership of a relevant language group. Such noun morphology, which may match assumed proto-classes in both form and meaning, concerns such diverse elements as grammaticalized heads of nominal compounds, number markers, adpositions, and non-agreeing determiners.

Olson (1996, 2006, 2012) has discussed a particularly instructive case within this general theme: the vowel prefixes found in many Bandaic languages were taken by Greenberg (1963a: 12–13) as noun-class reflexes but are in fact phonotactically required segments.

A more common phenomenon is that compound heads become affixes. They can easily take on a classificatory function as soon as they are applied to a larger set of nominals, but need not come to involve agreement, as opposed to the cases reported above. Thus, Elders (2006: 67–72) and Anonby (2005) provide an extensive discussion about noun affixes and "denominal performatives" in Kebi-Benue languages that look suggestive but are wrongly analyzed as traces of an older noun-class system. Earlier reports about such phenomena are Gerhardt (1988), dealing with various Plateau languages that use the stems for 'person' and 'child' as regular compound heads, and Storch (1999: 108–111), treating similar morphological forms in the Jukunoid language Hone.

Given that Niger-Congo noun affixes regularly mark gender AND number, simple number-sensitive affixes, especially making up a complex system, represent another major type of noun morphology that has been mistaken for a reflex of old noun-class marking. This problem is compounded by the fact that assumed Niger-Kordofanian groups in the (north)east are geographically entangled in an area whose languages are known for their complex number declension systems. An exemplary case of the facile interpretation of number marking as being related historically to an earlier noun-class system is the classification history of Kadu (U20). Greenberg (1963a) first assigned it to Kordofanian, and thus to the wider Niger-Kordofanian unit, because he saw in its complex system of noun prefixes a parallel to the class prefixes of neighboring language groups. Schadeberg (1981f: 301–304) later convincingly demonstrated the inadequacy of this approach by showing that these prefixes instead reflect a complex number-marking system, which is of the tripartite type identified by Dimmendaal (2000) for the wider area.

Last but not least, there is evidence that a language can acquire features of its noun morphology that look to be inherited from Proto-Niger-Congo by way of language contact. Thus, some Mbaic languages from the Ubangi pool, already possessing a suffix system, have borrowed noun prefixes from neighboring Bantu. Pasch (1987, 1988) reports that Ndunga took over a singular–plural prefix pair *li-*/*ma-* for around 50 nouns, which Greenberg (1963a: 13) had taken to be a direct reflex of the Proto-Niger-Congo gender *5/*6. According to Pasch (1986: 33–36), the Bantu prefix *mo-* of the human singular class 1 borrowed by Mba even shows the first signs of productivity. Mutual contact-induced changes in the nominal declension involving suffixing languages of Southeast Gurunsi (Gur) and prefixing languages of the Guang (Potou-Akanic) and Ghana-Togo Mountain groups are also entertained by Kleinewillinghöfer (2000, 2002: 76–79, 90).

Various historical factors can even conspire to create a considerably complex system of number declension that is quite Niger-Congo-like. The relatively recent emergence of nominal prefix morphology that indexes features relating to both number and nominal classification has been discussed repeatedly for unrelated West Nilotic languages (cf. Dimmendaal 2000, 2001a, 2001b; Storch 2003, 2005; Hieda 2011). The general process is said to have involved language-internal phenomena like inherited noun morphology and the grammaticalization of nominal compounds as well as language contact with neighboring Niger-Congo languages.

Dimmendaal (2000: 246–249, 2001a: 382, 2001b: 102–104) deals with the creation of prefixal number alternation in Dholuo, which is in contact with Bantu languages. This involves both language-internal formation and direct borrowing, as shown in Table 22.

Table 22: Noun prefixes sensitive to number and noun classification in Dholuo (after Dimmendaal 2000: 246–249)

	Singular	Plural	Historically related to:
Human	*ji-*	*jo-*	*jal/jo(o)l ‘traveler’
Human	*mi-*	*wa-*	Swahili loans in *mu-*/*wa-*
Diminutive	*nya-*	*nyi-*	*nyákɔ̂*/*nyiri* ‘girl, daughter’
Locative	*ka-*		*ka* ‘place’

Further north Storch (2003: 78–82) reports the similar emergence of a prefix system for Belanda Bor and connects this partly to contact with Belanda Viri, a language of the Ndogoic group in Ubangi (U17.G).

Table 23: Noun prefixes sensitive to number and noun classification in Belanda Bor (after Storch 2003: 81–82)

	Singular	Plural	Historically related to:
Human	*ji-*	*jò-*	*jal/jo(o)l ‘traveler’
Unmarked	Ø-	*ká-*	–/?
Diminutive	*dì-*		?*‘child’/?
Singularized mass	*ɲí-*	*káɲí-*	*ɲı ‘daughter’/unmarked plural

The noun prefix paradigms in Dholuo and Belanda Bor are still far from being like a gender system of the Niger-Congo type, notably because this type of morphology does not apply throughout the nominal lexicon and, more importantly, is not associated with agreement, but they are certainly parallel to Niger-Congo “noun classes” in that they encode both number and noun semantics. The history of these systems also throws some light on how an initially small morphological paradigm can become larger and more similar to the Niger-Congo canon, which can certainly mislead linguists in their search for distant genealogical relationships.

A third and final problem to be mentioned here for the historical-comparative assessment of Niger-Congo gender systems is the research bias, referred to in section 2.5.1., toward Bantu and its reconstructed proto-language.

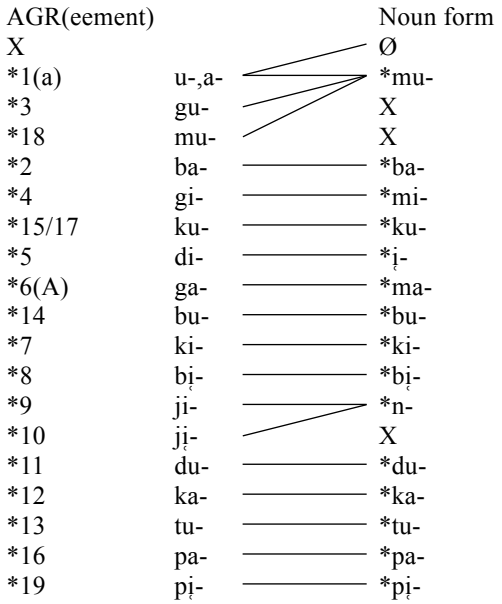
The Proto-Bantu “noun class” system is shown in Table 24. Assuming the overall adequacy of this reconstruction, its detailed information allows one to establish a close approximation to the original situation regarding in particular the number-mapping of agreement classes to form the gender system and the number-mapping of noun form classes to form the declension system, including the charting of several single-class categories for non-count nouns/referents.

Table 24: Proto-Bantu “noun classes” (conflating agreement classes and noun form classes) (after Meeussen 1967: 96–104)

“Noun class”	Number	Agreement class	Different agreement targets				Noun form class
			CONC	NUM	SBJ	OBJ	
*1a	S	1(a)	ju-	u- ?	u-, a-	mu-	Ø
*1	S						mu-
*3	S	3	gu-	u- ?	gu-	gu-	
*18	TR	18	mu-	mu-	mu-	mu-	
*2	P	2	ba-	ba-	ba-	ba-	ba-
*4	P	4	gi-	i- ?	gi-	gi-	mi-
*5	S	5	di-	di-	di-	di-	ị-
*6	P	6(A)	ga-	a- ?	ga-	ga-	ma-
*6A	TR						
*7	S	7	ki-	ki-	ki-	ki-	ki-
*8	P	8	bị-	bị-	bị-	bị-	bị-
*9	S	9	ji-	i- ?	ji-	ji-	n-
*10	P	10	jị-	ị-	jị-	jị-	
*11	S	11	du-	du-	du-	du-	du-
*12	S	12	ka-	ka-	ka-	ka-	ka-
*13	P	13	tu-	tu-	tu-	tu-	tu-
*14	S, TR	14	bu-	bu-	bu-	bu-	bu-
*15	S, TR	15/17	ku-	ku-	ku-	ku-	ku-
*17	TR						
*16	TR	16	pa-	pa-	pa-	pa-	pa-
*19	S	19	pị-	pị-	pị-	pị-	pị-

Note: single agreement class: *1/*1a (*6/*6A, *15/*17);
single noun form class: *1/*3/*18, *9/*10 (*6/*6A, *15/*17)

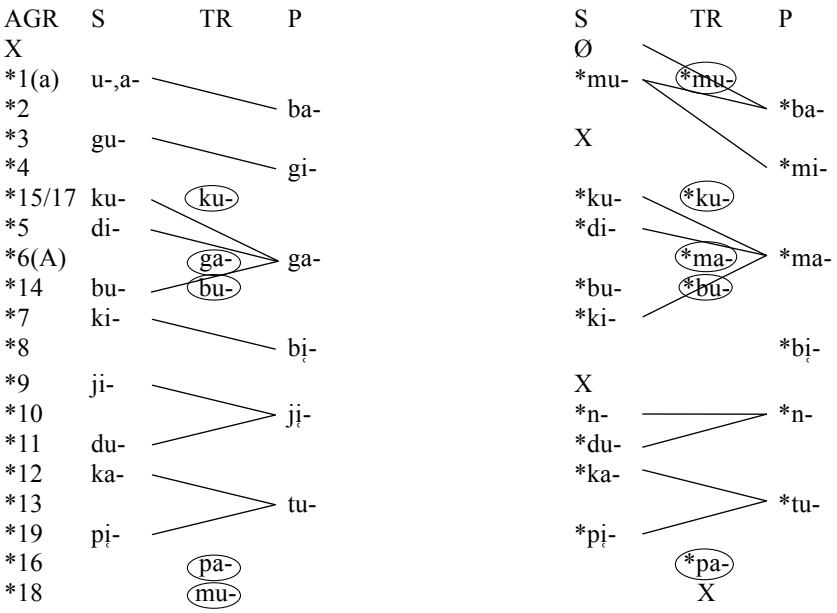
As mentioned in connection with (3)b., the system in modern Bantu languages and in their proto-language is portrayed primarily in terms of a one-to-one relation between a noun form class and an agreement class, often involving widespread alliteration. As Table 24 and Figure 5 show, however, even the reconstructed proto-system entails at least three major mismatches, namely two cases where one noun form class matches more than one agreement class and one case for the inverse situation.



Note: X = no independent counterpart in the other class type

Figure 5: Mapping of 18 agreement classes and 16 noun form classes in Proto-Bantu

In spite of the overall strong one-to-one alliterative mapping between agreement classes and noun form classes shown in Figure 5, the different size of their inventories, 18 vs. 16 classes, respectively, already implies that the gender system based on agreement and the declension system based on noun affixes cannot be identical. A full and explicit comparison is presented in Figure 6. The crucial differences are that the gender system is "convergent" in terms of Heine (1982) and Corbett (1991) and entails 10 paired genders for count nouns while the declension system is "crossed" and entails 11 morphological number alternations, caused by the additional Ø-marked noun form class.



Note: X = no independent counterpart in the other class type

Figure 6: Gender system (left) vs. declension system (right) of Proto-Bantu

This analytical picture means that the philological concept of a unitary "noun class", which conflates agreement class and noun form class, while capable of covering a large portion of the system, is nevertheless misleading regarding the whole picture, even in Bantu, for which the model was originally established. While the problem as such has been recognized (cf., e. g., Voorhoeve and Wolf 1969: 4), Güldemann and Fiedler (forthcoming) show that historical-comparative Niger-Congo research largely follows this Bantu tradition. However, in contrast to Bantu studies, there is a strong tendency to neglect agreement as the definitional parameter of gender and to use instead noun form classes and the declension system they establish to describe and reconstruct gender systems. This approach hampers the successfull historical comparison and reconstruction of earlier language states and thus also attainment of the ultimate goal of arriving at a likely proto-system. In order to overcome this problem, noun morphology and the resulting number declension system can certainly be addressed in tandem with agreement and the resulting gender system but should nevertheless be carefully separated from it. The following discussion of individual language groups is only to show the degree to which their systems are similar to the most robust reconstruction of Bantu, focusing on languages and groups that are not dealt with by Westermann (1935). When I deal with a system as a whole, I will mostly limit myself to the representation

of agreement-based genders and point out possible links to reconstructed Bantu classes. A summary survey of possible reflexes of the most frequently recurring classes, namely *1 for human singular, *2 for human plural, and *6A for liquid and mass nouns, is given in Table 25.

Table 25: (Potential) reflexes of classes *1, *2, and *6A across Niger-Kordofanian classificatory units

	Lineage	*1 Singular		*2 Plural			*6A Transnumeral			Source
		Noun affix	Concord/ pronoun	Noun affix	Concord/ pronoun	Meaning	Noun affix	Concord/ pronoun	Meaning	
(U6.A)	Bantoid: Bantu	*mu-	*ju/ a	*ba-	*ba	Human	*ma-	*ga	Liquid, mass	Meeussen (1967: 98)
(U6.A)	Bantoid: Ekoid	*ǹ-	–	*(b)à-	–	Human	*a-	–	Liquid, mass	Crabb (1965: 85, 98, 102)
(U6.B)	Cross River: Upper	*ò-/ ɔ̀-	*o/ɔ	*bà-/ bə-	*ba/ bə	Human	*mà-	*dà/ *də	Liquid	Dimmendaal (1978: 190–195)
(U6.B)	Cross River: Lower	*O-	–	*Ba-/ e-	–	Human	–	–	–	Connell (1987)
(U6.C)	Kainji-Platoid: Ninzic	*u-	*w(a)	*ba-	*ba	Human	*ma-	–	Liquid	Gerhardt (1972/73, 1983a: 202–205)
(U6.C)	Kainji-Platoid: *Yukuben*	*u-*	*u-*	*ba-*	*ba-*	Human	*ba-*	*ba-*	Liquid, mass	Prischnegg (2008: 135–136, 180)
U6.D	Igboid	–	*-yɛ́	–	*-ɓɛ́	3rd person	–	–	–	Williamson, Blench, and Ohiri-Aniche (2013: s.561, s.564)
U6.F	Nupoid: *Gade*	*ụ-*	*ụ-*	*ba-*	*ba-*	Human, 3rd person	*ba-*	–	Liquid	Sterk (1978)
U6.G	Edoid	*O-	–	*A-	–	Human	*A-	–	Mass	Elugbe (1983: 66, 67)
(U6.H)	Akpes: *Ekiromi*	*O-*	*-u*	*a-*	*-ba*	Human	–	–	–	Agoyi (1997: 2, 4)
U6.I	Ukaan	*O-	*O-	*A-	*A-	Human	*A-	*A-	Transnumeral	Abiodun (1997); Salffner (2009: 59–61)

U6.J	*Oko*	*ó-*	*-yẹ*	–	*-bẹ*	Human, 3rd person	–	–	–	Atoyebi (2010: 67, 110)
(U6.K)	Owon-Arigidi: *Arigidi*	–	–	–	*wá*	3rd person	–	–	–	Oshòdi (2011: 24–29)
U6.M	Yoruboid	*ɔ-	*-ŋũ	–	*-b'ã	Human, 3rd person	–	–	–	Akinkugbe (1978: 302–303, 779, 419)
(U6.O)	Ghana-T.-M.: Ka-Togo	*o- > -wə	*o	*ba- > -bə	*ba	Animate	*N-	*N	Liquid, mass	Heine (1968: 187–191, 129, 208–210)
(U6.O)	Ghana-T.-M.: Na-Togo	*o-	*o	*ba-	*ba	Animate	*N-	*N	Liquid, mass	Heine (1968: 187–191, 129, 208–210)
(U6.P)	Potou-Akanic: Guang	*O-	*O-	*bA-	*bA-	Human	*N-	*N-	Liquid, mass	Manessy (1987); Snider (1990); Fiedler (p. c.)
U6.Q	Ga-Dangme	–	*è-	–	*à-	Human	–	–	–	Kropp Dakubu (2006: 46)
U6.S	*Ega*	*ɔ-*	*ɔ-*	–	–	Human	*a-*	*a-*	Liquid, mass	Bolé-Richard (1983a)
(U7)	Dakoid	–	–	*-bū*	*bèè*	3rd person	–	–	–	Boyd (1994: 18, 2004: 223)
U9.A	Kru	*-ɔ	*ɔ	–	–	Human	–	–	–	Marchese (1988: 324–328)
U9.B	*Siamou*	–	*à*	–	–	3rd person	–	–	–	Prost (1964: 358)
U10	*Pere*	*-(ɣ)O*	*a/ yɛ*	*-(m)bɛ*	*bé*	(Animate) 3rd person	*-mu*	–	Liquid (some)	Creissels (2010: 3, 4–10)
(U11.A)	Atlantic: Cangin	–	*(y)a	–	*ɓa	Animate	*m-	*m-	Liquid, mass	Drolc (2005: 122–124; 119–121)
(U11.B)	Mel: Temnic	*(w)o-	*(w)o	*a-	*a	Animate	*ma-	*ma	Liquid, mass	Wilson (1961: 53–57)

	Lineage	*1 Singular		*2 Plural			*6A Transnumeral			Source
		Noun affix	Concord/ pronoun	Noun affix	Concord/ pronoun	Meaning	Noun affix	Concord/ pronoun	Meaning	
U11.C	*Gola*	*(w)o-...-(o)*	*(w)o*	*a-...-(ɲa)*	*a*	Animate	*ma-...-(ma)*	*ma*	Liquid, mass	Koroma (1994: 25–26, 59)
U11.D	*Limba*	*wu-* (et al.)	*wo*	*bV-* (et al.)	*be*	Animate	*ma-*	*ma*	Liquid, mass	Berry (1958)
U11.E	*Sua*	*(æ)-*	–	*-(än)*	*wa*	Animate	*m-/ N-*	*mɛ*	Liquid	Wilson (2007: 148, 212–213, 217–218)
U11.F	*Nalu*	–	*a-*	*bɛ-*	*bɛ(-)*	Animate	*ma-*	–	Liquid (some)	Wilson (2007: 131–134, 212–213, 217–218)
U11.G	Rio Nunez	*(w)O-	–	–	–	Human	–	–	–	Wilson (2007: 136, 212–213, 217–218)
U12	Mande	–	–	–	–	–	–	–	–	
U13	Dogon	–	–	–	*bO	Human, 3rd person	–	–	–	Heath and Prokhorov (2010)
U14	*Bangime*	–	–	–	–	–	–	–	–	
(U15.A)	Central: Oti-Volta	*-ʊ/ a	*ʊ/ a	*-(m)ba	*ba	Human	*-ma	*ma	Liquid, mass	Manessy (1975: 80–133)
U15.H	Senufo	*-wV	*wV	*-bVlV	*pV	Human	*-mV	*mV	Liquid, mass	Miehe (2007)
U16.A	Tula-Waja	*-V	*W	*-BV	*B	Human	*-mV	*B	Liquid, mass	Kleinewillinghöfer (1996b: 29–31, 2012c)
U16.B	Longuda	–	*a*	*-b*	*ba*	Human	*-mV*	*mV*	Liquid, mass	Jungraithmayr (1968/69); B. Newman (1978)

U16.C	Ɓəna-Mboi	–	⁎(y)a	⁎-Ba	⁎Ba	Human	⁎-ma	⁎ma	Liquid, mass	Kleinewillinghöfer (1992, 1993)
U16.H	Kebi-Benue	–	–	–	–	–	-mI	–	Liquid, mass	Elders (2006: 65–67)
U16.N	Fali	–	–	–	*oᵛwa	3rd person	-m	–	Liquid (some)	Sweetman (1981: 90)
U17.A	Gbayaic	–	*ʔa̱	–	*wà	3rd person	–	–	–	Moñino (1995: 649)
U17.B	Zandic	–	–	⁎a-	–	3rd person (animate)	–	–	–	Tucker (1959: 119, 180, 221)
U17.C	Mbaic	*-wo	*w	–	–	Human	*-mV	*-m	Liquid, mass	Pasch (1986: 359)
U17.E	Ngbandic	–	⁎à	⁎á-	–	3rd person	–	–	–	Moñino (1988: 118); Boyeldieu (1982c: 34)
U17.F	Bandaic	–	–	⁎a-	–	3rd person (animate)	–	–	–	Tucker and Bryan (1966: 89)
U18.A	Heibanic	*gu-	*gu-	–	–	Animate	*ŋ-	*ŋ-	Liquid, mass	Schadeberg (1981a: 132–152)
U18.B	Talodic	*pV-	*pV-	–	–	Animate	*ŋu-	*ŋu-	Liquid, mass	Norton and Alaki (2015: 107–112)
U18.D	Rashadic	*w-	*w-	–	–	Animal	*ŋ-	*ŋ-	Liquid, mass	Schadeberg (2013: 330, 333–338)

Notes: (U…) = data disregard portions of a lineage; likely reflexes of proto-form are left-aligned; likely secondary reflexes of proto-form are right-aligned; – = no relevant form; *xxx* = single-language form; * = cited reconstruction; ⁎ = pseudo-reconstruction

Table 26: Typical nominal lexemes across Niger-Kordofanian classificatory units

	Lineage	'person'			'people'			'tongue'			Source(s)
		Prefix	Root	Suffix	Prefix	Root	Suffix	Prefix S/P	Root	Suffix S/P	
(U6.A)	Bantoid: Bantu	*mu-	ntu		*ba-	ntu		*du-/jị-	dímị		Meeussen (1980: 46, 53; 1967: 98)
(U6.A)	Bantoid: Ekoid	*ǹ-	nɛ̀		*(b)à-	nɛ̀		*(l)E-/-	LEBE		Crabb (1965: 85; 98)
(U6.B)	Cross River: Upper	*ò-	nɛ̀TO		*bà-	nɛ̀TO		*–	díBí		Dimmendaal (1978: 311, 313, 276 ['to lick'], 279)
(U6.B)	Cross River: Lower	NO			NO			*ɛ́-/a-	lɛ́mɛ̀		Connell (1994: 17)
(U6.C)	Kainji-Platoid: Ninzic	*u-	nEt		*ba-	nEt		*i-/?-	rem		Gerhardt (1983a: 149, 153)
(U6.C)	Kainji-P.: Central Jukunoid	*̩	ŋguT	-u	*̩	ŋ̣guT	-a	*̩(–)	dema		Shimizu (1980, 2: 172; 79–80)
U6.D	Igboid	*ó-	nḿC̃ḗ		?			*̩i-	dV		Williamson, Blench, and Ohiri-Aniche (2013: series 185, series 466)
U6.E	Idomoid	*ọ-	ŋ̣inyị		?			?			Armstrong (1983: 115)
U6.G	Edoid	–			–			*U-/A-	dhamhı		Elugbe (1986: 163)
U6.H	Akpes	*ɔ̄-	nī		*̩ā-	nī		*i-	da(-)		Agoyi (1997: 2); Ibrahim-Arirabiyi (1989: 35)
U6.I	Ukaan	*ɔ̀-	ní		*̩à-	ní		NO			Abiodun (1999: 302, 325)

U6.K	Owon-Arigidi	₊ɛ- nɛ̃	–	₊– rɛ̃	Fadoro (2010: 56, 126)
U6.M	Yoruboid	*ɔ- nĩ	*ɛ- nĩ	*è-/– dè	Akinkugbe (1978: 640, 510–512)
U6.N	Gbe	₊– nũ-	₊– nũ-	*– ɖɛ́	Capo (1991: 220, 224); Kluge (2000: 114, 118, 120)
(U6.O)	Ghana-T.-M.: Ka-Togo	? *o- tEN	? *ba- tEN	₊ki-/bi- nE(B)i	Heine (1968: 246, 237)
(U6.O)	Ghana-T.-M.: Na-Togo	? *o- tEN	? *ba- tEN	₊o-/- NEmi	Heine (1968: 246, 237)
(U6.P)	Potou-Akanic: Guang	*o- ɲV	*a- ɲV	?	Manessy (1987: 30)
U6.Q	Ga-Dangme	? ₊ Nu –	NO	*lí- lɛ̄ –	Kropp Dakubu (2006: 37, 47)
U6.S	*Ega*	? ɔ- *ɲáà*	?	NO	Blench (2004b: 4, 3)
(U7)	Dakoid: *Samba Daka*	? *nèé*	NO	? *lą́ą̀*	Boyd (1997: 182, 196)
(U8)	Ijoid: Ijo	NO	NO	*i̱- ɓɛ̱l -ɛʊ	Williamson (2004b: 24, 34)
U9.A	Kru	₊ nI -(O)-	?	₊ mĨ(l) -(O)	Marchese (1983: 349, 393)
U9.B	*Siamou*	NO	NO	*dɛ* /-´	Prost (1964: 427, 431)
U.10	*Pere*	? *nɔ̀* *-ŋɔ̀*	? *nì* *-mbɛ*	? *jèŋ* *-gé*	Creissels (2010: 8, 6)
(U11.A)	Atlantic: Cangin	NO	NO	*pe-/tE- ɗe(e)m (-)	Drolc (2005: 122, 237, 127 f, 235)
(U11.B)	Mel: Temnic	NO	NO	₊dE-/ meL (-)/EN	Dalby (1965: 13)
U11.C	*Gola*	*(o)- ṅun* *-(o̱)*	*a- ṅun* *-(ṅã)*	*(-) miè(l)* *(-)*	Westermann (1921: 27–30, 178)

	Lineage	'person'			'people'			'tongue'			Source(s)
		Prefix	Root	Suffix	Prefix	Root	Suffix	Prefix S/P	Root	Suffix S/P	
U11.D	*Limba*	? *(wu)-*	*n(de)*		? *bi-*	*n(de)*		*fi-/tafi-*	*liṅ*		Clarke (1922: 101, 133 ['(s) he'], 141 ['they'], 143)
U11.E	*Sua*		*nɛɛr*			*nɛɛr*	*-an*	*(n)-/i-*	*dɛm*	*-ɛtɛ*	Wilson (2007: 213, 223)
U11.F	*Nalu*	*n-*	*neen*		*bɛ-*	*neen*		*/a-*	*rim*		Wilson (2007: 213, 223)
U11.G	Rio Nunez	*wu-	nV		*BE-	N		*(E)-/a-	lEm		Wilson (2007: 213, 223)
U13	Dogon	*	nu		*	nu	-bo	*	nEN	-dV	Heath and Prokhorov (2010); Moran, Forkel and Heath (2016)
U14	*Bangime*	NO			NO			NO			Hantgan (2013: 336, 338)
(U15.A)	Central: Oti-Volta	*	nit(V)	-V	*	nit(V)	-ba	*(Je)-/-	lEm	–	Manessy (1975: 287, cf. 264, 278; 273)
U16.A	Tula-Waja	*	nI(r)		*	nI	-b(U)	*be-	lEm	-tV	Kleinewillinghöfer (2012c)
U16.B	Longuda	*	(n)yIr	-E	*	(n)yI	-bE	*dI-	lIm	-Ka	Kleinewillinghöfer (2014c)
U16.C	Ɓəna-Mboi	*	yet	-e	*b-	Et	-a	*dE-	lmaa	-ra/ta	Kleinewillinghöfer (2011c)
(U16.E)	Samba-Duru (minus Samba)	?			?			*	mE(l)	–	Boyd (1974); Kleinewillinghöfer (2015c)
U16.F	Mumuyic	NO			NO			*	dEE	-tE	Shimizu (1979: 97, 100)
U16.G	Maya	NO			NO			NO			Kato, Yoder, and Blench (n.d.: vi, iii)
U16.H	Kebi-Benue	? *	rV		*	rV		*(le)-	lim		Boyd (1974: 63 ['man'], 82 ['old person']; 77)
U16.K	*Day*	NO			NO				*le*	*-le*	Nougayrol (1980: 169; 164)

U16.L	*Baa~Kwa*	NO	NO	*dyẽ̀ǹ* *-(vì)*	Kleinewillinghöfer (2011b)
U16.M	*Nyingwom~Kam*	*à-* *nyíu*	*nyí* *-yo*	*à-* *lím* *-ə́ní*	Kleinewillinghöfer (2015b)
U16.N	*Fali*	* nidu	*(ɔ)- nit -ʌy	* ř ɛ:ŋ -gu	Sweetman (1981: 73 [‘man’], 54; 76)
U17.A	Gbayaic	NO	NO	* lé(m) -Be	Moñino (1995: 563; 541)
U17.B	Zandic	⁎gwa- nI	?	⁎ miLa -a	Tucker (1959: 264–265; 258–259)
U17.C	Mbaic	NO	NO	⁎(-) mE -	Pasch (1986: 385; 383)
U17.D	Mundu-Baka	NO	NO	⁎ mI(DN) -E	Moñino (ed., 1988: 128; 120)
U17.E	Ngbandic	? ⁎ zò	? ⁎a- zì	⁎(li)- mEn -ga-	Moñino (ed., 1988: 128; 120)
U17.F	Bandaic	? ⁎ zū	? ⁎a- zū	NO	Moñino (ed., 1988: 128; 120)
U17.G	Ndogoic: South	? ⁎ dù	?	⁎ mè	Santandrea (1961: 156–157; 160–161)
U18.A	Heibanic	NO	NO	*d̪-/d- ŋela	Schadeberg (1981a: 42–43, 179; 50–51, 176–177)
U18.B	Talodic	*p- ɔl(ɔ)	ɔl(ɔ)	*t̪u-/l̪ə- ləŋɛ	Norton and Alaki (2015: 138, 140)
U18.C	*Lafofa*	NO	NO	*liáŋi*	Schadeberg (1981b: 35, 41)
U18.D	Rashadic	⁎- JVt	⁎– JVt (-)	⁎– ŋV(l) (-)	Schadeberg (2013: 336, 337)

Notes: (U…) = data disregard portions of a lineage; – = no form(s) given; *xxx* = single-language form; * = cited reconstruction; ⁎ = pseudo-reconstruction; ? = no single (plausible) reconstruction; NO = no cognate with Niger-Congo form based on superficial inspection

Table 27: Lower numerals across Niger-Kordofanian classificatory units

	Lineage	**'two'**	**'three'**	**'four'**	**'five'**	**Source**
(U6.A)	Bantoid: Bantu	*-bV.di	*-tá.tu	*-na.ị	*-táa.no	Meeussen (1967: 105)
(U6.A)	Bantoid: Jarawan	*-ba.ri	*-ta.tu	*-n(E)	–	Gehrhardt (1982: 94, 84)
(U6.A)	Bantoid: Ekoid	*-ba.(l)	*-Tá(a)	*-nE	*-Tɔ̂.n	Crabb (1965: 68–69, 97, 99)
(U6.A)	Bantoid: Mambiloid	*Ba	*ta.R	*na	*tV.n	Connell (2010)
(U6.B)	Cross River: Upper	*-ppán-	*ttá.DN	*-nà.(ŋ)i	*tá.ǹ(ò)	Dimmendaal (1978: 243, 267, 273, 312)
(U6.B)	Cross River: Lower	*-bà	*-tá	*-nĭàŋ	*-tíò.n	Connell (1991: 340–341)
(U6.C)	Kainji-Platoid: Ninzic	*-pah	*-ta.t	*-na.s	*-tó.ŋ	Gerhardt (1983a: 144, 153)
(U6.C)	Kainji-P.: Central Jukunoid	*-pan	*-ta.r	*(-)NE.(n)	*-to.n	Shimizu (1980,2: 1, 51–52, 108, 61–62); Storch (1999: 373)
U6.D	Igboid	*-bòwá	*-tɔ́	*-nɔ̀	*-tɔ̃́	Williamson, Blench, and Ohiri-Aniche (2013: series 551–554)
U6.E	Idomoid	*-pà	*-tā	*-nE	*-rūɔ̄	Armstrong (1983: 111, 116–118, 121)
U6.F	Nupoid	*-ba	*-ta	*-nV	*-tu.(N)	Blench (2013d: 133–135)
U6.G	Edoid	*-və	*-cha.Gɪ	*-niə	*-chi.Nə.nhi	Elugbe (1986: 150, 153, 211, 228)
U6.H	Akpes	*-di.aN	*-sa.s	*-ni.(N)	–	Ibrahim-Arirabiyi (1989: 33, 35)
U6.I	Ukaan	*wà	*tá.ɾV	*nā́.hī́	*tʃɔ̃̀.nṼ	Abiodun (1999: 331)
U6.J	*Oko*	*-bọ̀.rẹ̀*	*-ta*	*-na*	*u-pi*	Atoyebi (2010: 150)
U6.K	Owon-Arigidi	*-ji	*-da	*-nɛ	*-tṼ	Fadoro (2010: 90)
U6.L	Ayere-Ahan	*-ji	*-ta	*-rEn	*-(n)tu	Blench (2007b: 15); Ogunmodimu (2015: 66)
U6.M	Yoruboid	*-jì	*-ta	*-rĩ	*-rɔ̃ā́	Akinkugbe (1978: 480, 590, 614, 666)

U6.N	Gbe	*-’bè	*-tɔ̃̀	*-nɛ̃̄	*à.tɔ́	Capo (1990: 66–67); Kluge (2000: 141–143)
(U6.O)	Ghana-T.-M.: Ka-Togo	?	*-ta	⁎-nV	⁎-to.(N)	Heine (1968: 236–237, 245, 248)
(U6.O)	Ghana-T.-M.: Na-Togo	⁎-NO	⁎-tE	*-na	⁎-(to).no	Heine (1968: 236–238, 245, 248)
U6.P	Potou-Akanic	*(-)ɲɔ̃	*-tã	*-nã	–	Stewart (1993: 28, 35, 37; 2002: 215, 223)
U6.Q	Ga-Dangme	*-nyɔ̰	*-tɛ̰	⁎JwE	*-nṵ.mɔ̰	Kropp Dakubu (2006: 46, 54)
U6.R	Lagoon: *Abe*	*a.ñɔ̃*	*a.re*	*a.lɛ*	*o.ni*	Dumestre et al. (1971: 270–271)
U6.S	*Ega*	*-ɲɔ̀*	*-tà*	*-lɛ̀*	*-ŋwè*	Blench (2004b: 11)
U7	Dakoid	⁎ba.ra	⁎ta.ra	⁎na.sa	⁎tO.(ŋ)o.na	Boyd (1989b: 170)
U8	Ijoid	*mą̱ą̱-mV̱	*taa.tʊ	*-nọ̱.i̱	*tʊ.ŋọ̱.ɾɔ̱	Williamson (2004b: 14, 33, 35)
U9.A	Kru	⁎sO/sÕ	⁎ta/tã	⁎(-)na/ɲiɛ	?	Marchese (1983: 399–400)
U9.B	*Siamou*	*nĩ*	*tya.r*	*yiro*	*kwẽ*	Prost (1964: 354)
U10	*Pere*	*yɔ̀ŋgɔ́*	*tà:.ŋɔ́*	*ná:*	*nû*	Creissels (2010: 7, 9, 10)
(U11.A)	Atlantic: Cangin	*ana	*a(ɛ)ʤ(a)y	?	?	Drolc (2005: 203)
(U11.B)	Mel: Temnic	⁎-rə.ŋ	⁎-sa.s	⁎-aŋ(ə)lɛ	⁎(kə)Tamat	Wilson (1961: 62)
U11.C	*Gola*	*ti.el*	*tɛ́.(l)*	*tɛ́.nâ*	*nó.no*	Westermann (1921: 39)
U11.D	*Limba*	*-le*	*-ta.t*	*-na.ṅ*	*-sọhi*	Clarke (1922: 94, 96, 142, 144)
U11.E	*Sua*	*-ceŋ*	*-ra.r*	*-na.n*	*sɔŋgun*	Wilson (2007: 200–201)
U11.F	*Nalu*	*-lɛ*	*pwaat*	*-na.ŋ*	*tɛɛduŋ*	Wilson (2007: 200–201)
U11.G	Rio Nunez	⁎-lE	⁎-Tɛ.T	⁎-nə.ŋ	?	Wilson (2007: 200–201)
(U12)	Mande: Southwest	*fele	*sa(g)ba	*naa.ni	*zɔlɔ	Dwyer (1988: 145); Kastenholz (1996: 188, 189)

	Lineage	'two'	'three'	'four'	'five'	Source
(U12)	Mande: Niger-Volta	*pela	*jalko	*sireko	*sodu	Schreiber (2008: 327)
U13	Dogon	⁎leV	⁎ta.n(dV)	⁎nai	⁎nu(m)V	Moran, Forkel and Heath (2016)
U14	*Bangime*	*jíndò*	*táá.rù*	*néè*	*núndì*	Hantgan (2013: 489)
(U15.A)	Central: Oti-Volta	*le	*ʈa	*na:.(si)	*nu	Manessy (1975; 180, 306, 308)
(U15.A)	Central: Gan-Dogose	⁎-nyo	⁎-sa	⁎-nyi	⁎-mU.wa	Miehe (2001: 270)
U15.B	Kulangoic	?	⁎sA.(r)	⁎na	⁎tO	Miehe (2001: 271)
U15.C	*Miyobe*	*-tí:.ré*	*-tā:nī*	*-nā*	*-nūbū*	Pali (2011: 262)
U15.D	Tiefo	⁎jõ	⁎sã	⁎ŋ(w)Õ	⁎kã	Heath, Ouattara, and Hantgan (2017: 40)
U15.E	*Vîemo*	*nii.ni*	*saa.si*	*juumi*	*kwɛge*	Prost (1979: 39)
U15.F	Tusian	⁎ni.nV	⁎tṼ.nṼ	⁎(V)nyã	⁎k(V)lV	Prost (1964: 279); Zaugg-Coretti (2005: 36)
U15.G	Samuic	?	⁎tV	⁎naa.(so)	⁎susu	Miehe (2001: 271)
U15.H	Senufo	⁎Suni	⁎ta.r(e)	⁎TiKyEr(E)	⁎kaKuro	Miehe (2001: 271)
U16.A	Tula-Waja	⁎-rVP	⁎-taa.T-	⁎-naa.T	⁎-nU.(N)-	Kleinewillinghöfer (2012c)
U16.B	Longuda	⁎-Kwa(i)	⁎-(t)sE.r	⁎-nyI.r	⁎-nyO.(N)	Kleinewillinghöfer (2014c)
U16.C	Ɓəna-Mboi	⁎fEtE	⁎taa-	⁎kurun	⁎-nO.n	Kleinewillinghöfer (2011c)
(U16.E)	Samba-Duru (minus Samba)	⁎-i.tV	⁎taa.r	⁎naa.r	⁎-nO.n-	Boyd (1974: 68, 73, 75); Kleinewillinghöfer (2015c)
U16.F	Mumuyic	⁎zi.ti	⁎taa.ti	⁎(d)nee.ti	⁎maani	Shimizu (1979: 82, 106–107)
U16.G	Maya	⁎iDNE(t)	⁎taa.t	⁎naa.t	⁎nu.ŋ	Kato, Yoder, and Blench (n.d.: v)
U16.H	Kebi-Benue	⁎si.tV	⁎sa.i	⁎na.i/na.N	*ndep	Boyd (1974: 68, 73, 75)

U16.I	Kimic: *Kim*	*zī	*ta(')	*nda	*nũy	Lafarge and Seignobos (1975: 104)
U16.K	*Day*	*dĩí*	*tāà*	*ndāà.g*	*sāri*	Nougayrol (1980: 154, 157, 171, 177)
U16.L	*Baa~Kwa*	*gbéè*	*mwáàn*	*nà.t*	*núú*	Kleinewillinghöfer (2011b)
U16.M	*Nyingwom~Kam*	*yiraak*	*cà.r*	*ná.r*	*ŋwú.n*	Kleinewillinghöfer (2015b)
U16.N	*Fali*	*cuk*	*ta:.n	*na:.n	*kɛ̃rɛw*	Sweetman (1981: 90–91); Kramer (p. c.)
U17.A	Gbayaic	*l̩íí.tò/ *bùà	*tà.r(à)	*ná.r(á)	*mɔ̀rkɔ́	Moñino (1995: 654)
U17.B	Zandic	?	*-ta.(i)	?	*-SʊH	Boyd and Nougayrol (1988: 69–71)
U17.C	Mbaic	?	?	*-na	?	Pasch (1986: 398)
U17.D	Mundu-Baka	*-Si	*-tà	*-na	*Būè	Winkhart (in prep.); cf. Moñino (1988: 101, 106, 133, 142)
U17.E	Ngbandic	*-sè	*-tá	*-siO	*-kO	Moñino (1988: 101, 106, 133, 142)
U17.F	Bandaic	*-Sì	*-tà	*-nā	*mīndû	Moñino (1988: 101, 106, 133, 142)
(U17.G)	Ndogoic: South	*(-)s.o	*ta.o	*na.o	*vo.o	Santandrea (1961: 37); cf. Moñino (1988)
U18.A	Heibanic	?	?	*-aŋ̰ŋo	*-u̪dine	Schadeberg (1981a: 56, 180–181)
U18.B	Talodic	*-eḍac	*-ə̪t̪t̪ək	*bəḍandɔ	(derived)	Norton and Alaki (2015: 151)
U18.C	*Lafofa*	*pa.ḏéér.iŋ*	*pa.daa.iŋ*	*kêkká*	*kilíɛgúm*	Schadeberg (1981b: 45)
U18.D	Rashadic	*-(r)ko(k)	*-V.tta	*-aaram	*-arVm	Schadeberg (2013: 338)

Notes: (U…) = data disregard portions of a lineage; likely reflexes of proto-form are left-aligned; likely secondary reflexes of proto-form are center-aligned; non-cognates of proto-form are right-aligned; – = no form(s) given; *xxx* = single-language form; * = cited reconstruction; * = pseudo-reconstruction; ? = no single (plausible) reconstruction

2.5.2.2. Lexicon

Since Westermann's (1927b) pioneering work it has been recognized that many language groups subsumed today under Niger-Kordofanian share a considerable lexical stock. Mukarovsky's (1976/7) study has further substantiated this impression, although his scope over different groups is partly different and in particular excludes the Mande family. The major problem with both comparative studies is that the results are not genuine lexical proto-forms. Stewart, who has been working since the 1970s according to standard methodology on a pilot lexical reconstruction comprising Proto-Bantu and Proto-Potou-Akanic (previously Potou-Tano), gives a fair judgement about the state of the art in Niger-Kordofanian lexical comparison when he writes (2002: 201):

> In fact my Proto-Potou-Akanic-Bantu is the only true protolanguage on offer that is ancestral to Proto-Bantu. Mukarovsky, like Westermann before him, provides starred forms, and the unwary have often mistaken these for true reconstructions arrived at by the comparative method, though Mukarovsky himself accurately characterizes Westermann's starred forms as "pseudo-reconstructions of Proto-Western Sudanic" ([Mukarovsky 1976/7] vol. 1: 36) and, to his credit, refrains from claiming that the status of his own Proto-Western Nigritic starred forms is any different. Pseudo-reconstructions differ from true reconstructions in that it is not possible to derive from them, by a specified set of diachronic rules, their putative reflexes in the daughter languages.

The fact that Stewart's Proto-Potou-Akanic-Bantu merely comprises two lineages from within the Benue-Kwa pool implies that the scope of genuine historical-comparative lexical reconstruction in the Niger-Kordofanian domain is currently still limited indeed.[12]

There is, of course, other published work on lexicon-based comparison and classification in Niger-Kordofanian. However, this is restricted either to lexicostatistic analysis (notably Bennett and Sterk [1977], which triggered several follow-up studies), or to the discussion of relatively few sample lexemes and their supposed phonological change, which suffers from a limited and often ecclectic database. The latter holds in particular for Williamson's (1971, 1992, 2000b, 2004a; see also Elugbe and Williamson 1977) studies. Apart from a considerable bias toward establishing Ijoid as a member of the larger family, it is also noteworthy that her work has engaged little with the canonical reconstructions available, notably those by Stewart.

This evaluation by no means implies the absence of a lexicon that spans large portions of the Niger-Kordofanian domain and which may turn into a set of robust

[12] Stewart (2007) extends his research scope to include so-called "Fulanic" languages representing Atlantic (in the narrow concept of section U11.A) but can only advance abstract comparisons of phoneme systems rather than concrete lexical proto-forms.

proto-forms after dedicated and rigorous research. As an illustration, Table 26 assembles comparative data for two stems for 'person' and 'tongue', including their grammatical behavior, that display considerable similarities across different groups and languages. In part, these have already been subjected to detailed historical-comparative inspection (cf., e. g., Wolf [1992] on the intricacies of and possible solutions to the reconstruction of 'tongue', or Meeussen's [1974] demonstration, confirmed here even outside Benue-Kwa, that the root *n(V)tV 'person' is, *pace* Greenberg [1974], not a Bantu innovation). These data only serve to show that a sufficiently large genealogical core within Niger-Kordofanian is also supported by lexical evidence. It goes without saying that the mention of a particular group- or language-specific form in the table is not meant to imply any claim, let alone establishment, of cognacy. Also, the still enormous variation of the forms cited in Table 26 does not ensure that parts of a comparative series can always be distinguished clearly from similar forms in unrelated languages (see, e. g., 'tongue' vis-à-vis Hieda's (2009: 107–108) similar forms in Nilotic languages).

As discussed in section 2.2.3, a yet more promising line of research is the inspection of lexical paradigms. One potentially fruitful domain, namely numerals, has been and still is a recurrent focus of research (cf., e. g., Hoffmann 1953; Meeussen 1969; Boyd 1989b; Miehe 1997b, 2001; Williamson 2000b). Pozdniakov (2012) is the most recent treatment of lower numerals across the entire domain, including an extensive and insightful discussion of relevant methodological problems.

Similar to my approach to pronoun paradigms (see section 2.5.2.1.1 above and Güldemann 2017), I have surveyed the lower numerals 'two', 'three', 'four', and 'five' across a large number of Niger-Kordofanian subunits, the data of which are given in Table 27. On this basis it is possible to advance a preliminary reconstruction of a proto-paradigm, as given in the first line of Table 28.

Table 28: Proposed lower numeral paradigms of Proto-Niger-Congo

Source	**'two'**	**'three'**	**'four'**	**'five'**
Güldemann	$_{*}$Ri	$_{*}$ta(C)	$_{*}$na(C)	$_{*}$nU
Pozdniakov (2012)	*-di	*thati	–	–
Mukarovsky (1976–1977: LXX, LXIX, LX, LIX)	*-bà.li	*-tháthu	*-nán-/ *-ní(a)-	*-t(s)á.nu
Westermann (1927b: 204, 221, 263–265, 271)	*-bà-/*-gÌ/ *-n(i)u(a)	–	*-na(n)-/*-ni	-nú-

The proto-forms I propose are similar to those advanced by earlier research but have a better empirical foundation in that they are based partly on intermediate reconstructions and a more complete coverage of subgroups. Another similarity to the

situation with pronouns is that some earlier reconstructions of numerals are arguably biased toward forms recurrent in Benue-Kwa and Bantu in particular. Especially Mukarovsky's proto-forms for 'two' and 'five' (like those of Williamson 2000b: 57–59) project back initial CV segments to the Proto-Niger-Congo stage although they occur almost exclusively in Benue-Kwa languages. In line with earlier discussions (see Miehe 1997b, 2001; Pozdniakov 2012), these elements are better analyzed as prefixes incorporated into these numeral stems in later periods and subgroups.

2.5.2.3. Typology

In a language family of the assumed age and size of Niger-Kordofanian (or Niger-Congo) one must expect a considerable amount of typological diversity, and this is indeed the picture found across modern languages. Table 29 records basic features of word order (transitive clause, noun phrase) and morphology ("noun classes", verb extensions) that have received some attention in the reconstruction of the early typological profile in the Niger-Kordofanian domain.

There has been considerable controversy over the original word order profile of Niger-Congo. A focused discussion of this issue was initiated by Givón (1971a, 1971b), particularly in his influential (1971a) article, where it is argued that synchronic morphology largely reflects diachronically earlier syntax. He started out in particular from the observation that many Niger-Congo languages display suffixes in various grammatical domains, which, in his account, reflects earlier syntactic head constituents. He thus entertains a large-scale word order shift from a consistently head-final to a head-initial syntax for the entire family. Later studies, for example, Givón (1975, 1979), Hyman (1975), Lord (1977), Madugu (1979, 1981), and Williamson (1986), reiterated or followed this hypothesis.

While Givón's general idea has a number of merits for historical linguistics, it also has risks when applied too mechanically. Its concrete application to the Niger-Congo problem does not take a number of other aspects and alternative explanations into account. These are in particular the following: a) a cross-linguistic suffixation preference irrespective of syntax (cf., e. g., Bybee, Pagliuca, and Perkins 1990; Himmelmann 2014); b) the observation that (proto)-languages need not be consistent regarding the syntactic parameter of headedness; and c) the historical caveat that some families, for example, Mande and Ijoid, which are thought to lend crucial support to the head-final hypothesis, may turn out to be unrelated and hence irrelevant to the question at issue.

The alternative view that Niger-Congo was by and large head-initial has been proposed at least since Heine's cross-African research on word order typology (1975, 1976a). Defense of and further support for this hypothesis is provided by Heine (1980), Claudi (1993), and Heine and Claudi (2001), focusing in particular on the attested innovative emergence of the preverbal position of objects by way of grammaticalization changes (see also Marchese 1986). These studies have so far

not been challenged again by the opposite view of Niger-Congo being originally head-final.

Gensler (1994, 1997), Gensler and Güldemann (2003), and Güldemann (2007b, 2008d, 2011a) support the idea of an early head-initial profile of Niger-Congo but view the phenomenon of preverbal objects in Niger-Congo as a potentially old alternative clause order with a history of multiple causation. Notably, many cases of innovative O-V patterns are arguably triggered by information-structural factors. Moreover, a likely contributing circumstance for the emergence of preverbal objects in some secure Niger-Congo groups was local contact with languages possessing this feature regularly like Mande, Dogon, and Ijoid. This factor might also be relevant for some of the variation that holds in the noun phrase of western and central Niger-Kordofanian languages.

Given the size of the group and, by implication, its advanced age, one can hardly exclude any change from an earlier to a modern profile, however radical it may appear. In this sense, typological data cannot decisively inform the question of whether a language (group) is a member of the larger family. Nevertheless, the realistic assumption that elaborate morphological systems of verb derivation and noun classification have to be reconstructed for some early proto-stage has, of course, several implications for the typological type of this language and the likely reflexes in its presumed modern daughter languages. The attempt to relate modern typological diversity across related languages in this regard had already preoccupied early researchers like, for example, Westermann (1947), dealing with possible historical trajectories in the inherited noun classification system. The problem of diachronic typology also played a central role in the discussion revolving around Greenberg's classification. Compare, for example, a statement by Westphal (1957: 523).

> Greenberg has courageously ignored the regular consonantal transformations and the well-defined prefixal agreements of Bantu and has so enabled himself to compare the West-African languages with Bantu, but he still owes us an explanation and exposition of his method and a statement of the circumstances in which one can equate the absence of characteristic morphological features in one set of languages with their presence in another. He has not shown what actually takes place when the typical Bantu morphology is transformed into an isolating language (or a language with limited prefixal systems), or to view from the other side, he has not shown how isolating West-African languages suddenly come to have the Bantu prefixal system. If, on the other hand, he suggests that the Semi-Bantu languages have the potentiality of developing into both isolating and inflexional languages of the two kinds under discussion, then I think he is most unwise to do so without discussing the stages of the transformations both ways much more fully than he has done.

To Greenberg's credit, he did in fact attend to this problem in the Niger-Kordofanian domain in both his original classification and later studies (e. g., 1977, 1978). He thus paved the way for similar but more detailed work that focused in particular on the considerable morphological reduction undergone by entire language groups in

Table 29: Typological features across Niger-Kordofanian classificatory units

	Lineage	Transitive sentence word order	Noun phrase word order		"Noun classes"	"Verb extensions"	Major source(s)
			Genitive modifier	Other modifiers			
U6.A	Bantoid	S-V-O/S-AUX-O-V-X	HI	HI	YES	YES	Meeussen (1967); Watters (1989)
U6.B	Cross River	S-V-O/S-AUX-O-V-X	HI/ (HF)	HI	YES	(YES)	Faraclas (1989); Connell (1994)
U6.C	Kainji-Platoid	S-V-O/(S-AUX-O-V-X)	HI	HI	YES	YES	Gerhardt (1983a, 1989)
U6.D	Igboid	S-V-O/S-AUX-O-V-X	HI	HI	NO	YES	Manfredi (1989); Emenanjọ (1978)
U6.E	Idomoid	S-V-O/S-AUX-O-V-X	HI	HI	YES	?	Armstrong (1989)
U6.F	Nupoid	S-V-O/S-AUX-O-V-X	HF	HI	(YES)	NO	Hyman and Magaji (1970); Blench (1989b)
U6.G	Edoid	S-V-O	HI	HI	YES	YES	Elugbe (1983, 1989)
U6.I	Ukaan	S-V-O/S-AUX-O-V-X	HI	HI	YES	(YES)	Salffner (2009)
U6.J	*Oko*	S-V-O	HF	HF	NO	NO	Atoyebi (2010)
(U6.K)	Owon-Arigidi: *Arigidi*	S-V-O	HI	HF	NO	NO	Oshòdi (2011)
(U6.L)	Ayere-Ahan: *Ahan*	S-V-O/(S-AUX-O-V-X)	HI/ (HF)	HI	NO	?	Akanbi (2014); Ogunmodimu (2015)
U6.M	Yoruboid	S-V-O/S-AUX-O-V-X	HI	HI	NO	NO	Awobuluyi (1978)
U6.N	Gbe	S-V-O/S-AUX-O-V-X	HF	HI	NO	NO	Essegbey (2005)
U6.O	Ghana-Togo Mountain	S-V-O	HF	HI	YES	?	Kropp Dakubu and Ford (1988)

U6.P	Potou-Akanic	S-V-O/S-AUX-O-V-X	HF	HI	(YES)	NO	Dolphyne and Kropp Dakubu (1988)
U6.Q	Ga-Dangme	S-V-O/S-AUX-O-V-X	HF	HI	NO	NO	Kropp Dakubu (1988)
U6.R	Lagoon: *Abe*	S-V-O	HF	HI	NO	?	Kouadiou (1983: 29–38)
U6.S	*Ega*	S-V-O	HF	HI	YES	NO	Bolé-Richard (1983a, b)
(U7)	Dakoid: *Samba Daka*	S-V-O/S-AUX-O-V-X	HF	HI	NO	YES	Boyd (1996/97, 1999, 2004)
(U8)	Ijoid: *Izon*	S-O-V	HF	HF	NO	(YES)	Williamson (1965)
U9.A	Kru	S-V-O/S-AUX-O-V-X	HF	HI	YES	YES	Marchese (1983)
U9.B	*Siamou*	S-(AUX)-O-V-X	HF	HI	NO	NO	Prost (1964), Toews (2015: 17–75)
U10	*Pere*	S-V-O/S-AUX-O-V-X	HF	HI	NO	(YES)	Creissels (2010)
(U11.A)	Atlantic: Cangin	S-V-O/(S-AUX-O-V-X)	HI	HI	YES	YES	Wilson (1989)
(U11.B)	Mel: Temnic	S-V-O/(S-AUX-O-V-X)	HI	HI	YES	YES	Wilson (1989)
U11.C	*Gola*	S-V-O/(S-AUX-O-V-X)	HI/ (HF)	HI	YES	YES	Fachner (1994)
U11.D	*Limba*	S-V-O	HI	HI	YES	?	Berry (1958)
U11.E	*Sua*	S-V-O	HF	HI	YES	YES	Wilson (2007: 147–151)
U11.F	*Nalu*	S-V-O	HI	HI	YES	?	Wilson (2007: 131–134)
U11.G	Rio Nunez	S-V-O	HI	HI	YES	?	Wilson (2007: 135–137)
U12	Mande	S-AUX-O-V-X	HF	HI/ (HF)	NO	(YES)	Dwyer (1989); Vydrin (2012)
U13	Dogon	S-O-V	HF	HI	(YES)	YES	Heath and Prokhorov (2010); Moran, Forkel and Heath (2016)
U14	*Bangime*	S-V-O/(S-AUX-O-V-X)	HF	HI	NO	YES	Hantgan (2013)

	Lineage	Transitive sentence word order	Noun phrase word order		"Noun classes"	"Verb extensions"	Major source(s)
			Genitive modifier	Other modifiers			
U15.A	Central Gur	S-V-O/(S-AUX-O-V-X)	HF	HI	YES	YES	Bendor-Samuel (1971); Naden (1989)
U15.H	Senufo	S-AUX-O-V-X	HF	HI	YES	(YES)	Carlson (1997)
U16.A	Tula-Waja: *Waja*	S-V-O	HI	HI	YES	YES	Kleinewillinghöfer (1990b, 1996b)
U16.B	Longuda	S-V-O	HI	HI	YES	YES	Jungraithmayr (1968/9); B. Newman (1978)
U16.E	Samba-Duru	S-V-O/(S-AUX-O-V-X)	HI/ (HF)	HI/ (HF)	YES	?	Boyd (1974: 52); Kleinewillinghöfer (2011a, 2012b)
U16.F	Mumuyic	S-V-O	HI/ HF	HI	NO	YES	Shimizu (1979: 29–32, 1983)
U16.H	Kebi-Benue	S-V-O	HI	HI	(YES)	YES	Boyd (1974: 52); Elders (2006)
U16.I	Kimic	S-V-O	(HI)/ HF	HI	NO	?	Mouchet (1954); Iberg (1990); Roberts (2009)
U16.J	Buaic	S-V-O/(S-AUX-O-V-X)	HI/ (HF)	HI	(YES)	(YES)	Tucker and Bryan (1966: 161–164); Boyeldieu (1985)
U16.K	*Day*	S-V-O	HI	HI	NO	?	Nougayrol (1979)
U16.N	*Fali*	S-V-O	HI	HI	NO	YES	Kramer (2014)
U17.A	Gbayaic	S-V-O	HI	HI	NO	YES	Moñino (1995)
U17.B	Zandic	S-V-O	HI/ (HF)	(HI)/ HF	NO	YES	Tucker and Bryan (1966: 141–160)
U17.C	Mbaic	S-V-O/(S-AUX-O-V-X)	HI	HI/ (HF)	YES	YES	Tucker and Bryan (1966: 108–140)
U17.D	Mundu-Baka	S-V-O	HEAD-MOD	HEAD-MOD/ (MOD-HEAD)	NO	NO	Tucker and Bryan (1966: 85–107)

U17.E	Ngbandic	S-V-O	HI	HI/ (HF)	NO	NO	Tucker and Bryan (1966: 85–107)
U17.F	Bandaic	S-V-O	HI	HI/ (HF)	NO	NO	Tucker and Bryan (1966: 85–107)
U17.G	Ndogoic	S-V-O	HI	HI/ (HF)	NO	NO	Tucker and Bryan (1966: 85–107)
U18.A	Heibanic	S-V-O	HI	HI	YES	YES	Tucker and Bryan (1966: 270–288)
U18.B	Talodic	S-V-O	HI	HI	YES	YES	Tucker and Bryan (1966: 270–288)
U18.C	*Lafofa*	S-V-O S-O-V	HI/ HF	HI/ HF	YES	?	Tucker and Bryan (1966: 270–288)
U18.D	Rashadic	S-O-V	HI/ (HF)	HI	(YES)	YES	Tucker and Bryan (1966: 289–299)
U19	Katlaic	S-V-O	HI	HI	NO	YES	Tucker and Bryan (1966: 262–9); Alamin Mubarak (2009)

Notes: (U…) = data disregard portions of a lineage; ? = no data; HF = head-final; HI = head-initial; YES = present; NO = absent; (…) = restricted relevance

Benue-Kwa (cf. Williamson 1985; Hyman 2004; Good 2012) and elsewhere. Thus, in principle, there is no obstacle to explaining how isolating languages without the morphological systems in question could emerge from an ancestor that had them.

2.5.3. Basic classificatory units

U6 BENUE-KWA

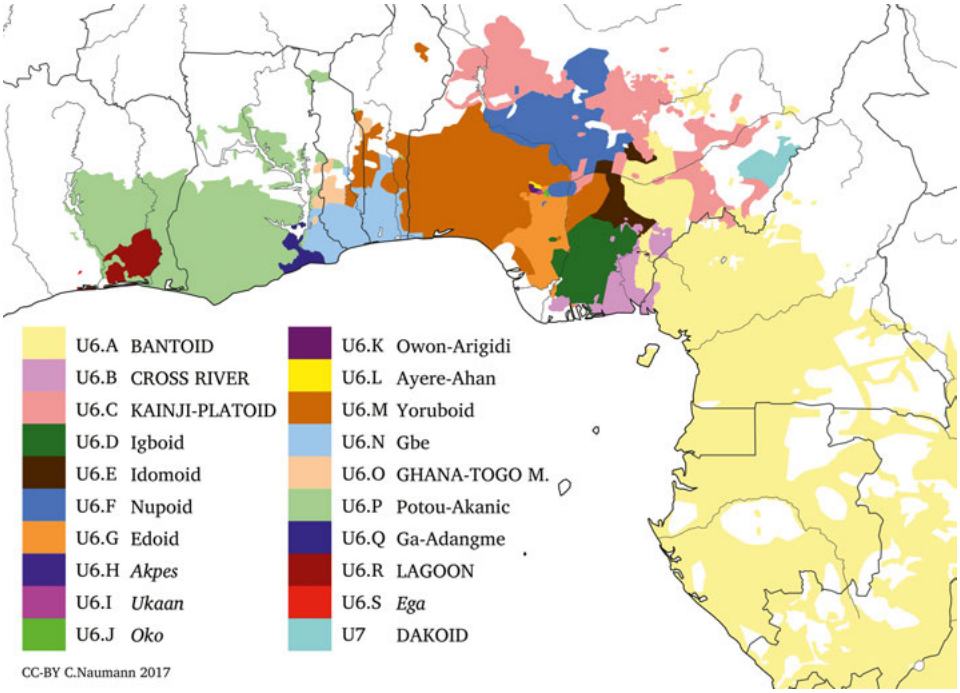
For various reasons Benue-Kwa is the central group of the Niger-Kordofanian domain. It is the largest in terms of number of languages and territorial extent, and its core area in the northwest occupies a geographically central position (see Map 4). Quite a few subgroups display the individual-identifying features of the phylum laid out above. And last but not least, it harbors at the same time a structural diversity that is representative for that across the entire unit.

Since Benue-Kwa was presented by Greenberg (1963a) under two separate units, Benue-Congo and Kwa, previous surveys as well as historically oriented works normally dealt with these two units separately: cf., for example, Stewart (1971, 1989) and Kropp Dakubu (2012) for Kwa, and Williamson and Shimizu (1968), Wolf (1971), Williamson (1971, 1973, 1989a), and Elugbe and Bankale (2004) for Benue-Congo.

The overall composition of Benue-Kwa results from three major factors: the initial extensive research revolving around the large Bantu family, the still ambivalent assessment of the relation between it and Western Sudanic by Westermann (1927b), and Greenberg's (1963a) final elaboration of this historical problem. Westermann had made a typological rather than genealogical distinction in Western Sudanic between a more Bantu-like Benue-Cross group and a Kwa group. Greenberg aptly joined the first group with Bantu to form Benue-Congo. He also pooled three of Westermann's Kwa groups, which form a western geographical cluster against other Kwa groups further east, into his "Kwa b", namely Lagoon, Togo-Rest (= Ghana-Togo Mountain), and Ewe-Tschi (= Gbe, Potou-Akanic, and Ga-Dangme) – a step already prefigured by Westermann himself (e. g., 1925).

Later Ijoid (Greenberg's "Kwa h", U8) and Kru (Greenberg's "Kwa a", U9) were removed from Kwa and elevated to higher-order nodes within Niger-Congo, so that a tripartite geographical division emerged, namely western "Kwa b" vs. eastern "Kwa c–g" vs. Benue-Congo "A–D". At the same time the close relationship between Westermann's Benue-Cross languages (= Benue-Congo "A–C") and their adjacent Kwa neighbors (= "Kwa c–g") had always been apparent, so that Greenberg's division between Kwa and Benue-Congo was questionable from the very beginning, as he admitted himself (1963a: 39, fn.13).

The apparent untenability of a genealogical partition between eastern Kwa and adjacent Benue-Congo became a central issue of subsequent research. Stirred in



Map 4: Geographical location of BENUE-KWA (U6) and DAKOID (U7)

particular by Bennett and Sterk's (1977) lexicostatistic study and their concept of "South Central Niger-Congo" but also by the recognition of Bantu-like noun classification systems in Nupoid, Idomoid, and Edoid languages, Greenberg's genealogical division repeated under (I) became reorganized as that under (II):
(I) Western (Old) Kwa + Eastern (Old) Kwa vs. (Old) Benue-Congo
(II) (New) Kwa vs. Western (New) Benue-Congo + Eastern (New) Benue-Congo
The "Benue-Congo Working Group" in particular has tried to tackle this classificatory problem since the 1960s, focusing on the following issues (Williamson 1989a: 248):

a) delimiting Bantu from the rest of Bantoid
b) delimiting each of the branches of Benue-Congo
c) delimiting Benue-Congo from Kwa

More than five decades later, none of these questions have been resolved conclusively. Hence, it seems more useful for the time being to present Benue-Kwa as a genealogical pool consisting of numerous subgroups; some of these, for example, Bantoid, Cross River, Kainji-Platoid, Ghana-Togo Mountain, and Lagoon, are for

now genealogical pools themselves rather than proven phylogenetic entities. The persisting difficulties in determining a conclusive genealogical structure is as such not surprising. Apart from the size of the task involving a multiplicity of languages, many of which not or insufficiently described, there are clear signs that earlier genealogical signals may well have eroded through subsequent language contact between languages that after all are relatively closely related. To mention just one example, Armstrong (1964) presents evidence according to which widely spread languages from Yoruboid, Idomoid, Igboid, and Gbe share detailed vocabulary related to a divination cult, which implies intensive cultural and linguistic contact in the past. Before the background of a multitude of new genealogical configurations that have been advanced for Benue-Kwa languages after Greenberg's initial proposal I refrain from giving any of these subclassifications, because this risks being interpreted as an informed statement about articulated genealogical relationships.

Roger Blench's prolific classificatory enterprise is exemplary in this respect. This author has the merit of spearheading particularly the inventarization and lexical documentation of the myriad of underdescribed languages in Benue-Kwa and beyond. At the same time, it has become ever more difficult for both insiders and outsiders to keep track of his reshuffling of the family tree of Niger-Congo in general and its central Benue-Kwa portion in particular. Just to mention some examples: Should one follow Blench (1989a: 130, 2012a: 95), where Gbe is a Western or New Kwa branch, or rather Blench (2006a: 118, 2012b: 30), where it belongs, together with Yoruboid, etc., to "Volta-Niger" (his new term for Eastern Kwa aka Western Benue-Congo)? Does Dakoid go with Mambiloid, etc. into non-Southern Bantoid, as per Blench (1993: 113, 2000b: 161, 2006a: 122, 2012a: 99), or is it, as per Blench (2000b: 166, 2004a: 16), a primary branch of "Central Nigerian" (a new clade within [Eastern] Benue-Congo assumed by him to comprise Jukunoid, Plateau, and Kainji as opposed to Bantoid and Cross River)? Is Ukaan a member of Western Benue-Congo as in Blench (1989a: 130), is it a part of Bantoid-Cross River in Eastern Benue-Congo as in Blench (2000b: 161, 2005b: 9), is it a primary Benue-Congo branch as in Blench (2012b: 25), or is it better placed at a yet higher Niger-Congo node as in Blench (2006a: 118)? Or finally, does a single language like Ega warrant an entirely different look at "East Volta-Congo" (aka Benue-Kwa), according to which this large set of languages has arisen out of a flatly structured "dialect chain that has diversified" (Blench 2004b: 16)? Irrespective of whether any of his numerous classificatory decisions withstand more detailed and methodologically canonical scrutiny, outsiders cannot distinguish them from mere speculations. This is because most of them are just posited, and if empirical material is at all presented, the reader is left with the task of interpreting how and why certain pieces of data, mainly of a lexical nature, are thought to be more diagnostic than others in a particular classificatory context.

Inconclusive and/or contradictory classifications in the Benue-Kwa domain are, of course, a more general problem transcending the work of a single prominent scholar. Just to mention one exemplary case, the remnant languages in the wider Akoko region west of the Niger-Benue confluence, comprising Akpes (U6.H), Ukaan (U6.I), Oko (U6.J), Owon-Arigidi (U6.K), and Ayere-Ahan (U6.L), have been embedded in Benue-Kwa and Niger-Congo in multiple different ways (see below). Blench's various tree versions aside, their classification has been dealt with notably by Agoyi (1997), Ohiri-Aniche (1999), Elugbe (2001, 2012), Elugbe and Bankale (2004), and Bankale (2008). The contradiction between this attention and the inconclusive results is a function of two circumstances: crude methodology focusing on very restricted lexicostatistics and insufficient documentation (only two of the five lineages are known in some detail, and this for less than ten years).

The focus for historical comparisons in Benue-Kwa has been on lexical data, for which there are such major and extensive data collations as Williamson and Shimizu (1968), Williamson (1973), and Kropp Dakubu (ed. 1977, ed. 1980). However, most of the work remains superficial and unsystematic for several reasons beyond the already mentioned bias toward lexicostatistics. The deficiency regarding the study of sound change was mentioned in section 2.5.2.2; very few studies, for example, Miehe (1985b), have tried to address certain issues more systematically. Also, while there exist lexical reconstructions for a number of subgroups, to be mentioned below, these are, *pace* Williamson (1989a: 248), not all the result of a rigorous application of the historical-comparative method – indeed, some authors themselves use terms like "pseudo-" or "quasi-reconstructions". Another defect of lexical comparative work in Benue-Kwa is that whatever the quality of the reconstructions, they are often not used on higher comparative levels. Equally serious for the question of reliable subgrouping is that relevant studies mostly do not discuss to what extent their reconstructions are exclusive to a given group vis-à-vis other languages in Benue-Kwa and beyond. For example, Ohiri-Aniche (1991) sets out to reconstruct the consonantal proto-system of a group forming a geographically compact block in southern Nigeria and comprising Igboid, Edoid, and Yoruboid, but gives hardly any justifiction that this particular set is a real clade excluding other Benue-Kwa groups. In some other works the very proto-language as a realistic speech form in a particular temporal and geographical setting is doubtful. To mention a central example, Wolf's (1971: 54–59) often cited Proto-Benue-Congo displays double or even triple proto-forms for basic and generic lexical items like, for example, 'belly', 'knee', 'tongue', 'tooth', 'buffalo', 'crocodile', 'elephant', 'blood', 'fat, grease, oil', and 'water'. Such a high but unmotivated incidence of multiple reconstructions, which themselves seem to be valuable in principle, casts doubt on whether a single proto-language is involved. Recently, Kropp Dakubu (2012) had resumed more widespread lexical reconstruction, thereby also trying to rescue the idea of a Kwa family, but her research has

unfortunately not come to completion and the available study still suffers from defects typical of earlier works. As referred to already in section 2.5.2.2, Stewart's reconstructions are exceptional in that he tries to relate the proto-languages of Bantu and Potou-Akanic to each other in a systematic way.

In terms of morphology, as can be expected, the focus has been on the inherited gender and noun declension system and related issues, as in such comparative studies as Kähler-Meyer (1971), Wolf (1971), Hyman and Voorhoeve (1980), Menne (1992), Williamson (1993), and Gerhardt (1994), to mention just a few. This research has established a robust set of proto-forms but their exact historical relevance is hampered by the problem that it remains partly unclear to what extent individual forms reflect old Niger-Congo inheritance or are innovations that are diagnostic for subgrouping.

One important and revealing theme of the previous historical research in the Benue-Kwa pool is the enormous typological change that some of these relatively closely related languages have undergone (see section 2.5.2.3 above). Since the resulting grammatical profile is associated with what used to be called Kwa, a series of instructive studies have been published that broach the issue of "how to become" Kwa-like, such as Williamson (1985), Hyman (2004, cf. also 1974), and Good (2012). These show that detailed work on diachronic typology can crucially inform historical reconstruction, although it remains unclear whether the changes themselves are reliable criteria for subgrouping, as envisaged by Manfredi (2009). In the following I present and briefly discuss the 19 groups subsumed under Benue-Kwa.

U6.A BANTOID

The role of Benue-Kwa for Niger-Kordofanian is played within Benue-Kwa itself by Bantoid, for which see the relevant overviews by Hedinger (1989), Watters (1989), and Watters and Leroy (1989). As the name suggests, this status in turn is due to the fact that the Bantoid core is Bantu – by far the largest close-knit language group in Africa in terms of number of languages (more than 500) and geographical extent (from the Central African rainforest southwards to the limits of the continent). Since Greenberg's work (e. g., 1949c, 1972a), the synchronic picture has been described as the result of one of the most spectacular linguistic expansions of the last few millennia, starting in the area where the modern non-Bantu Bantoid languages are found. While many parts of this process are still poorly understood, it is researched today by multiple and sophisticated methods within an interdisciplinary perspective (see, e. g., Bostoen, Grollemund, and Muluwa 2013; Grollemund et al. 2015).

The central role of Bantu can be considered in some sense to be the "curse and blessing" of historical-comparative research in this domain. On the one hand, the group has been studied since Meinhof (1899, 1948) very intensively and suc-

cessfully and was thus placed at the forefront of historical-comparative research not just on African languages but on languages with little or no early written tradition in general. Bantu, as defined by Guthrie (1948), involves today hundreds of lexical proto-forms (Guthrie 1967–71; Meeussen 1980; Coupez, Bastin, and Mumba 1998; Bastin et al. 2002) and a great amount of detailed morphological and syntactic reconstructions (see, e. g., Meeussen 1967). On the other hand, as remarked in section 2.5.1 above, the advanced understanding of the synchronic and diachronic profile of Bantu tends to steer the historical assessment of its lesser-known relatives, both in Bantoid and beyond, without any proof that this approach is appropriate.

Bantoid itself must be viewed as a genealogical pool for various reasons that go beyond mere uncertainties about its internal classification, which have existed since early on (see the controversy of Greenberg [1974] and Meeussen [1974] as just one example). First and foremost, in spite of our highly advanced historical knowledge about Bantu it has not yet been conclusively delimited from its closest Bantoid and other Benue-Kwa relatives in the northwest, as acknowledged by Nurse and Philippson (2003: 5–7). A first principled attempt to establish some defining criteria for Bantu was made by Greenberg (1963a: 35), Crabb (1965: 14), and Welmers (1978), figuring the assumed innovation of nasal prefixes in some noun classes as the central argument (see Hyman and Voorhoeve [1980] for detailed and particularly crucial data). Since this proposal has been contradicted by Miehe (1985a, 1991), the validity of this once promising hypothesis needs to be reviewed. The position of Bantu within Bantoid has also not been resolved by lexicostatistic investigations (e. g., Gerhardt 1980; Guarisma 1986; Piron 1995, 1998a, 1998b: Bastin and Piron 1999; Bastin, Coupez, and Mann 1999). Moreover, an unclear genealogical status also holds for other Bantoid groups. One example is Mambiloid, for which Blench (1993) and Connell (2000, 2010) fail to establish defining traits that are not found in other languages outside this group (see also Piron 1995). Good (2010, 2013) argues that another such case is Beboid. Last but not least, problems also exist with respect to the external demarcation of Bantoid, as is evident from the existence of such controversial lineages like Dakoid (U7).

It comes as no surprise then that there have hardly been any attempts to properly reconstruct Bantoid – this in spite of the existence of extensive data that could be subjected to systematic comparison. Instead, most studies are concerned with the question of whether, or in what way, a given language (group) can be allied with Bantu (cf., e. g., Crabb 1965; Maddieson and Williamson 1975; Gerhardt 1978, 1982; Shimizu 1983a; Thwing 1987). An exception is Babaev's (2008) attempt to reconstruct the pronouns of Proto-Bantoid, which suffers, however, from the preconceived assumptions that Bantoid is a true clade and that Bantu is a viable model for its proto-language.

The overall problematic historical-comparative evaluation of Bantoid is compounded by two other facts. First, it has been a long – and in fact still ongoing –

process to identify and then fully document the multiplicity of Bantu-like languages in Nigeria and Cameroon (cf., e. g., Maddieson and Williamson 1975; Breton 1993; Connell 1998c; Good 2013). Second, there is growing evidence that the area is characterized by a very complex sociolinguistic history involving in particular secondary contact between differentiated but nevertheless still closely related languages (see Warnier [1979] and Good [2013] for the wider Grassfields area). In general, while Bantoid represents an essential and undeniable member of Niger-Congo, its status in this family and ultimate role for its reconstruction is all but clear.

U6.B CROSS RIVER

Cross River is a geographical cluster of close to 60 languages that are spoken in the extreme southeast of Nigeria and just crossing over into Cameroon. Faraclas (1989) provides an informative survey of the five subgroups conventionally identified: Bendi, (Central) Delta, Ogoni, Lower Cross, and Upper Cross.

While the close relation of the languages to Bantoid was recognized early on (cf. Westermann 1927b), their diversity regarding the presence or absence of typical Niger-Congo features has become well known through Williamson's (1985) study. This also concerns the existence of a more or less canonical noun classification system; the existing ones are the topic in Miehe (1983) and Connell (1987).

Most of the abovementioned subgroups have been dealt with in comparative and historical studies. These are Wolff (1964), Ikoro (1989), and Bond and Anderson (2006) on Ogoni (also called Kegboid); Dimmendaal (1978) on Upper Cross; Alex (1989) on Central Delta; and in particular Connell (1987, 1991, 1994, 1995) on Lower Cross. Many of these works contain numerous lexical reconstructions ready to be used in wider comparisons. Connell and Maison (1994) and Connell (1998b) have employed linguistic data for the reconstruction of population history.

Connell (1994, 1998a) extended his work further to the historical assessment of Cross River as a whole. On this topic he writes (1998a: 24) "… that the unity of the Cross River group, first proposed by Greenberg (1963a) and still considered plausible, is far from satisfactorily established. Considerably more comparative work is needed before this grouping can be taken as fact". The possibility that Cross River is actually not a true clade seems to have turned into the more appropriate evaluation by the work reported in Villa Duque, Nara, and Connell (2015). Employing phylogenetic methods on lexical data, these authors conclude that the group is unlikely to be a genuine family and that some groups appear to be closer to languages outside it, notably Bendi to Bantoid. For this reason, Cross River is dealt with here, like Bantoid, as a genealogical pool.

U6.C KAINJI-PLATOID

Kainji-Platoid, the languages of which are spoken mostly in the so-called Nigerian Middle Belt, subsumes Greenberg's (1963a) two remaining Benue-Congo units, group A "Plateau" and group B "Jukunoid". The rough classification history of the two is shown in Table 30.

Table 30: The history of subclassification of Kainji-Platoid

Greenberg (1963a: 8–9)		Gerhardt (1989: 362–365)		Blench (2000b)
A.1a A.1b	Kambari, … Piti, …	I.1 I.2	Kainji: Western Kainji: Eastern	Kainji
A.4	Rukuba, …	II.1.B	Plateau: Western	West
A.5	Eggon, …			
A.2	Afusare, …			
		II.1.A	Plateau: Northern	North
		II.1.C	Plateau: Central	Central
A.3	Birom, …			Beromic
A.6	Kaleri, …	II.1.D	Plateau: Southeastern	Southeast
unknown		II.1.E	Plateau: Southern	South
A.7	Yergam, …	II.2.A	Benue: Tarokoid	Tarokoid
B	Jukunoid	II.2.B.	Benue: Jukunoid	Jukunoid

A number of studies of both a lexicostatistic and historical-comparative nature have argued that Plateau and Jukunoid cannot be treated as two genealogical entities that are coherent and independent from each other. Thus, Jukunoid has been proposed to be close to some Plateau subgroups, notably Tarokoid (e. g., Shimizu 1975), although Blench (2005a) tries to rescue Jukunoid as a separate genealogical unit. According to Prischnegg (2008, 2010), Jukunoid itself cannot be maintained as a genuine family within the Benue-Kwa panorama due to the separate status of its southern group comprising Kutep and Yukubenic. Another classificatory problem with Plateau is that its earlier Kainji subgroup is now accorded a position independent of the rest (cf. Gerhardt and Jockers 1981; Gerhardt 1983a; McGill 2012; McGill and Blench 2012). There are also a number of controversies regarding yet other smaller entities (e. g., Shimizu 1975 vs. Gerhardt 1983b on Eggon). Finally, there is the central unresolved issue of whether a Plateau core exists at all or whether the ten or so subgroups subsumed under it are all coordinate with each

other and even with other groups in Kainji-Platoid and beyond, as evident by the early critique by Ballard (1971: 295):

> The sub-grouping of these languages is complex and merely tentative, and there is some doubt whether there are any innovations common to the whole group, raising the possibility that Greenberg's Plateau group is in fact a geographical lumping together of several distinct but related groups each co-ordinate with other, much larger, subdivisions of Benue-Congo such as Jukunoid, Ekoid, and Bantu.

In more recent studies, opinions remain divided, with Mukarovsky (1987a) and Blench (2000b) arguing against such a family and, later, Blench (2004a, 2005a) changing tack and assuming its existence.

Due to this multiply inconclusive classificatory assessment of the Kainji-Platoid domain, I present all the languages together but merely view the group as a third genealogical pool within Benue-Kwa. Such a language aggregation follows Gerhardt's (1989) survey but does not imply the acceptance of this author's presentation in terms of a hierarchical classification.

Only a few dedicated historical-comparative studies have been undertaken for low-level units that propose concrete and empirically motivated proto-forms. These are primarily Shimizu (1980), Storch (1999: 267–399), and Prischnegg (2008, 2010) on the Jukunoid domain and Gerhardt (1983a) on three seemingly more coherent Plateau groups, which in the labeling of Gerhardt (1989) are B.1 North-Western or Koro-Jaba, B.2.a South-Western A (= Ninzic in terms of Blench 2004a), and C.2 South-Central. However, these works are also far from uncontroversial concerning their assumed subgrouping so that even the reconstructions proposed there remain partly inconclusive.

From a typological perspective, Kainji-Platoid languages conform to the general Niger-Congo canon with the proviso that typical morphological features show all kinds of variation, many of them the result of historical decay. Noun classification systems have been studied in some detail by Bouquiaux (1967); Gerhardt (1972/73, 1974, 1983a, 1988, 1994); Storch (1997); and Prischnegg (2008). Gerhardt (1971, 1983a, 1984, 2002), Wolff and Meyer-Bahlburg (1979), and McKinney (1979) have dealt with the trait of suffixal verb derivation.

The great structural variation within Kainji-Platoid may also be related to the partly considerable influences from other languages that are not or only distantly related genealogically. The intensive contact with unrelated Chadic languages in the north has been dealt with in particular (cf. e. g., Hoffmann 1970; Wolff and Gerhardt 1977).

U6.D Igboid

Igboid is a compact lineage of closely related speech varieties classified in less than ten language units located north(east) of the Niger delta (see Manfredi 1989

for a group survey). It is the first of more than a dozen following units whose typological character motivated Westermann (1926b) to assign them to his Kwa unit.

Various studies, for example, Armstrong (1967), Hyman (1974), Williamson (2000a), Ohiri-Aniche (2012), and Williamson, Blench and Ohiri-Aniche (2013) provide a wealth of information for historical-comparative research within and beyond this group. As shown in some of these works and referred to above, the modern typological profile of this Kwa-type group can be derived plausibly from the canon expected for a Niger-Congo lineage. The material presented here also attests to expected forms in the pronouns for first-person singular and second-person plural, the lower numerals, and also potential reflexes of the lexemes for 'person' and 'tongue', and in pronominal form of the noun classes *1 and *2, so that its assumed Niger-Congo membership is convincing.

U6.E Idomoid

Idomoid, with fewer than ten languages, is spoken in the wider region of the lower Benue and is surveyed in Armstrong (1989). Apart from the major language Idoma, the overall documentation and description of these languages is still sketchy. The group has been argued to be a coherent unit by Armstrong (1981, 1983), first based on lexicostatistics and then on close to 130 comparative lexical series involving what he calls "pseudo-reconstructions". There is, however, little more that can inform the judgement about both the coherence of Idomoid as well as its precise relation to other Benue-Kwa languages. Moreover, the status of Eloyi remains controversial, because it is also sometimes treated as a Plateau language (see Blench [2004a: 15–16], as opposed to Elugbe and Bankale [2004: 4]).

Morphological reduction has also brought these languages to possess a prototypical Kwa profile. There is, however, good evidence for the earlier existence of at least a Niger-Congo-type noun classification system (cf., e. g., Abiọdun 1989 on Igede). This fact, the basic structural properties, and clear lexical reflexes (e. g., all lower numerals) make the alignment with Benue-Kwa uncontroversial.

U6.F Nupoid

A group of around ten languages northeast of the confluence of the Niger and Benue Rivers in Nigeria has come to be called Nupoid after its major language. Westermann (1927a) established the unit as part of his Kwa group, and since then it has been treated within the Benue-Kwa domain (see the surveys by Blench [1989b, 2013d] for more information). Some comparative data have been collated in Blench (2013d) but these are incomplete and not accompanied by any systematic attempts toward reconstructions. According to Elugbe and Bankale (2004: 4–5), the Ebira varieties do not even belong to Nupoid as commonly conceived, so that the group remains to be demonstrated to be a genuine family rather than a genealogical pool.

The membership of Nupoid languages in Niger-Congo is uncontroversial, though. They are not only syntactically canonical Niger-Congo languages of the area but one language, Gade (see Sterk 1978), even displays a fully functional gender system with declension classes on the noun and an associated agreement system. The paradigmatic data collected for this survey corroborate this picture in that virtually all pronouns and lower numerals display likely common Niger-Congo forms.

U6.G Edoid

Edoid is a language family of around 30 languages spoken in southern Nigeria, northwest of and to a lesser extent within the Niger Delta (see Elugbe 1989 for a survey). It has been established in its full extent as a genealogical group by Elugbe's (1986) extensive historical-comparative reconstruction of the phonological system and more than 200 lexical roots.

Westermann (1926a) and Greenberg (1963a) classified Edoid originally as a Kwa group, and many languages indeed show many structural characteristics of other such languages. However, more extensive work taking the entire family spectrum into account has shown that a clear distinction from traditional Benue-Congo languages further east cannot be maintained. Most importantly, several languages show clear traces of an earlier noun classification system, especially in the form of noun prefixes but sometimes also of concord elements (see, e. g., Elugbe 1976 on Degema; Elugbe and Schubert 1976 on Oloma; Ọmọruyi 1986 on Edo; and Masagbor 1989 on Ivie, possibly referring to Etsako). Accordingly, Elugbe (1983) proposed the reconstruction of a proto-set of noun prefixes that correspond in both form and function with those in canonical Niger-Congo systems, and seem to reflect in particular the classes *1, *2, and *6A. Reconstructions have also been proposed for other parts of the morphology (cf., e. g., Elugbe 1984 on non-finite verb forms). Moreover, works like Kari (1995) report the existence of suffixal verb extensions in some languages whose form and function suggest that they are partly a feature inherited from Niger-Congo via Proto-Edoid. This morphological evidence is fully corroborated by lexical data, for which compare in the present survey 'tongue', the first-person singular pronoun, and all lower numerals.

U6.H Akpes

Akpes is a language complex with close to ten varieties that is virtually unknown apart from the studies mentioned below and a few more on phonological issues. It is one of five "micro"-lineages spoken in the wider, linguistically highly diverse Akoko area in the western vicinity of the Niger-Benue confluence (see Oyètádé 1995 and Ohiri-Aniche 1999). These lineages have received scholarly attention

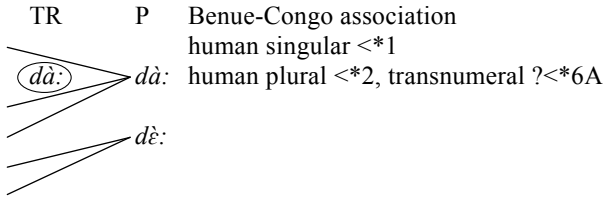
only of late, and their speakers are mostly bilingual in Yoruba and other more prestigious languages of their respective regions.

The primary source for a historical evaluation of Akpes is a study by Ibrahim-Arirabiyi (1989), who establishes the close relationship of all relevant varieties by means of inspecting more than 100 lexical comparative series and performing lexicostatistics; he does not attempt any systematic reconstruction of proto-forms, though. Of the items surveyed here, Akpes displays a number of diagnostic elements that count as plausible Benue-Kwa reflexes: classes *1 and *2, the first-person singular and both plural pronouns, and the lexemes for 'three', 'four', 'person', and presumably also 'two' and 'tongue'.

Based on Ibrahim-Arirabiyi's (1989) lexical data Williamson (1989a: 266–267) treats Akpes as genealogically related to Ukaan (U6.I) but isolated within Benue-Congo, an assessment apparently supported by Ohiri-Aniche's (1999) lexicostatistic survey. Agoyi (1997) observes that number-marking of nouns in Akpes uses vowel prefix alternation and is thus similar to Ukaan and Edoid. Although this trait is merely a Niger-Congo retention, it motivates the author to propose a new family comprising all three lineages. Elugbe (2001, 2012) supports and elaborates on this hypothesis but provides equally restricted and inconclusive evidence, so that the exact affiliation of Akpes with other Benue-Kwa groups remains to be conclusively determined.

U6.I Ukaan

Ukaan is a second language complex spoken in the Nigerian Akoko area, and its four varieties are sometimes viewed as languages. The first published data is a word list in Jungraithmayr (1973b). Since then, the documentation of Ukaan has progressed considerably, focusing in particular on the Ikaan variety (see Salffner 2009, 2012, 2015; and Borchardt 2011). Abiọdun (1999) is a historical-comparative study of the entire group providing more than 200 lexical proto-forms.



Note: agreement classes represented by proximal demonstratives

Figure 7: Gender system of Ikaan (after Borchardt 2011: 75–78)

Abiọdun (1997) describes Ukaan's canonical system of noun classification with both noun form classes and agreement, as given in Figure 7, which is unique in its

narrow geographical context. This gender system, as well as the full numeral paradigm and possibly the second-person singular pronoun and the word for 'person,' firmly establishes the embeddedness of Ukaan in the Benue-Kwa pool.

Its more precise relation to other Benue-Kwa groups is, however, highly controversial. The various hypotheses are a closer relation to Akpes (Blench 1989a: 130; Williamson 1989a: 266–267; Ohiri-Aniche 1999: 18); to Akpes and Edoid (Agoyi 1997; Abiọdun 1999: 5; Elugbe 2001, 2012); to Cross River and Bantoid (Blench [1994] 2005b: 9; Connell 1998a: 23–24); or a more independent position in Benue-Congo (Bankale 2008). Salffner (2009: 42–49) summarizes the discussion and correctly points out the multiple shortcomings of the different proposals having to do with insufficient and/or inappropriate data as well as inconclusive classification criteria.

U6.J Oko

Oko (aka Oko-Eni-Osayen) is another isolated language in the wider Akoko area whose linguistic-genealogical significance was recognized first by Jungraithmayr (1973a). While for a long time it remained virtually undescribed, there is now a detailed description by Atoyebi (2010).

The language possesses a structural profile typical for Niger-Congo but has lost diagnostic noun classification and verb derivation. It shows, however, possible reflexes of the classes *1 and *2 in both noun prefixes and concords, as well as a canonical pronoun paradigm and reflexes of the numerals 'two', 'three', and 'four'. Williamson (1989a: 266–267) treated it as an isolated unit in Benue-Congo.

U6.K Owon-Arigidi

The fourth micro-lineage in the Akoko area is in fact commonly referred to as or subsumed under the label "(Northern) Akokoid" following Hoffmann's (1976) original suggestion (the wider notion includes Ayere-Ahan (U6.L)). Based on lexicostatistics and phonology, the almost ten speech varieties are classified by Akinyemi (2002) and Fadọrọ (2010)[13] into two languages with a cognation rate of 70 %–80 % and called by the last author Owon (the previously proposed Amgbe is said to be inappropriate) and Arigidi. In order to avoid the ambiguity of Akokoid, the bipartite term Owon-Arigidi is adopted here. Fadọrọ bases his calculation on 200-word lists from all varieties and also compares these with Yoruba (Fadọrọ 2010: 126–134); unfortunately the author does not demonstrate at all how he arrives at his lexicostatistic results, nor does he attempt to reconstruct proto-forms.

[13] Fadọrọ (2013, 2014) and Oluwadoro (2014) are articles publicly available on the internet that are recapitulations of individual parts of the original dissertation.

In the previous literature, the group in the wider Akokoid sense has commonly been treated as the closest relative of Yoruboid (cf. U6.M). This idea has been popularized in particular under the concept of a Defoid family by Capo (1989a: 281–283). This author does not justify the hypothesis himself but merely refers to Akinkugbe's (1978: 865–874) classificatory assessment, which in fact is quite inconclusive (see section U6.M). Ohiri-Aniche (1999), Akinyemi (2002), and Fadọrọ (2010) try to assess the relation between Owon-Arigidi and Yoruboid by means of lexicostatistics; the various cognation rates are given in Table 31.

Table 31: Cognation rates between Owon-Arigidi and Yoruba

Comparison	**Cognation/ no. of words**	**Source**
Arigidi~Ọka Yoruba	50 %/100	Ohiri-Aniche (1999: 84)
Arigidi~Standard Yoruba	55 %/100	Ohiri-Aniche (1999: 84)
Owon-Arigidi~(?St.) Yoruba	x̄ 46 %/100	Akinyemi (2002, cited in Fadọrọ 2010: 144)
Owon-Arigidi~(?St.) Yoruba	x̄ 31 %/200	Fadọrọ (2010: 144)

Apart from the considerable variation of the figures in Table 31, two interrelated observations cast doubt on the usefulness of the authors' relatively crude and purely lexical approach to genealogical language classification. On the one hand, a good amount of shared lexicon must be expected as a baseline among all languages of the Benue-Kwa pool, because they are relatively closely related. On the other hand, it is widely recognized that Owon-Arigidi, like all other minority languages in the Akoko area, is under heavy contact influence of Yoruba, which makes lexical borrowing, including of basic vocabulary, rampant (cf., e. g., Akinkugbe 1978: 866, 874). This situation also renders Fadọrọ's (2010: 140) historical interpretation of the numerous lexical isoglosses unsatisfactory:

> Rather than regard these items as borrowing from Yorùbá, we think it would be better to regard them as pointers to Proto-Defoid. The reason for this is simple and straightforward. These lexical items are part of the basic vocabulary items which have the greatest resistance to change.

It is clear that a more robust conlusion about the place of Owon-Arigidi in the Benue-Kwa panorama can only be achieved through more qualitative comparative research that also inspects its morphosyntactic features (cf., e. g., Oshòdi 2011). The limited data available, including the first-person singular pronoun, the full set of lower numerals and the forms for 'person' and 'tongue' reported here, do not necessarily single out Yoruba as the closest relative of Owon-Arigidi but support a generic genealogical relation to Benue-Kwa languages.

U6.L Ayere-Ahan

Ayere and Ahan are two further related languages in the Akoko region. As already mentioned, they were subsumed initially under Akokoid but are now viewed as languages that form a separate unit. There are a few grammatical studies on Ahan, such as Akanbi (2014, 2015) and Ogunmodimu (2015), as well as some lexical data in Blench (2007b), including also Ayere, but the languages are still underdocumented.

As far as Ahan is concerned, it is structurally typical for Benue-Kwa languages of the area, including the absence of inherited noun classification and verb derivation. Its set of lower numerals and the first-person singular and arguably second-person singular pronouns are also comparable with canonical Benue-Kwa forms, so that its membership seems uncontroversial. Howewer, similar to Owon-Arigidi, the exact place of Ayere-Ahan in Benue-Kwa is uncertain. According to the lexicostatistic results obtained by Akinyemi (2002: 6, cited in Fadọrọ 2010: 10) the two languages share 56% of vocabulary in a 100-word list, while their highest cognation rate with an Owon-Arigidi variety is only 38% (usually only around 30% and lower), which justifies the separation between Ayere-Ahan and Owon-Arigidi. The figures presented are, however, contradictory, because Fadọrọ (2010: 144) also cites an Ayere-Ahan~Yoruba cognation rate of 64%, which is hard to reconcile with the internal value of 56%. Unless more extensive and conclusive information comes to the fore, Ayere-Ahan is thus best treated as another separate unit of the Benue-Kwa pool.

U6.M Yoruboid

Yoruboid is a demographically and geographically important Benue-Kwa group in the southwest of Nigeria and adjacent pockets in Benin and Togo but comprises only three languages (see Capo 1989a for a survey). Its core is the extensive cluster of varieties subsumed under Yoruba; the two other members of this small family are Isekiri and Igala. While the relation between the three started to be recognized as early as in Koelle (1854), Yoruboid has been firmly established as a family by Akinkugbe's (1976, 1978) historical-comparative research, which provides among other things close to 400 lexical proto-forms.

As mentioned above, Capo's (1989a) claim about a larger Defoid family including Owon-Arigidi and Ayere-Ahan remains doubtful because of the insufficient empirical support provided for this hypothesis. Inconclusive lexicostatistic results aside, we are still confronted with Akinkugbe's (1978: 874) modest conclusion:

> It is evident from our discussion above that the understanding of the true relationship within the NAK sub-group [= Northern Akokoid including Owon-Arigidi and Ayere-Ahan], and between it and the YIG sub-group [= Yoruboid] requires a more penetrating investigation than the limited time and material at our disposal have allowed.

From a wider perspective, Yoruboid has a canonical typological profile of Benue-Kwa languages of this area without verb derivation and noun classification (although the classes *1 and *2 may have reflexes in third-person pronouns). The genealogical alliance with other Benue-Kwa groups (see Ohiri-Aniche 1991) as well as the wider Niger-Congo group (see section 2.5.2.2) is clearer from lexical data.

U6.N Gbe

The Gbe cluster, spoken predominantly in the south of Togo and Benin, may be subclassified into more than 20 language-like units but also, alternatively, viewed as a single language complex (see Capo 1983). Within the Benue-Kwa pool, it is the first group presented here that is conventionally subsumed under the concept "New Kwa" (as opposed to "New Benue-Congo") – an idea prefigured by Westermann's (e. g., 1925) "Ewe-Tschi" group within his original Kwa. Recent survey data about the entire Gbe group are contained in Kluge (2000, 2005, 2006, 2011) and Essegbey (2005), including evidence for its uncontroversial coherence. Dedicated historical-comparative research was carried out primarily by Capo (e. g., 1980, 1982, 1989c, 1990, 1991, 1993; see also Stewart 1994) but has unfortunately not arrived at a full and systematic set of Proto-Gbe reconstructions.

Although Proto-Gbe must have already lacked the typical Niger-Congo morphology, its affiliation to this group is not in doubt. Apart from its canonical typological profile, this is also suggested by the present sample data that show good matches in the lower numerals, a couple of pronouns, and possibly also the lexemes for 'person' and 'tongue'.

U6.O GHANA-TOGO MOUNTAIN

Ghana-Togo Mountain is the current term for a group that German scholars previously called *Togorestsprachen* ("Togo remnant languages") (cf., e. g., Westermann 1927b). They are often surrounded by major vehicular languages like Ewe and Akan, and are thus subject to contact interference and marginalization (cf. Kropp Dakubu 2009 for more details), which is epitomized by the original group name. Kropp Dakubu and Ford's (1988) survey contains such demographic facts as well as linguistic information.

Heine (1968) is an extensive historical-comparative treatment of the phonology, morphology and lexicon of the group. Despite its bipartite subclassification into Ka-Togo vs. Na-Togo, the study suggests a genealogical unit in line with earlier assessments. Later research has cast doubt on this hypothesis. For example, Stewart (1989) subsumes the Na-Togo but not the Ka-Togo group under his Potou-Akanic. Blench (2009: 31–32) made an explicit statement to the effect that the group is possibly a genealogical pool:

> Although apparently a well-established group, the GTM language subgroup bears features of a typological classification – i. e. languages with noun-class affixes in a region otherwise dominated by languages with residual morphology. Heine's work has had the effect of making GTMLs seem more coherent than they really are, because many of his cognate sets reflect no more than established Niger-Congo roots widespread throughout the region.

Apart from the doubt about the unity of the Ghana-Togo Mountain languages there are also diverging ideas regarding the likely closest relatives within Niger-Congo. Heine (1968: 294–299) briefly discusses the evidence for two major hypotheses that align the group either with Gur or with other Kwa groups like Gbe and Potou-Akanic (Guang, Akan).

A general Niger-Congo affiliation of the Ghana-Togo Mountain group is beyond doubt. Apart from the clear relationship on account of the shared noun classification system known since Westermann (1935), parts of the pronoun paradigm, the lower numerals 'three', 'four', 'five', and 'tongue', possibly even 'person', conform with the expected forms.

U6.P Potou-Akanic

Potou-Akanic is a group of more than 30 languages primarily located in the southern half of Ghana with some languages spoken in Togo and Benin as well as southeastern Ivory Coast. While still included by Stewart (1989), the Na-Togo group of the Ghana-Togo Mountain languages and Ega are excluded today. Potou-Akanic received other labels in earlier studies, like (simply) Akan, Volta-Comoe, Volta-Bandama, and Potou-Tano. As implied by both the earliest and the current name, the Akan language complex and its closest relatives form the core of this group. Dolphyne and Kropp-Dakubu (1988) present a survey of the major subunits located in Ghana.

As mentioned above, Stewart (e. g., 1973, 1975, 1983, 1989, 1993, 1999, 2001, 2002, 2004) argues for Potou-Akanic within the frame of the historical-comparative method, mostly within his wider Potou-Akanic-Bantu project, so that it is based on regular sound correspondences and a good number of lexical reconstructions (e. g., more than 100 proto-forms in the latest published version of 2002). Compared to other genealogical hypotheses within Niger-Congo its likelihood as a genuine family is thus high, with the caveat that most of the published data inform the argument regarding the higher-order affiliation rather than its unity as such. There are also comparative studies on subgroups including reconstructions, notably on Guang (see Painter 1966, 1967; Manessy 1987; Snider 1988, 1989, 1990).

In this context, a word on Dompo, spoken in Ghana as a linguistic enclave in the territory of the Gur language Nafaanra, is in order. While the Ethnologue lists Dompo under the Guang group of Potou-Akanic, Blench (1999a, 2015), who carried out the most recent field work on the language and produced a vocabulary

of more than 450 items, entertains an additional possibility that "it is a language of unknown provenance that has been heavily relexified from Gonja and other languages" (2015: 11). This conclusion is hard to understand after a superficial comparison of his data with published Gonja material (see, e. g., Painter 1967, 1970). The specific similarities to this Guang language, many of which Blench fails to identify and which include all available numerals and pronouns, are so numerous and diagnostic that the classificatory assessment in the Ethnologue is the most plausible hypothesis. Blench's (2007c: 5–6) observation, following unpublished work by Paul Whitehouse, that specific similarities in a few animal names exist with the virtually extinct and unclassifiable language Mpra (see section 2.3.3) is intriguing but does not justify speculation about the isolate status of Dompo. Only new non-lexical data, which may still be possible to collect, given Blench's report of about 60–70 speakers in the late 1990s, has a realistic chance of affecting the current genealogical evaluation of the language.

The Niger-Congo membership of Potou-Akanic as a whole is secure. While, as a Kwa group, it has lost a lot of morphology, its typological structure conforms to the expected profile, and, more importantly, a functional gender system is a very likely reconstruction for the proto-language. That is, languages of the Guang subgroup have full cognate systems of nominal declension with some even keeping agreement (see Manessy [1987] and Snider [1988] for Proto-Guang reconstructions), and some others have retained a highly reduced gender system (see, e. g., Osam [1993] on Akan itself). The forms for first- and second-person singular pronouns and the lexemes for 'two', 'three', and possibly 'person' confirm this genealogical assessment.

U6.Q Ga-Dangme

The Ga-Dangme group comprises two languages spoken around Accra in Ghana. They have been studied most intensively by Mary Esther Kropp Dakubu. There are also treatments with extensive historical-comparative discussion by her (e. g., 1968, 1971, 1980, 1988, 2006) and Capo (1989b). It can be seen from the data assembled in the tables that the small family is a typical unit of the areal "Kwa" concept. It displays a typological structure expected for Niger-Congo and while it lacks most of the diagnostic morphology, it does possess a few plausible relics, which suggests the loss of an earlier canoncial family profile.

U6.R LAGOON

The term "Lagoon" was used by Westermann (e. g., 1927b) for a geographical cluster of about a dozen Kwa languages spoken mainly in the southeastern corner of Ivory Coast, of which Dumestre et al. (1971) provide a demographic and basic linguistic survey. The present concept is more restricted, because some languages

of the original set were subsumed later under other genealogial groups in Benue-Kwa, notably Stewart's (1989: 221–229) Potou-Akanic. Such a negative definition of Lagoon languages is already prefigured by Dumestre et al. (1971: 301–313), who largely classify them in terms of their proximity~distance to Agni-Baule, which represent the local Akanic languages. The two criteria, geography and non-Potou-Akanic, leave six languages or dialect clusters to be treated here: Adioukrou, Abidji, Abe (all subsumed sometimes under Agneby), Avikam-Alladian, and finally Attie. Since there is no explicit claim that this set is of a genealogical nature, it comes as no surprise that no dedicated comparative study exists.

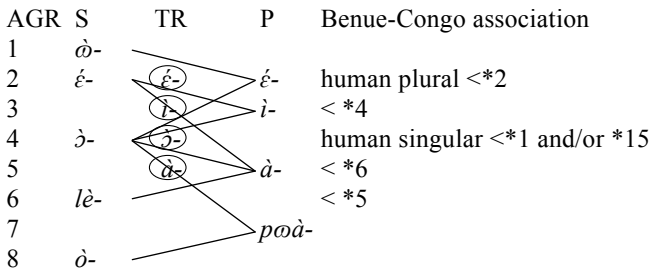
Beyond Dumestre et al.'s (1971) survey, short grammatical sketches of all languages are found in Hérault (1983), interspersed with other Ivory Coast languages subsumed under Kwa. The short treatments show that the languages are typologically similar to neighboring Kwa languages, including the fact that they sometimes show likely remnants of the noun classification system like, for example, number-sensitive noun form classes in Abiji (Tresbarats 1983: 57–60) and a reduced gender distinction in Attie (Kutsch Lojenga and Hood 1983: 248). As evident from Abe, one sample language surveyed here, the paradigmatic and lexical evidence can simultaneously point toward Niger-Congo membership, as with pronouns, or diverge considerably from expected forms, as with numerals.

U6.S Ega

Ega is a single minority language in the Benue-Kwa pool spoken in south-central Ivory Coast. Surrounded by Kru languages, it is both geographically isolated and the westernmost member traditionally subsumed under Benue-Kwa. There is only a limited amount of published linguistic material by Bolé-Richard (1983a, 1983b). The language was also the subject of a documentation project within the DOBES program (see Salffner 2004) but very few descriptive data have become publicly available.

Its position as a geographical outlier is paralleled by the fact that it also differs from other nearby Kwa languages in possessing a fully functional noun classification system whose historical relation to the Niger-Congo canon has been argued for by Bolé-Richard (1983a: 58–62); the gender system and some of the more robust etymological associations are given in Figure 8.

Other features that Ega is likely to share with secure Niger-Congo members can be gleaned from the data surveyed in the above tables; apart from a compatible typological profile and the gender system, they concern some lower numerals and personal pronouns. Before this background, one of Blench's (2004b: 16) three hypotheses, namely that Ega could be a "non-Niger-Congo language that has come under … [Niger-Congo contact] influences", is quite unlikely.



Note: agreement classes are represented by numeral prefixes

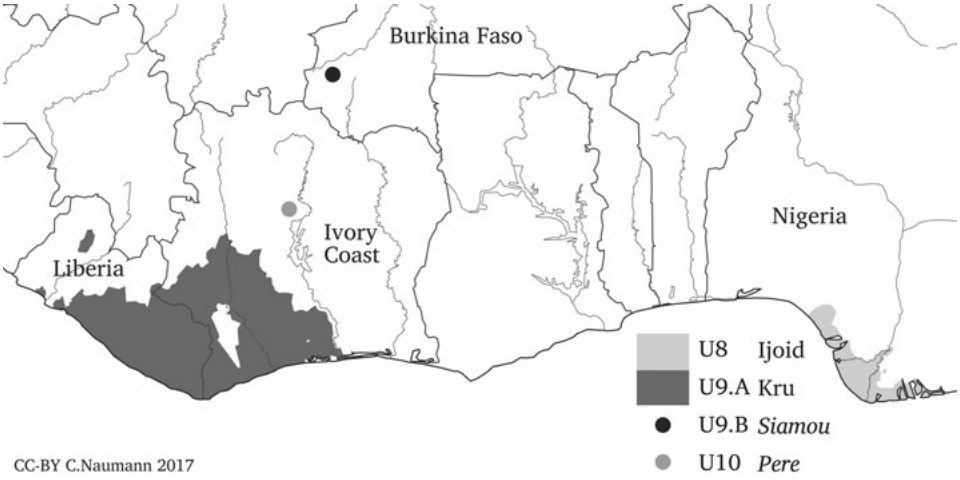
Figure 8: Gender system of Ega (after Bolé-Richard 1983a)

U7 DAKOID

Dakoid is a group of a handful of language varieties in the northern border area of Nigeria and Cameroon (see Map 4), labeled here after its best known variety (Samba) Daka. It was placed by Greenberg (1963a) into Adamawa as his Group 3. Since it was regrouped by Bennett's (1983: 43) lexicostatistic study into Benue-Congo, its genealogical position within Niger-Congo has been controversial. Watters (1989: 401) and Hedinger (1989: 424) listed it more specifically under Northern Bantoid, albeit without any discussion of data; rather, their classification appears to be based merely on a claim in an unpublished manuscript by Roger Blench and Kay Williamson. More recently, Blench (e. g., 2000b) has affiliated it with Jukunoid, Plateau, and Kainji in his Central Nigerian.

Boyd (1994, 1996/97) is the first scholar who provides and discusses more extensive lexical material, particularly on Samba Daka, in order to assess its genealogical position. He argues that lexical affinities point in different directions, namely, in addition to Bantoid and Adamawa also to less expected Gur languages, and he concludes that "… it may still reasonably be maintained that the classification of Chamba Daka within Niger-Congo is indeterminate" (Boyd 2004: 35). However, lexical comparison has not yet brought any appreciable results. Dakoid is not even a proven lineage but for now rather a genealogical pool, because some languages subsumed under it are indeterminate in terms of their immediate genealogical affiliation, as discussed by Boyd (1999) for Gaa~Tiba. A major desideratum concerning Dakoid is the lack of sufficient empirical data, including on morphosyntactic features.

The traits surveyed here merely support a wider Niger-Congo affiliation for the narrow Daka complex in providing plausible reflexes for singular speech-act participant pronouns, the numerals 'three', 'four' and 'five', and potentially also for class *2 and the lexemes for 'person' and 'tongue'.



Map 5: Geographical location of Ijoid (U8), KRU (U9), and *Pere* (U10)

U8 Ijoid

Ijoid, surveyed in particular by Williamson (1971) and Jenewari (1989), is a language family spoken in a relatively compact coastal belt of the central Niger Delta (see Map 5). Its central component is the language complex Ijo. Unfortunately, a systematic reconstruction of Proto-Ijo including the presentation of the full data does not yet exist, although this is necessary for at least two reasons. For one thing, the different varieties, though obviously related, display considerable diversity; they comprise nine languages according to the Ethnologue and lexicostatistic proximity can go down to 60 % (Lee and Williamson 1990). Moreover, the assessment of any genealogical relationship beyond Ijo depends on a reliable picture of its proto-language.

This has become important ever since Jenewari (1983) identified the remnant language Defaka and proposed that it is Ijo's closest relative. Defaka, today in a moribund state, is spoken in an enclave in the eastern realm of Ijo and for a considerable time has been in intimate contact with the Ijo variety Nkoroo. Jenewari's genealogical hypothesis is based on the observation that Defaka and Ijo share a rather consistent head-final word order profile, a distinct pronoun system involving a tripartite sex-based gender scheme, and numerous lexical isoglosses with a few dimly emerging sound correspondences; the first two features are unique in the area and untypical for Niger-Congo.

Williamson (1998, 2004b) endorsed Jenewari's proposal and offered lexical reconstructions for the higher-order lineage Ijoid. Unfortunately, her reconstructions, like those for Proto-Ijo, are simply posited without any systematic justi-

fication. Moreover, they repeatedly appear to be shaped by intertwining two hypotheses that need to be separated, namely the unity of Ijoid and its assumed membership in Niger-Congo. As shown in Table 32, Proto-Ijoid forms are illegitimately inferred from other Niger-Congo forms and a single possible counterpart in either Proto-Ijo or Defaka (see the items in boldface), although they should be based primarily on the presence of cognates in the two units at issue.

Table 32: Selected Proto-Ijoid reconstructions (after Williamson 2004b)

Meaning	**Proto-Ijo**	**Defaka**	**Proto-Ijoid**	**Niger-Congo**
arm, hand	*ɓara	***káa***	*káa	PWS *-ka, Igbo *áká*, BLR *kaca
bag	***akpa**	-	*akpa	PWS *-kua(l), Igbo *àkpà*
belly, stomach	***furou**	*itɔ*	*furou	PWS *-pu, BLR *pudʊ
black, become	*kurukuru	***ɓire***	*ɓire	PWS *-bì-

Note: PWS = Proto-West Sudanic (Westermann 1927b),
BLR = Bantu lexical reconstructions

Connell et al. (2012) have assessed the Ijoid hypothesis critically based on a more extensive documentation of Defaka, in particular because Jenewari's evidence is arguably overshadowed by the possibility that many isoglosses are the result of linguistic convergence between Defaka and its Ijo neighbor Nkoroo. The authors, however, conclude that the new and more extensive data confirm the Ijoid family, because they make it possible to establish some more grammatical isoglosses and, most importantly, additional sound correspondences.

The evaluation of the external relationship of Ijoid is characterized by considerable change and ultimate uncertainty. Greenberg (1963a: 39, fn.13) classified Ijo as Kwa but admitted the uncertainty of this affiliation. Since then it has been assigned to ever-higher nodes in Niger-Congo family trees, predominantly on the basis of lexicostatistic studies and the qualitative assessment of single etyma (cf. Bennett and Sterk 1977; Williamson 1971, 1989b). However, when comparing Ijoid languages with their purported relatives it becomes clear that diagnostic evidence is largely lacking. Apart from sharing hardly anything of the typological structure of secure Niger-Congo lineages, there are no traces of the expected noun classification system and verb extensions, and pronoun forms are entirely dissimilar.

One is left with lexical isoglosses that are subject to ambiguous interpretation. Williamson (1971, 1979, 1988, 1992), in particular, compares a wealth of lexical data between Ijo and secure Niger-Congo lineages but fails to establish recurrent regular sound correspondences, which are necessary for excluding alternative explanations like borrowing and chance resemblance. The lexical similarities appear to be particularly strong between Ijoid and Bantu but the data in Table 33 illustrate the problems pertinent to her hypothesis.

Table 33: Proposed cognates between Bantu and Ijo (after Williamson 1971: 282)

No.	C1	Meaning	Bantu	Ijo
1	b~ɓ	‘goat’	*-búdị*	*-ɓórí*
2		‘become rotten’	*-bòd-*	*ɓùrù*
3		‘excreta’	*-bị*	*bíɛ̃́* ‘defecate’
4	t~t	‘three’	*tátù*	*tárú*
5		‘tree’	*tí*	*tɪ́*
6		‘platform’	*tádà*	*tàndà*
7		‘war, bow’	*tá*	*tɛ̀ɪ̃̀ ‘shoot’*
8	c~s	‘five’	*cáánò*	*sɔ́ŋɔ́rɔ̃́*
9		‘cut’	*-cèng-*	*sèngì, séngí* ‘slice’
10		‘choose’	*-càd-*	*sèlè*
11		‘rub’	*-cịng-*	*sìgìdì*
12		‘wash’	*-cụk-*	*sɔ̀gìdí*
13		‘poke in’	*-còk-*	*sógú* ‘till, harvest’
14	k~k	‘become strong’	*-kód-*	*kùrɔ̀*
15		‘cut’	*-kèd-*	*kárá* ‘carve’
16		‘neck’	*-kịngò*	*kɔ̀ngɔ̀*
17	n~n	‘animal, meat’	*-yàmà~nàmà*	*námá*
18		‘four’	*-nèè*	*-né*
19		‘eight’	*-náánà*	*níŋínà*

Table 33 displays 16 proposed cognate pairs involving four apparently regular consonant correspondences in the C1 position (the first labial series is in fact irregular: 2x b~ɓ vs. 1x b~b). However, as soon as other positions are considered, irregularity sets in. Thus, alveolar and velar segments in C2 present the following picture: 3x d~r vs. 1x t~r vs. 1x d~nd, and 2x ng~ng vs. 1x ng~g vs. 2x k~g, respectively. Equally absent are regular patterns regarding V1. Disregarding individual word pairs with semantic latitude like ‘poke in’ vs. ‘till, harvest’, or an item like ‘animal, meat’, the form of which is extremely widespread also beyond Niger-Congo, there is another general fact that makes the above comparisons suspicious as true cognates. Given that Ijoid is supposed to be an early offshoot of Niger-Congo, while the position of Bantu is very low in the family tree, some comparative pairs look in fact too similar. Hence, it is difficult to exclude the possible explanation of contact with a Bantu-like language. Indeed, borrowing is not unlikely for both a cultural word like ‘goat’ and for the set of four numerals that can so far not be traced back in these specific forms to the old language state implied by the comparison. In fact, Blench (2012c: 40–41) presents some such data within a possible scenario of language contact between the two families. Similar problems pertain to the lexical comparisons Elugbe and Williamson (1977) and Williamson (1979) have

advanced between Ijoid and Edoid, which have interacted intensively in the Niger delta region.

In a parallel fashion, Williamson (1988: 115–117) reconstructs proto-forms of Atlantic-Congo (= Niger-Congo minus Mande/Kordofanian) for such words as 'wine palm', 'oil palm', and 'goat', which crucially involve Ijo and lead to far-reaching conclusions for the prehistory of Niger-Congo in general and the Niger Delta in particular. However, such cultural vocabulary can be acquired by contact if a (proto-)language had not been exposed to the relevant conditions and/or environment before. This is, however, a possible scenario for some languages involved and especially for Proto-Ijoid, which gave rise to a family that may well be perceived as being indigenous in the Niger Delta and having been marginalized there by the spread of genuine Niger-Congo groups. With such data, one cannot help concluding that Williamson has intermingled linguistic and historical argumentation before the background of a preconceived genealogical classification.

Recently, Connell, Akinlabi, and Bennett (2012) reviewed the history of and evidence for Ijoid's placement in Niger-Congo, coming to an equivocal verdict: "Ijoid is indeed fully a part of N[iger]-C[ongo], but the time depth of its separation renders current methods difficult". While noting the overall scarcity of good evidence, they present short tables with possible sound correspondences, also restricted to the C1 position, between Proto-Ijoid on the one hand and Bantu, Mande, and Dogon on the other. Parallel to the evaluation of Williamson's evidence, these comparisons do not comply with standard methodology, because they are not based on transparent and reliable reconstructions for any of the families involved other than Bantu and the supporting data attest numerous undiscussed exceptions, especially if entire word forms are taken into account. Equally difficult to evaluate are the isolated and phonetically short grammatical morphemes that are compared with "common" Niger-Congo forms from Westermann (1927b).

Within the present survey, Ijo's numerals 'three', 'four', and 'five', and arguably also the word for 'tongue', suggest some kind of historical connection to canonical Niger-Congo forms. The interpretation of this finding in terms of inheritence is hard to reconcile, though, with the lack of any other typical Niger-Congo trace. Ijoid's genealogical status is thus far from being settled, and it is possible that it will turn out to be an isolated unit, as suspected early on, for example, by Delafosse (1924: 528–529).

U9 KRU

Kru is a geographically compact language group that is spoken around the common border of Liberia and Ivory Coast (see Map 5). Its constituency has been relatively uncontroversial. According to Marchese (1989), it comprises a large core group that is split into a western and an eastern branch, recognized already by Delafosse (1904), and a few geographically and genealogically more distant languages or

language clusters, namely the Aizi complex, Kuwaa, and Siamou. The proposal to join the last language with Kru, going back to Person (1966), was the latest more substantial classificatory change. It is this addition, to be discussed below in more detail, that causes Kru to be presented here as a genealogical pool.

With respect to its external classification, Kru was first viewed to be a member of (Old) Kwa (e. g., Westermann 1927b; Greenberg 1963a: 39, fn.13). The detailed work on Kru in the 1970s has led to the current view that it is a primary Niger-Congo lineage whose exact genealogical position can only be clarified in the context of more detailed work on the higher-order group as a whole.

U9.A (Narrow) Kru

The coherence and partly the internal grouping of Kru, assumed since early on, have been confirmed by lexicostatistic studies (cf. Welmers 1977), and later also by more detailed investigations of both morphosyntactic and lexical data within a historical-comparative approach, in particular in several studies by Marchese (Zogbo) (e. g., 1983, 1986, 1988, 1989, 2012). This author reconstructs a gender system of the Niger-Congo type as well as some morphosyntactic structures in the verbal domain and compares basic lexicon across the group.

A detailed discussion of the profile and history of gender systems in Kru is presented by Marchese (1983: 189–197, 1988); her reconstruction is summarized in Table 34 and Figure 9.

Table 34: Gender system of Proto-Kru (after Marchese 1988: 324–328)

Salient meaning	**Agreement class (pair)**	**Noun form class (pair)**	**Proposed Benue-Congo association**
human	*ɔ/ʊ	*-ɔ/-ʊ	*1/?*bu
mass, liquid, nature	*ʊ/ɪ	*-ʊ/-ɪ	*3/*4
plant, (small) animal	*a/ʔɪ	*-a/ʔ-ɪ	
large~dangerous animal	*ɛ/ɪ	*-ɛ/-ɪ	*9/*10 or *5/?
animal	*ɛ/a	*-ɛ/-a	*5/*6

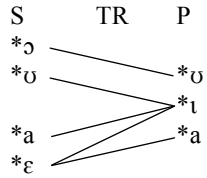


Figure 9: Gender system of Proto-Kru (after Marchese 1988: 324–328)

The systems in modern languages entail both agreement and suffixal noun form classes, whereby agreement can be highly alliterative and, depending on the language, elaborate in terms of morphosyntactic targets. Compared to canonical systems in Niger-Congo, class marking only consists of thematic vowels; on nouns these seem to have been reanalyzed partly as formal phonological triggers of agreement, and hence of gender assignment. Typological similarities aside, Marchese's (1988) proposed association of Proto-Kru markers with diagnostic Niger-Congo classes is not straightforward in terms of form, except for the human singular class *1.

A number of Kru languages display suffixal verb extensions that mostly increase valency, and some of them are reconstructed for Proto-Kru (Marchese 1983: 281–291). However, the forms of some elements are too short to reveal an obvious relation to forms in other Niger-Congo languages; others seem to be recent innovations that partly derive from generic verbs in compounds.

In terms of lexical comparison, Marchese (1983: 390–405) represents all primary lineages of the family in a word list comprising a little over 60 items. While no proto-forms are given, these data allow one to appreciate the unity of the family core. With respect to possible candidates for the Niger-Congo cognates inspected here, the lexemes 'three' and 'four' are clearer than those for 'tongue' and 'person'; speech-act participant pronouns are not obviously related to the most likely Niger-Congo reconstructions.

U9.B Siamou

The isolated language Siamou aka Sɛmɛ is located far to the northeast of the Kru core in southwestern Burkina Faso and adjacent regions in Mali and Ivory Coast. It was first described in a short sketch by Prost (1964: 343–381). In the meantime, more material on the language has become available in Traoré (1984, 1985), Traoré and Bednarz (2008), and Toews (2010, 2015).

The evidence for an affiliation of Siamou to Kru proposed by Person (1966) is unsatisfactory and does not justify his claim that "le caractère kru du sɛmɛ paraît avec une netteté extreme". His (1966: 487–488) lexical comparisons with individual Kru languages are random and equivocal, and *pace* Marchese (1983: 88), the language also partakes very rarely in the comparative lexical series she gives for the Kru core. The grammatical affinities of Siamou and Kru posited by Person (1966: 489–490) are only of a typological nature and often refer to the mere absence of typical Niger-Congo features. Hence, a genealogical relation of Siamou to the Kru family is far from conclusive.

Even its character as a Niger-Congo language must be considered equivocal. The sources do not report a gender system and verbal extensions, or any obvious traces thereof. From the two relevant lexical paradigms, only the word for 'three' can be associated with the recurrent Niger-Congo form; the words for 'person' and

'tongue' are too short to be conclusive. All in all, the current information about the language qualifies it at best as a possible member of Niger-Congo, but certainly unclassified within it, similar to Pere (U10) and Bangime (U14).

U10 Pere

Pere, aka Pɛrɛ (or Mbre as per the Ethnologue), is a moribund remnant language spoken in Ivory Coast (see Map 5) whose speakers are undergoing a language shift to the neighboring Mande language Koro.[14] Greenberg (1963a) does not deal with it, as it was discovered only in the 1980s by Denis Creissels. This author also provides the bulk of the publicly available data in the form of around 850 words and some basic structural features (Creissels 2010).

Boukari (2009) has compared typological features and a 100-word list of Pere in a generic fashion with Kru, Gur, and Kwa but his conclusion that its greatest synchronic affinity is with Gur languages cannot be taken as a sound historical-comparative assessment. Creissels (2010) shows that Pere is very distinct from neighboring Mande but possesses a rather canonical typological profile as well as some specific and thus diagnostic traits of Niger-Congo. This points toward its membership in this larger unit but does not allow its exact internal position to be determined – a conclusion also reached by Blench (2010b).

Regarding the set of features surveyed here it qualifies as possible Niger-Congo on account of plausible remnants of the classes *1, *2, and *6A in the form of pronouns and nominal suffixes; pronominal elements for the two second (but not first) persons; the paradigm of lower numerals; and possibly even the two lexical stems surveyed here. A fuller linguistic documentation of the language is currently underway (Jeffrey Heath, p. c.), which should provide the information necessary for a more robust and specific classification.

U11 ATLANTIC

The languages that Greenberg (1963a) subsumed under "West Atlantic", a concept going back to Westermann (1928), have to be viewed as another genealogical pool rather than a proven lineage. The unity of Atlantic (stripped of its superfluous modifier "west" by later scholars) was questioned early on, as evident in Dalby's (1965: 16) quotation given in section 2.5.1. Later comparativists applying lexicostatistics like Sapir (1971) and Wilson (1989) equally noted the overall low coherence of the group. By the early 2000s, some specialists had effectively abandoned the genealogical hypothesis – a situation epitomized by the title of a workshop held in 2007 at the University of Hamburg: "The Atlantic branch of Niger-Congo:

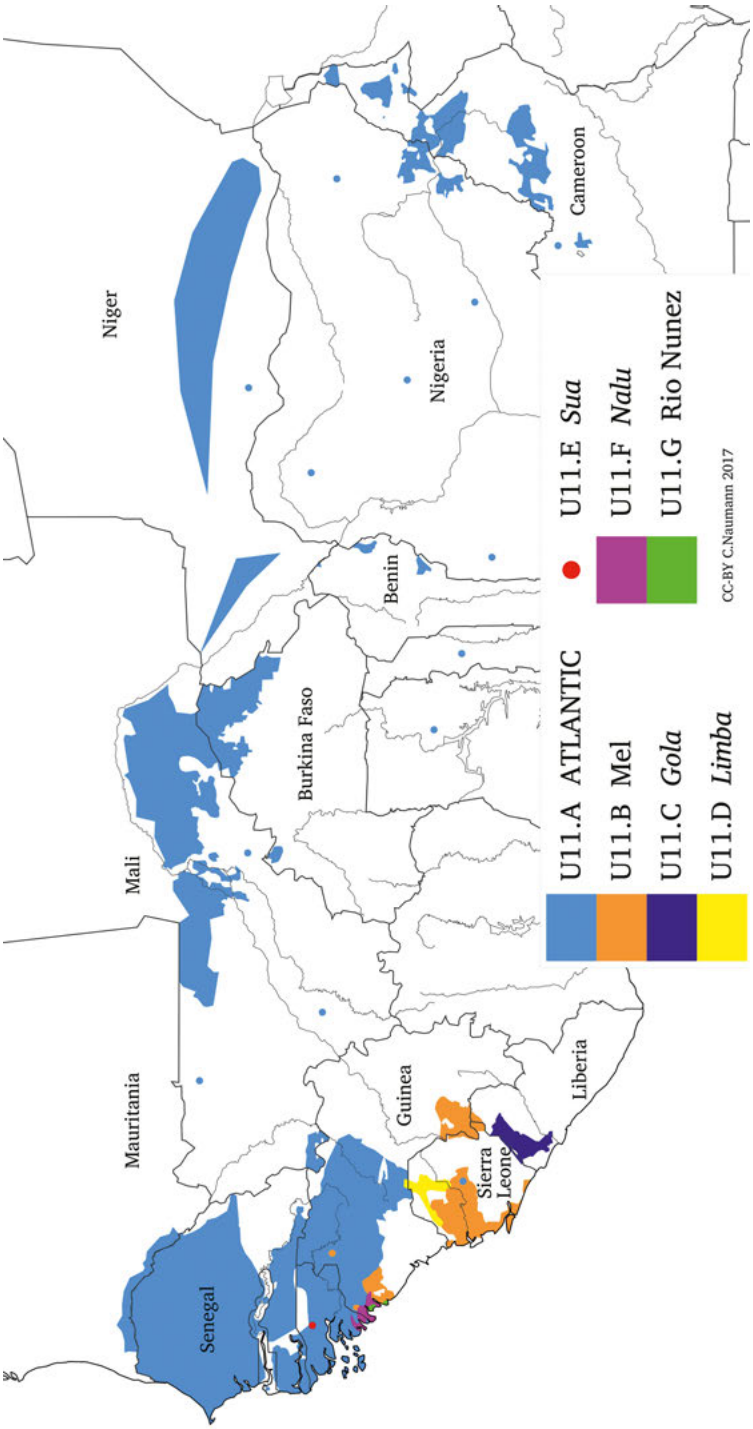
[14] It must not be confused with Peere, also called Kutin, which is spoken in Cameroon and belongs to the Samba-Duru family within Adamawa (U16.E).

genetic or typological unit?" What has held these languages together is primarily their proposed membership in Niger-Congo, their predominant geographical distribution along the coast of westernmost Africa (see Map 6), and the negative definition as non-Mande, which entails in typological terms that they share the standard structural features of Niger-Congo, notably functional gender systems.

In the meantime, the comparative study across Atlantic has intensified on all levels and by means of diverse approaches, leading to important changes. Guillaume Segerer and Konstantin Pozdniakov have been the most active scholars in this domain for more than a decade. Segerer (2010a, 2010c) presents the recent state of the art. Like earlier work, both studies involve hypotheses based largely on lexicostatistics without containing extensive data for inspection. Since they are apparently based on improved material and methodology and also include qualitative results of a canonical historical-comparative approach, their results are presented in Table 35 in comparison with previous accounts, and they serve as the starting point of the following discussion.

Table 35: The history of subclassification of Atlantic

Greenberg (1963a: 8)	**Sapir (1971), Wilson (1989)**	**Segerer (2010a, 2010c)**	**Subgroup source**
Northern	NE Nalu, Mbulungish, B. Mboteni	? *Nalu*	
	NA Sénégal: Fula, Serer, Wolof	Fula-Serer	Pozdniakov (1988)
	ND Eastern Sénégal-Portuguese Guinea, or Tenda-Nyun	Wolof-Nyun Tenda	
	NB Cangin	Cangin	Drolc (2005)
	NC Bak	Bak	
	Bijago	*Bijago*	
Southern	SA Sua	? *Sua*	
	SB Mel	Mel	Dalby (1965)
		? *Gola*	
	SC Limba	? *Limba*	



Note: Fula in Sudan, Chad, and the CAR is excluded.

Map 6: Geographical location of ATLANTIC (U11)

Compared to older assessments of Atlantic, Segerer's (2010a, 2010c) new classification entails crucial differences, the most important ones being as follows:

(a) Atlantic is not necessarily a single coherent lineage.
(b) The two major units in Atlantic are (I) (Northern) Atlantic and (II) Mel.
(c) The long-time Atlantic-internal isolate Bijago is affiliated with Bak in group (I).
(d) Wolof of group (I) is separate from Fula-Serer but possibly affiliated with Nyun.
(e) Several languages are not affiliated conclusively with either group (I) or (II), viz. Gola, Limba, Sua, and Nalu (see below).

The abandonment of the wide concept of Atlantic as a genealogical group throws a different light on any previous attempts to reconstruct all-comprising proto-forms (cf., e. g., Wolf 1992; Pozdniakov and Segerer 2004a). These studies are at best similar to Stewart's (e. g., 2002) project of reconstructing Proto-Potou-Akan-ic-Bantu (see section U6), in that they would be helpful for arriving at an earlier Niger-Congo stage but do not portray a real lineage that excludes other languages outside the comparison.

Atlantic largely comprises languages that have been marginalized in various ways by the expansion of the Mande family (cf., e. g., Köhler 1975: 195; Childs 2004, 2010). Consequently, there is no reason to assume their previous internal unity. Instead, it is equally plausible that the linguistic Pre-Mande landscape was more diverse, similar to other areas in the Niger-Congo domain.

U11.A (CORE) ATLANTIC

Some form of Greenberg's "Northern (West) Atlantic" remains the largest lineage in most of the later classifications, including Segerer's (2010a, 2010c). The most important difference between this core group and Atlantic as a whole is the exclusion of the Mel group, which has been argued for a long time to be an independent unit (cf. Dalby 1965). Without Mel, Atlantic lacks its "southern" component. Accordingly, I follow Segerer's suggested terminological simplification in keeping the well-established term Atlantic but restricting it to the northern core group, and treat this unit for the time being as a primary Niger-Congo group.

According to Segerer (2010a, 2010c), this Atlantic lineage comprises two major subunits, which appear to correlate quite neatly with the presence vs. absence of the important and well-known structural trait of initial consonant mutation. While the "Mutation group", pre-figured in such early studies as Krause (1895) and Klingenheben (1925), subsumes Fula-Serer, (Ba)nyun-Buy (aka Nun)-Wolof, Cangin, and Tenda; the other group, which lacks consonant mutation, can be called Bakic, in that it subsumes the Bak languages and the Bijago cluster.

Heavily distorting sound changes, which led to the complex consonant grade system and also recurrently involved the reanalysis of morphological material, are identified by Pozdniakov (2008) and Segerer (2010a, 2010c) as one of the major

reasons for the low cognacy rates arising from superficial lexical comparisons across these languages as a whole. Compare the illustrative examples in (5), which are based on proposed morphological and sound changes; in Bijago, these would have been particularly dramatic in that earlier noun prefixes became the only phonetic substance of the modern lexical roots illustrated.

(5) Proto-Bakic

‘head’		‘eye’	
*bu-gof		*di-gɛs	
*bu-kof	*bu-ŋof	*di-kis	*ne-ŋɛs
*bu-kow	*bu-ŋo	*di-kil	*ne-ŋɛ
fu-kow	*(u-)bu*	*ji-cil*	*nɛ*
Jola Kasa	Bijago	Jola Kasa	Bijago

(Segerer 2010a)

Obviously, such processes can obscure the genealogical history of a lineage immensely so that Pozdniakov (2008: 197) writes confidently in a programmatic article on Atlantic reconstruction: “… compte tenu de tous les processus évoqués ci-dessus, de nombreuses correspondences nouvelles restent à découvrir [… considering all the processes entertained above, many new correspondences wait to be discovered].” Given that such challenging problems have now been identified, one should expect that the way is paved toward the (partial) reconstruction of whatever proto-language(s) by means of a rigorous application of the historical-comparative method.

(Narrow) Atlantic has already been subjected to a more detailed comparative analysis by Doneux (1975), focusing on gender systems but also including comparisons of verb extensions and phonological and lexical features.[15] While he is able to show a good amount of shared traits, his crucial reconstructions of the gender markers, which are recurrently abstract, deviate considerably in form and/or meaning from language-specific elements and may have been steered partially by a prefigured Benue-Congo-type system. Hence, this work can only serve as a first basis for a more systematic attempt in which bottom-up reconstructions should have primacy over those oriented toward any higher-order group. Until then, Atlantic has to be treated as a genealogical pool.

More secure comparative data are occasionally available on a lower level. The small Senegalese family Cangin, in particular, has been intensively studied from a historical comparative perspective by Drolc (2005, 2006), who arrived at reconstructions for most parts of speech relating to the Niger-Congo-type gender system and more than 330 lexical items. Pozdniakov and Segerer (2004b) is another more abstract comparative study of Cangin pronouns. Similar efforts are underway for

[15] There also exist studies on a smaller scale, for example, Mukarovsky’s (1974) comparison of the gender systems of four Bak languages.

other Atlantic subgroups (cf. Segerer [2012] on Proto-Bak) so that one can hope that the overall historical picture will become more transparent.

The Proto-Cangin gender system is presented in Table 36 and Figure 10. Already a superficial inspection reveals that robust cognates for at least the Proto-Niger-Congo classes *2 and *6A exist in addition to other candidates that need more secure confirmation. Similar, if more sporadic affinities exist for two speech-act participant pronouns and the word ‘tongue’.

Table 36: Gender system of Proto-Cangin (Drolc 2005: 118–144, 219–222)

Salient meaning	**Agreement class (pair)**	**Noun form class (pair)**	**Proposed Benue-Congo association**
mass~liquids	*m-	*m-, others	*6A
inquorate ‘person’	*y-/ɓ-	–	*1?/*2
–	*k-/t-	*k-/t-, others	*7?/?
–	*p-/t-	*p-/t-, others	
diminutive	*j-/t-	*j-/t-, others	
animate	*f-/c-	*f-/Ø	
default	*Ø~n-/c-	*Ø/Ø	*9?, *3?/?

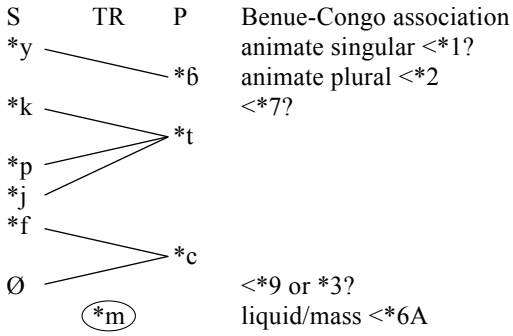


Figure 10: Gender system of Proto-Cangin (after Drolc 2005: 140)

From Doneux (1975) it can be gleaned that parallel results are likely to turn up for other subgroups. Provided that future research can substantiate the new narrow Atlantic as a true family, it can be counted as a robust member of Niger-Congo.

U11.B Mel

Mel is the more concrete label for the core of what Greenberg classified as “Southern (West) Atlantic”. Dalby (1965: 5) insisted that Mel should be treated as a primary lineage within Niger-Congo rather than as a part of some larger Atlantic group (cf. Stewart 2007: 189–190): “[T]he lexical relationship existing between

Mel and many of the North-Western class-languages (i. e. the remainder of 'West Atlantic') is no closer, and is sometimes less close, than that existing between Mel and other African class-languages, or even between Mel and some of the non-class languages of West Africa, including Kru and Akan".

Dalby (1965) bases the internal coherence of Mel on a set of around 300 cognate sets (not fully presented in the source), including sample sound correspondences, as well as a comparison of the gender systems of five languages: Themne, Bullom, Krim, Kisi, and Gola. The fact that Dalby views Gola (U11.C) to be an uncontroversial member of Mel but Segerer does not shows that even cautious approaches to genealogical classification may remain inconclusive without a full application of the comparative method.

A more coherent subgroup within Mel is formed by the northern group members Themne, Landoma, and several lects called Baga (this last term is not specific to Mel but refers more generally to remnant rice-farming populations in the area and also subsumes non-Mel languages to be treated in section U11.G). Wilson (e. g., 1961, 1962, 1963) studied in more detail the historical unity of this group, called here for convenience Temnic. It is this group that also reveals likely cognates to the rest of Niger-Congo with respect to the full paradigm of speech-act participant pronouns and at least the numeral 'three'. The possible reconstruction *meL for 'tongue', which is different but possibly related to the usual Niger-Congo reconstruction *lEm (cf. Wolf 1992), motivated the name for the family. Mukarovsky (1958, 1961, 1966a) undertook direct comparisons between Mel languages and Proto-Bantu but does not follow traditional methodology in that he presents plausible correspondences side by side with questionable or even contradictory ones.

Looking at the gender systems of Mel, the Niger-Congo affiliation is suggested by the presence of robust reflexes of at least the human/animate and the liquid/mass noun genders involving three reconstructed agreement classes *1, *2, and *6A (cf., e. g., Wilson [1961: 53–57] and Dalby [1965: 6–9]). This is also evident in Mel languages outside Temnic, as can be seen at the system of Kisi given in Figure 11.

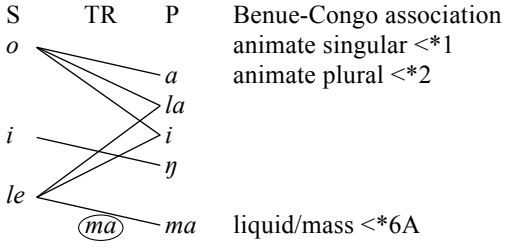


Figure 11: Gender system of Kisi (after Childs 1995: 162–170)

U11.C Gola

Gola is a relatively well-described language (cf. Westermann 1921; Fachner 1990; Koroma 1994) and is commonly affiliated with Mel. However, its lexicostatistic score with any language in the Atlantic pool, including Mel, is never higher than 10 % (Segerer 2010a).

Although far from conclusive, support for a Mel affiliation can be found in verb extensions, the gender system, as dealt with by Dalby (1965: 6–9), and the restricted comparison of diagnostic lexemes undertaken here. Thus, details in the speech-act participant pronoun system and *miè(l)* for 'tongue' point specifically to Mel, and Becher (2002: 31) identifies three verb extensions of Gola, *-i*, *-me*, *-ne*, which almost exclusively recur in Mel languages.

A look at the gender system as presented by Westermann (1921: 26–33) and Koroma (1994: 26–36, 59) yields further support. For one thing, all agreement classes of Gola are present across Mel, so that its system can be derived potentially from a more elaborate Proto-Mel system. One can also argue that Gola goes with Mel in having a likely cognate in the animate plural class in *a*, in which the lack of the initial labial consonant is a shared feature; non-Mel Atlantic languages attest for the widespread Niger-Congo class *2 in *ba*.

U11.D Limba

Limba, although demographically quite large and even viewed by the Ethnologue as two languages, is known only from a 5,000-item vocabulary (Clarke 1922), an extensive text collection (Finnegan 1963), and quite scanty grammatical information (notably, Berry 1958). Its lexicostatistic scores with the rest of Atlantic are very low, the highest being 11 % with Themne, which is its only contact language in the Atlantic pool (Segerer 2010a). Accordingly, it is considered to be isolated.

The non-specific Niger-Congo affiliation of Limba rests primarily on the nature of its gender system, which can be extracted in parts from Berry (1958). As with most other Atlantic languages, classes *1, *2, *6A and its two resulting genders have robust reflexes; an additional candidate may exist for class *15~17. The genealogical hypothesis may also be supported by the numerals for 'three' and 'four', and arguably by *liṅ* 'tongue'. Mukarovsky's (1962/63) comparisons between Limba and Proto-Bantu are only a first step to more systematic work, because they suffer from the same problems mentioned in connection with his historical work on Mel languages.

U11.E Sua

Sua aka Mansoanka is the third Atlantic language whose status remains uncertain in Segerer's (2010a, 2010c) lexicostatistic research. It is endangered and only

known from short word lists and scanty grammatical information, which inhibits a conclusive genealogical assessment.

The language possesses plausible Niger-Congo reflexes of a full paradigm of speech-act participant pronouns and for 'three', 'four', and 'tongue'. Wilson's (2007: 147–151) grammatical information also attests to a Niger-Congo-like gender system that at least displays likely cognates of classes *2 and *6A.

U11.F Nalu

The last Atlantic-internal isolate in Segerer (2010a, 2010c) is Nalu. Similar to Sua, there is very little information on which to base any classification. Lexical Niger-Congo traits seem to exist with 'tongue', 'four', and possibly also for 'I' and 'two'. Wilson's (1961: 61, 63; 2007: 131–134) grammatical data show that the language has traces of a Niger-Congo gender system with both noun prefixes and, in very restricted form, agreement markers, which plausibly reflect at least the earlier existence of classes *2 and *6A.

U11.G Rio Nunez

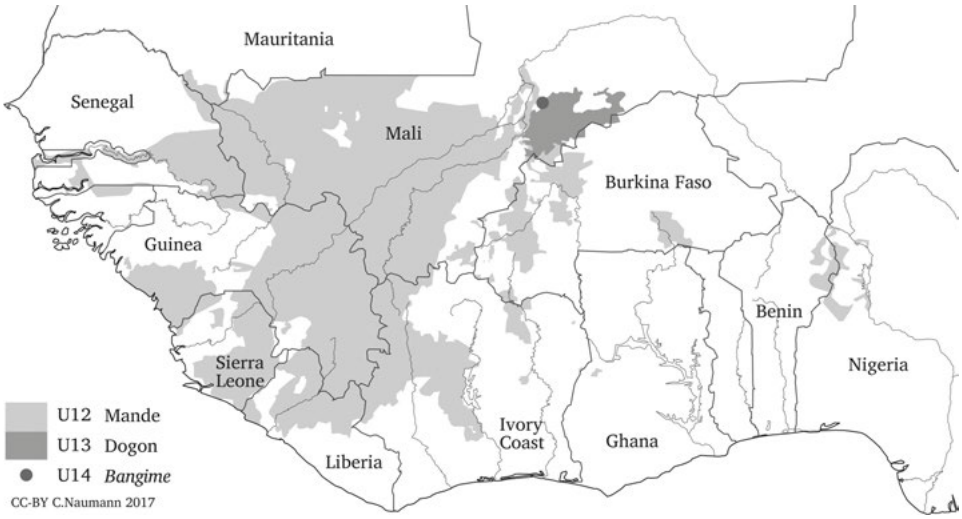
While Nalu is presented above on its own, it is recurrently listed together with two other languages that are not explicitly treated and assigned in Segerer's (2010a, 2010c) classification, viz. Mbulungish aka Baga Fore and the nearly extinct Baga Mboteni (aka Baga Pokur) (see section U11.B for the concept "Baga"). Since both languages are located around the mouth and estuary of Rio Nunez, I use this concrete geographical term for convenient reference. Like Nalu, they are spoken by ethnic minorities under heavy influence from larger neighboring groups speaking Mande and other Atlantic languages. They are also very poorly known without any fuller grammar and dictionary. The lineage assumed to comprise both Nalu and the Rio Nunez languages is called "Mbulungish-Nalu" by the Ethnologue and "Coastal" by Fields (2001).

Fields's (2001) study of the social history of coastal rice-farming populations of Guinea, comprising parts of the Mel family and her "Coastal" group, includes some linguistic comparison by means of lexicostatistics and is thus the most explicit classificatory treatment known to me. By assembling 100-word lists for the three languages at issue (Fields 2001: 294–300) and comparing them with each other and her Mel data, the author comes to the conclusion that they do form a genealogical unit, opposed to Mel and the rest of Atlantic (Fields 2001: 59–66). However, the lexical proximities given by Fields (2001: 61) are modest in that they do not exceed 30 % and are questionable in the first place, because there is virtually no discussion of individual comparative sets, let alone a serious attempt at lexical reconstruction.

The three languages do not form a group according to Wilson's (1961: 60–61,

2007: 131–137) assessment, which appears to be linguistically sounder. In particular, he provides a comparison of parts of their gender and number morphology, which is more reliable classificatory evidence than degrees of lexical proximity, *pace* Fields (2001: 62). On this account, Mbulungish and Baga Mboteni appear to be more closely related, because they share largely identical paradigms of prefixes and suffixes for number and noun classification, even though Baga Mboteni has lost gender agreement. Nalu does not possess comparable morphology, although it does have a restricted gender system, as mentioned in section U11.F.

The Rio Nunez languages may well belong to Niger-Congo, given likely reflexes for 'tongue' and the numerals 'three' and 'four' as well as less clear reflexes for classes *1 and *2. Beyond this general conclusion, the languages should be viewed as unclassified for now, like all of Segerer's (2010a, 2010c) isolates in the Atlantic pool discussed in section U11.C–F.



Map 7: Geographical location of Mande (U12), Dogon (U13), and *Bangime* (U14)

U12 Mande

As opposed to such groups as Benue-Kwa, Atlantic, etc. the Mande family is a well-defined genealogical group comprising more than 70 languages that are spoken in a large area south of the Sahara from the Atlantic coast up to western Nigeria (see Map 7). A geographically central area is dominated by the demographically and sociolinguistically crucial language complex Manding whose historical genesis is partly associated with the formation of the Mali Empire around the middle and upper course of the Niger River. Despite the relatively large lan-

guage inventory, Mande is one of the better documented families on the continent.[16] Family surveys rich in information are Welmers (1971), Dwyer (1989), Kastenholz (1991/92), and Vydrin (2016).

Recognized already by Koelle (1854), the internal structure and historical dynamics of the Mande family has been the subject of investigation in quite a number of studies. Its modern internal classification took shape with Welmers's (1958) treatment, which used both lexicostatistical and historical-comparative methods. Today there exists wide agreement about the existence of around ten low-level subgroups and a major split between a western and a southeastern branch, whereby the latter comprises only two groups, namely Mani-Bandama (aka "South[ern]") and Niger-Volta (aka "East[ern]"). Apart from variable and for outsiders potentially confusing terminology (note the use of cardinal directions on different classification levels), divergent views mainly exist regarding intermediary groups, particularly so with respect to the subclassification of the primary and complex western branch (see Vydrin [2009, 2016] for the most recent discussion).

Besides applying lexicostatistic approaches on various levels, historical-comparative reconstruction has been applied to several of the Mande constituent units, notably to Southwestern by Dwyer (e. g., 1973, 1974), Vydrin (1989), and Babaev (2010a); to Mani-Bandama by Vydrin (e. g., 2005, 2006); and to Niger-Volta by Schreiber (2008). A more comprehensive study tackling the entire western branch is Kastenholz (1996); this work has also been used up to now as the primary reference for the overall subclassification of Mande. Dwyer (1988), Grégoire (1988), Grégoire and de Halleux (1994), and Vydrin (2009) are additional works with scope over the entire family. In spite of this quite extensive amount of historically oriented literature there is no fuller published work yet on Proto-Mande that could be used for comparisons beyond the family. Recent works like Vydrin (2012, 2016), however, have promised to fill this gap in the not-so-distant future.

A typological hallmark of the Mande family is the cross-linguistically marked syntactic clause configuration S-AUX-O-V-X (see Creissels and Good, this volume). While it is not unique in Niger-Congo or the wider geographical area (Gensler and Güldemann 2003; Güldemann 2007b, 2008d), it has been recurrently discussed especially for Mande, including its possible historical implications, for example, by Claudi (1993, 1994), Bearth (1995), Creissels (1997, 2005), Kastenholz (2003, 2006), Tröbs (2009, 2010), and Nikitina (2011, 2012). While some scholars simply view it as an old feature to be reconstructed for Proto-Mande, others like Claudi and Nikitina attempt to derive it from a mainstream Niger-Congo clause profile with SVO order, apparently under the assumption that Mande is a demonstrated member of that larger entity.

[16] This includes a sizable amount of literature by Russian scholars whose studies written in Russian unfortunately inform the general discussion about the family only to a limited extent (see Vydrin [2016] for a selection of some historically relevant studies).

Due to the considerable geographical extension of Mande it comes as no surprise that its member languages have been found to have multiple contact relationships outside the family and that studying these relationships can also throw some light on linguistic prehistory. For example, Mande language contact is discussed with respect to Atlantic (Childs 2004, 2010; Dwyer 2005; Vydrin and Vydrina 2010), Gur (Beyer 2010; Beyer and Schreiber 2013), and Songhay (Nicolaï 2006), whereby the particular pattern regarding the direction of interference depends on the sociolinguistic status of the contact partner. Especially in the southern and southwestern realm of the family, Mande languages appear to have been widely dominant and hence the target of language shift whereby their structure underwent simplification and/or a drift to local linguistic patterns – a point convincingly argued for by Vydrin (2004) concerning phonological data. This pattern seems to support Vydrin's (2009) hypothesis that the homeland of Mande is to be sought in its modern northern rather than southern realm.

The external genealogical relationship of Mande has been a controversial topic since Greenberg's claim about its membership in Niger-Kordofanian. While Mukarovsky's (1965, 1966b, 1966c, 1966d, 1971, 1988, 1995) skepticism is clouded by his own speculative associations of Mande with various families outside Niger-Kordofanian, it is not clear whether the quantity, quality, and diagnostic value of the evidence he musters is entirely different from that in Greenberg's proposal. That the latter is weak is also recognized by other scholars: Köhler (1973/4) treats Mande as a fifth separate African unit – his most substantial deviation from Greenberg's (1963a) classification. Moreover, at least the Mande-Songhay affinity is viewed also by other scholars to be so significant that it warrants a new and more detailed assessment (cf. Creissels 1981).

The reluctance of some scholars to assign Mande to Niger-Kordofanian has obvious empirical reasons that have been known for a long time. So far, no convincing case for even remnants of relevant morphological traits in Mande can be made (cf. Vydrin 2012 for a recent overview); this also applies to the hypothesis that phonological alternations in nouns in some Mande languages might be prefixal remnants of an inherited noun class system (cf. Creissels 1979; Pozdniakov and Vydrin 1986; Vydrin 1989). With respect to the lexicon, too, Mande displays a distinctive profile that sets it apart from the Niger-Congo core. Dwyer (1998) argues that Mande does share a considerable amount of lexicon with Niger-Congo but at the same time has to concede that his comparative data, namely his own Proto-Mande, the basis of which is not presented in the study, and Mukarovsky's (1976/7) Proto-West-Nigritic, are far from providing established and sufficiently proven reconstructions. The same situation holds for a similar argument made by Vydrin (2016: 120). The limited affinity of Mande to Niger-Congo is also reflected by the absence of convincing cognates in the pronouns and numerals surveyed here in that any meaningful item occurs merely on the subgroup but not the proto-level (e. g., *naa.ni 'four' in the southwest branch; cf. also Mukarovsky 1971). Overall,

unless more robust and systematic evidence is brought forward, the long-standing but vague idea that Mande is distant from the rest of Niger-Kordofanian as one of its earliest offshoots should give way to the neutral assessment that it is a family without a proven genealogical affiliation.

U13 Dogon

Dogon languages are spoken on and around the Dogon Plateau in south-central Mali (see Map 7). This family is one of the African lineages whose image, classificatory and otherwise, has changed most dramatically in the recent past, which is mainly due to the "Dogon languages and Bangime project" initiated by J. Heath (see Moran, Forkel and Heath 2016).

For one thing, while Dogon was viewed in the past as a complex language or dialect cluster (cf., e. g., Bendor-Samuel, Olsen, and White 1989), it is now recognized as a family of more than 20 languages and many more dialects with a rather complex sub-branching (cf. Hochstetler, Durieux, and Durieux-Boon 2004; Moran and Prokić 2013; Moran, Forkel and Heath 2016). That the family is nevertheless a relatively close-knit unit is evident from Heath, Moran, and Prokhorov's (2012) lexicostatistic chart based on the Swadesh 100-word list in that only a couple of cognacy rates across all language pairs fall below 40 %.

Another radical change regarding Dogon concerns its state of documentation. For a long time, the only published and more comprehensive description was that by missionaries on Donno Sɔ (Kervran and Prost 1969, 1986; Kervran 1993). The website of the above documentation project now offers a number of extensive grammatical descriptions, two of them published (Heath 2008; McPherson 2013), as well as a large amount of other material. This great increase in the level of knowledge about the group already allows for a better assessment of its typological profile and its internal diversity, although historical-comparative reconstructions of the family are not yet available.

Equally dramatic is the change of the genealogical position of Dogon within the Niger-Kordofanian domain. While Greenberg (1963a) still lists Dogon under Gur (U15), it was given a separate status by Bendor-Samuel, Olsen, and White (1989), possibly coordinate with such families as Kru, Kwa, Benue-Congo, etc. according to Williamson (1989b: 21). Now it is considered to be a yet more peripheral Niger-Congo family (cf., e. g., Williamson and Blench 2000: 18). This marginal status seems to be due to the fact that, among other things, Dogon stands out against the Niger-Congo canon due to its quite coherent head-final word order.

Nevertheless, a number of its languages turn out to possess some of the features that are typical for Niger-Congo. For example, Najamba aka Bondum Dom and related varieties have a noun classification system with agreement on adjectives and participles that, albeit reduced, could be argued to be comparable to the Niger-Congo type (see Figure 12). This seems to be supported by the recurrent

existence of an element that may be reconstructed as a third-person (human) plural marker, *bV, that surfaces in both nouns and pronouns and resembles the common Niger-Congo form for class *2 (cf. Heath and Prokhorov 2010).

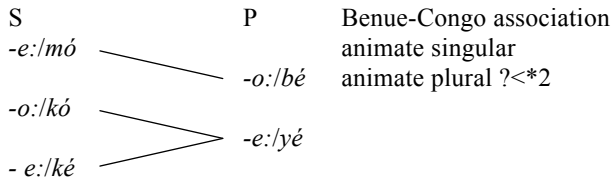


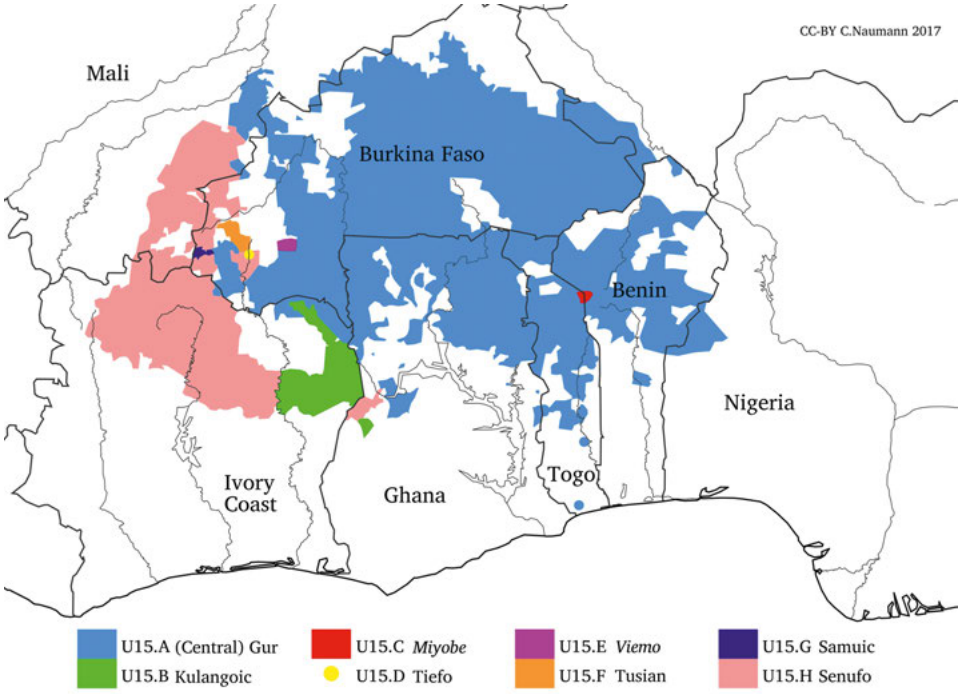
Figure 12: Gender system of Najamba aka Bondum Dom (after Heath 2015)

The full numeral paradigm surveyed here, the first- and second-person singular pronouns, and potentially also the words for ‘person’ and ‘tongue’ all appear to support a Niger-Congo affiliation. Overall, the genealogical status of Dogon is nevertheless an open question and awaits a serious comparison of Proto-Dogon with what can be assumed to be relevant for early Niger-Congo.

U14 Bangime

Practically unknown at Greenberg’s (1963a) time, Bangime is an isolated minority language spoken by a few thousand people in the northwestern part of the Dogon-dominated Plateau (see Map 7). It is surrounded by such distinct and diverse languages as Tiranige (Dogon), Bozo (Mande), and Fula (Atlantic). Although the ethnic group identifies unilaterally with the Dogon, anthropologists recognized its distinctness early on. The language was nevertheless subsumed under Dogon, mainly due to the lack of any substantial linguistic documentation. In the wake of the “Dogon languages and Bangime project”, the language received more attention in the recent past, culminating in a first extensive description by Hantgan (2013).

The available data have made it clear that Bangime cannot be shown convincigly to be a part of Dogon or any other family (see Blench 2010a; Hantgan 2010). Accordingly, it is now listed even by the Ethnologue as an isolate, the only one in Africa except for the questionable Jalaa. Its typological profile can be distinguished from all neighboring lineages like Dogon, Mande, and Atlantic but falls within the general range found across the Niger-Kordofanian domain. The lack of any diagnostic morphological traces is not a strong criterion for its classification either way. Its lower numerals for ‘three’, ‘four’, and ‘five’ as well as the first-person singular pronoun can be argued to present evidence in favor of its membership in Niger-Kordofanian. The question of its genealogical classification is also complicated by the suggestion made by Hantgan (2013) that the language is at least partly a secret language with a potentially mixed origin, although this idea still awaits a full exposition and justification.



Map 8: Geographical location of GUR (U15)

U15 GUR

The approximately 100 languages traditionally subsumed under Gur and spoken in a compact area south of the bend of the Niger River (see Map 8) form another genealogical pool within Niger-Congo (see Bendor-Samuel 1971 and Naden 1989 for surveys of the group). Earlier alternative labels for the group are "Mossi" (cf. Westermann 1913) and still today within the important French research tradition "Voltaïque". The development of its internal classification is reproduced in Table 37.

The necessity to present Gur as a genealogical pool has already been aptly expressed by Naden (1989: 143) for the group itself (but see also below on external relationships):

> The … languages [outside Central Gur] …, especially Senufo, may well be no more closely related to Central Gur than to Guang or Togo Remnant [= Ghana-Togo Mountain], or than these to Central Gur or Volta-Comoe [= Potou-Akanic]. Classificatory studies at a level between these lower-level groupings and the level of Volta-Congo [= Niger-Congo in the present use] are presently in flux.

Table 37: The history of subclassification of Gur

Greenberg (1963a: 8)	**Naden (1989: 144–151)**	**Miehe, Reineke, and Winkelmann (2012: 725–727)**
g. Gurma, …	Central: Oti-Volta	Central: North
d. Mossi, …		
c. Grusi	Central: Grusi	Central: South, including now
e. Tem, …		
f. Bargu (Bariba)	? Bargu	Baatɔnum
b. Lobi-Dogon	? Lobi	Lobiri-Jąąnɛ
	? Logon	? Kulangoic
	? Kulango	
	Dogon > section U13	–
	??? Wara-Natioro	??? Samuic
unknown	??? Tyefo	??? Tiefo
unknown	??? Viemo	??? *Viemo*
unknown	??? Win	??? Tusian
unknown	??? Kuyobe	??? *Miyobe*
a. Senufo	??? Senufo	??? Senufo

Note: ?(??) uncertain status vis-à-vis Central Gur

Since Naden's study, tremendous progress has been made in the documentation, description, and historical comparison of the languages, and the genealogical assessment of some members has certainly become clearer. However, the situation has not changed in principle, as is apparent from the most recent classification found in Miehe, Reineke, and Winkelmann (2012: 725–727) as well as from the persistent lack of Gur reconstructions based on all languages conventionally subsumed under it.

Despite such problems, Gur is one of the language groups in Africa that has been studied most intensively in the framework of historical-comparative methodology. This is primarily to the credit of Manessy (cf., e. g., 1969, 1975, 1979, 1982; see the succinct summary of his extensive Gur oeuvre by Miehe 1997a), because he insisted, among other things, on bottom-up reconstruction based in particular on morphological features – this in a period of elation for lexicostatistics during the 1960s and 1970s. His research agenda was taken up by a major German research initiative starting in the 1990s, resulting in, among other things, such comparative works as Miehe (1997b, 2001, 2004, 2006); Miehe and Winkelmann

(eds., 2007); and Miehe, Reineke, and Winkelmann (eds., 2012). The results of this research make it clear that virtually all Gur languages possess typical Niger-Congo systems for noun classification, well beyond the three proto-classes surveyed here (cf. Miehe's [1997a: 15–16] synopsis of Manessy's reconstructions), which alone is sufficient evidence for their membership in the higher-order lineage.

The linguistic history of peoples speaking Gur languages was also addressd by means of other approaches. These include lexicostatistics – one of the first foci by Swadesh himself (see Swadesh and Arana 1966); the study of cultural vocabulary and nonlinguistic information like migration traditions (see Köhler 1958; Manessy 1977; Beyer 1998); and research on different patterns of language contact, for example, with Mande in the (north)west (e. g., Beyer and Schreiber 2013; Schreiber 2014) and with Benue-Kwa in the south(east) (e. g., Kleinewillinghöfer 2000, 2002).

In addition to the uncertainties about the connections between the various Gur subgroups, another crucial observation was made regarding external genealogical relations. Especially on account of the important Niger-Congo diagnostic of gender marking, Kleinewillinghöfer (1996b) argues that at least the Tula-Waja family (U16.A) within the Adamawa pool shows striking affinities with the core group of Gur, warranting the suggestion of a close genealogical link between the two. This proposal has been well received by other specialists to the extent that the connection became the focus of the workshop titled "Adamawa-Gur Sprachen im Brennpunkt afrikanistischer Forschung [Adamawa-Gur languages in the focus of African studies]" held in 2016 at the University of Hamburg (see http://www.aai.uni-hamburg.de/afrika/adamawa-gur/). Nevertheless, the uncertain constituency of the Gur family itself and of other Niger-Congo lineages implies that it is too early to conclusively evaluate the historical implications of such a link.

U15.A (Central) Gur

The core of the genealogical pool, containing around 70 languages, has come to be called "Central" but for the time being may be better conceived of as Gur proper to which other questionable groups still have to be related in a more conclusive manner. The family was proposed by Manessy (1979) by joining lineages previously established by him into a single larger unit; these were Gurunsi (see Manessy 1969), Oti-Volta (see Manessy 1975; cf. also Beyer 1998 and Sambiéni 2005), Koromfe, and implicitly Cerma-Curama (see Manessy 1978). The proposal is based on regular sound correspondences, comparative verbal and nominal morpology, and close to 100 lexical reconstructions. One particular focus is the comparison and reconstruction of the gender system (which in some modern languages is only retained in the nominal declension system). He also used this trait later for adding other groups like Lobiri-Jaane, Gan-Dogose, Bwamu, and Bariba (see Manessy 1982, 1983, 1993). The inspection of the reconstructed gender systems as well as diagnostic lexical proto-forms leave no doubt about the Niger-Congo

membership of this group but, as indicated above, the exact affiliations within it remain open.

U15.B Kulangoic

Less than a handful of closely related languages spoken close to and partly across the northeastern border of Ivory Coast are subsumed under a family named here after its major member, Kulango. There are a number of descriptive studies concerning languages of the small family, the most significant one being the full grammar on Kulango of Bouna by Elders (2008). The comparative Kulangoic research that the same author had been preparing has not been completed due to his untimely death. His (2007b) brief comparative notes on the canonical gender system remain as indeterminate as the central conclusion in the classificatory overview by Manessy (1982: 128–138), who states that the Kulangoic languages "appartiennent à la famille voltaïque, mais qu'ils sont issues d'un autre rameau que les langues proto-centrales" [belong to the Gur family, but derive from another branch than the languages of Proto-Central]. That is, the peripheral position of the group vis-à-vis the core of Gur entails a general Niger-Congo affiliation but at the same time the possibility that its closest relative(s) may still be found outside this genealogical pool.

U15.C Miyobe

Miyobe (also known under the exonym Sol(l)a) is a single language spoken on the northern stretch of the border between Togo and Benin. Its exact classification remains controversial, because Naden (1989: 150, fn. 13) has questioned Manessy's assumption that it belongs to Oti-Volta. The documentation of the language has improved in the meantime, notably through the works of Rongier (1996) and Pali (2011); unfortunately, however, neither one uses their data to address the genealogical status of Miyobe vis-à-vis Gur and beyond. A superficial inspection of its gender system, as described by the above sources, displaying agreement and, as opposed to the Gur canon, *prefixal* noun declension, leaves no doubt that Miyobe is a Niger-Congo language. Its exact position remains to be determined, though – a conclusion also arising from its generic forms for the pronouns and lower numerals recorded here.

U15.D Tiefo

Tiefo (aka Cɛfɔ) is the first of four language units that are spoken by little-known minority groups in the southwest of Burkina Faso, and sometimes beyond its borders, and have not yet been related conclusively to the rest of Gur or any other Niger-Congo group. The group comprises two languages threatened by shift to the

vehicular Mande language Jula, namely the moribund Tiefo of Daramandugu documented by Winkelmann (1998, 2001, 2007a) and the highly endangered Tiefo of Numudara~Niafogo described recently by Heath, Ouattara, and Hantgan (2017). Manessy (1982: 143–145) provides a short comparative discussion of Tiefo and, based on very restricted data, assigns it to Gur. In a similar fashion, Winkelmann (2001, 2007a) attempts to reconstruct an earlier noun classification system of the Niger-Congo type for the Daramandugu variety whereby all "nominal endings, plural morphemes, pronouns and dialectal variations were taken into consideration, under the assumption that these elements are remnants of the same [Gur gender] system" (2007a: 492). Her results are far from unequivocal, because both suffixal noun morphology and agreement marking of the language may but need not be (partly) cognate with the assumed proto-paradigm. Yet another situation holds in the Niafogo variety described by Heath, Ouattara, and Hantgan (2017) in which the small set of article-like vowel prefixes is the central part of relevant noun morphology. An equivocal picture also emerges from the limited data inspected here in that only a couple of elements, namely for second-person singular and 'three', could go back to early Niger-Congo forms. A genealogical relationship of Tiefo to Gur, or more generally Niger-Congo, is certainly possible but so far poorly supported; its conclusive establishment requires a dedicated comparative investigation based on all available relevant data.

U15.E Viemo

The Viemo language is the second of the relevant isolated entities. Published data are available in Prost's (1979) grammar sketch and Winkelmann's (2007c) description of the gender system. Manessy's (1982: 138–143) comparative assessment parallels that for other similarly unclassified Gur units, namely that "il s'agit d'une langue dont l'appartenance à l'ensemble voltaïque ne fait, du point de vue typologique, aucun doute, mais dont la parenté généalogique avec les autres composantes de cet ensemble est difficile à établir" [it is a language whose affiliation to Gur is beyond doubt from a *typological* perspective but whose *genealogical* relation to the other components of this group is difficult to establish, emphasis mine] (Manessy 1982: 138). Since Gur as a whole is "typologically" not easy to distinguish from other geographically close Niger-Congo languages with functioning noun classification systems, for example, of the Ghana-Togo Mountain and Guang groups, his specific genealogical characterization is equivocal. Winkelmann's (2007c) more extensive discussion of the gender system also does not go beyond identifying a canonical Niger-Congo system. A similar conclusion has to be drawn here from the pronoun and numeral data, which show some likely Niger-Congo cognates but do not clearly point to a particular affinity with the Gur core.

U15.F Tusian

The third isolated Gur unit in southwestern Burkina Faso is Tusian, comprising the two languages Win (aka South Tusian) and Tir (aka North Tusian); Prost (1964: 249–342) and Winkelmann (2007d) deal with the former and Zaugg-Coretti (2005) with the latter. Both Tusian languages have a complex system of suffixal number declension on nouns, similar to many other Niger-Congo languages, but a restricted agreement system revolving around humanness~animacy. Some pronouns and lower numerals correspond to forms assumed for Proto-Niger-Congo. All these features point to a generic membership in the larger family, while other more concrete proposals like a Gur or even specific Senufo affiliation have not been made in an empirically sound fashion.

U15.G Samuic

The last linguistic unit in southwestern Burkina Faso with an unclear relation to the core of Gur is Samuic, consisting of three poorly known languages. The main data sources are Prost (1968) and the four relevant contributions in Miehe and Winkelmann (eds., 2007: 512–565) dealing with the gender system of each language and their comparison. According to Winkelmann's (2007b) overview article, the noun classification systems are reduced in having fewer and less regular noun declensions and agreement restricted to human vs. non-human. These data as well as the pronouns and numerals assembled here suffice to recognize the Niger-Congo membership of the family but not to determine its more precise position with respect to canonical Gur or any other group in the larger unit.

U15.H Senufo

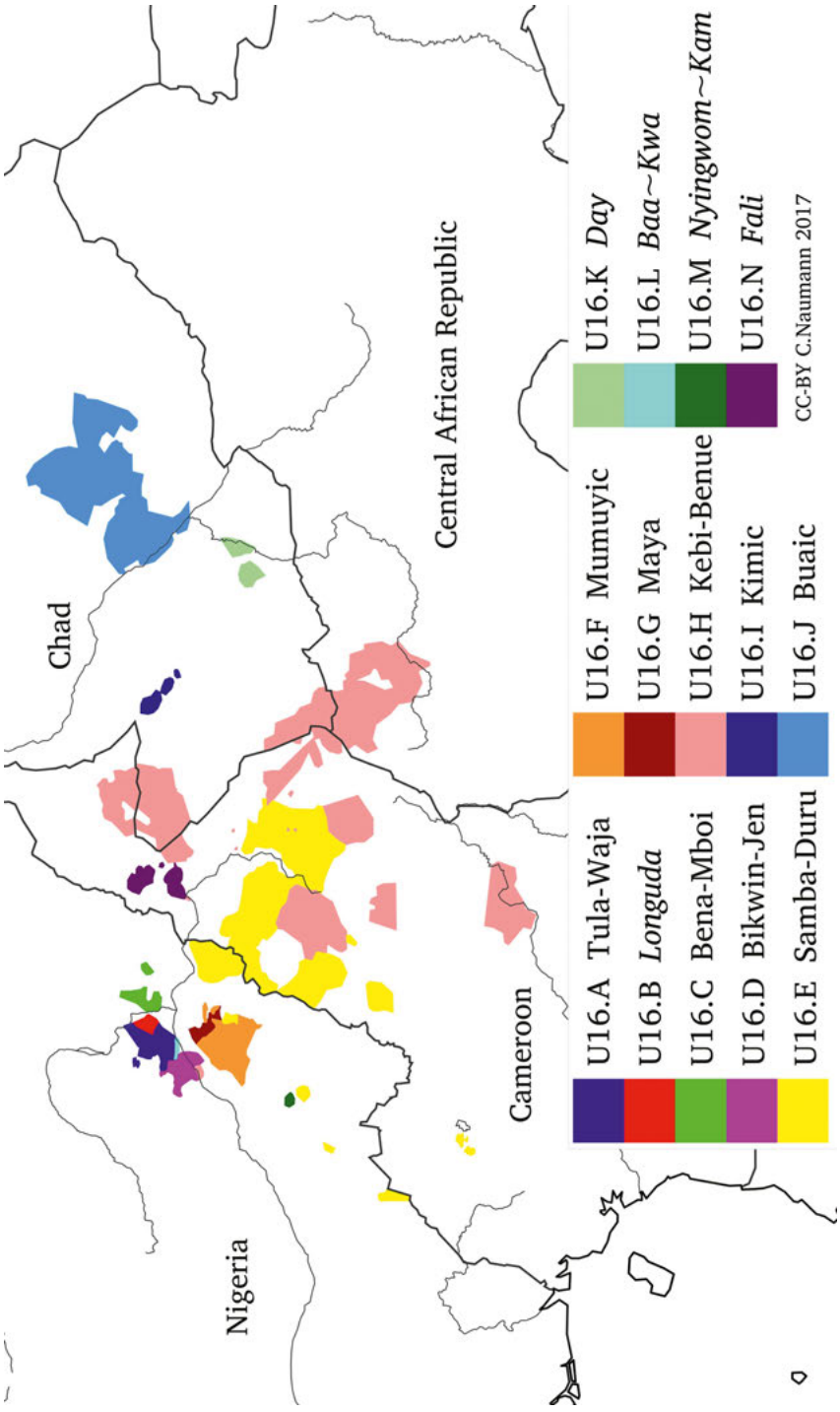
The Senufo group consists of more than a dozen languages distributed in southern Mali, southwestern Burkina Faso, northeastern Ivory Coast, and western Ghana (see the survey by Carlson 1997). It has long been recognized as having a distinct character setting it off from the rest of Gur. One of its common denominators is its consistent S-AUX-O-V-X word order and other head-final features, which, in view of the group's westernmost distribution, may reflect its increased contact interaction with other such lineages, notably Mande. Efforts to reconstruct Proto-Senufo go back again to Manessy (1994, 1996a, 1996b, 1996c, 1996d) who dealt primarily with phonology and morphology. No substantial list of lexical proto-forms is available so far. The indeterminate relation to Gur aside, there is no doubt that Senufo is a typical Niger-Congo lineage of its geographical area. This is particular clear from its gender system with suffixal noun declension and full agreement (cf. the summary by Miehe 2007) but also supported by other traits, for example, lexical elements like the singular speech-act participant pronouns and the numeral 'three'.

U16 ADAMAWA

Adamawa is a highly diverse genealogical pool of Niger-Congo in its northeastern periphery (see Map 9). While joined by Greenberg (1963a) specifically with Ubangi (then called Eastern), this larger unit was recurrently questioned or even abandoned (cf., e. g., Köhler 1975; Bennett 1983; Kleinewillinghöfer 1996b, 2014a), so that Adamawa is treated here on its own.

Table 38: The history of subclassification of Adamawa

Greenberg (1963a: 9)	**Bennett (1983)**	**Boyd (1989a)**	**Present name (subgroup source)**
4 Vere, …	Chamba-Namshi	Duru	Duli-Gey (see section 2.3.3)
2 Chamba, …		Leko	Samba-Duru (Kleinewillinghöfer 2015c)
5 Mumuye, …		Mumuye-Yendang	Mumuyic (Shimizu 1979) / Maya (Kato, Yoder, and Blench n.d.)
12 Nimbari	–	Nimbari	*Nimbari* (see section 2.3.3)
6 Dama, …	Mangbei-Mbum	Mbum	Kebi-Benue (Boyd 1974; Elders 2006)
14 Masa	–	Kim	Kimic
unknown	unknown	Day	*Day* (Nougayrol 1979)
13 Bua, …	Boa-Kula	Bua	Buaic (Boyeldieu 1988)
1 Tula, …	Tula-Longuda	Waja-Longuda	Tula-Waja (Kleinewillinghöfer 1996a) / *Longuda* (Kleinewillinghöfer 1996a)
10 Longuda			
7 Yungur, …	Yungur	Yungur	Bena-Mboi (Kleinewillinghöfer 1996a)
unknown	Burak-Jen	Burak	Bikwin-Jen (Kleinewillinghöfer 1996a)
9 Jen, …		Jen	
unknown	unknown	Kwa	*Baa* (Kleinewillinghöfer 1996a)
8 Kam	–	Kam	*Nyingwom* (Kleinewillinghöfer 2015b)
11 Fali	Fali	Fali	*Fali* (Sweetman 1981)
3 Daka, …	Daka > section U7	–	–



Map 9: Geographical location of ADAMAWA (U16)

Table 38 contains the major classificatory developments of the Adamawa pool and important sources that are related to individual subgroups and contain crucial information for comparative purposes and/or introduce new terminology, which for many units is still in flux. Apart from amending group names according to the principles laid out in section 2.3.2, the table largely reflects the current approach by Kleinewillinghöfer, who has been the most versatile scholar on Adamawa languages since the 1990s.

According to this author, the evidence for an Adamawa lineage as well as for the various subgroups is meager and unconvincing; for non-specialists, the proposals are in fact impossible to understand and evaluate. While Bennett's (1983) subgrouping is based on very fragmentary lexicostatistics, Boyd's (1989a) scheme is based on the mere inspection of word lists and simply posited without referring to any concrete supporting data.

The picture becomes even more intransparent when considering Boyd (1974), the only early historical-comparative treatment within the Adamawa domain, which, one would think, would have informed partially the classificatory scheme(s) of Table 38. This study predominantly deals with comparative word lists from three more obvious Adamawa units: Kebi-Benue (twelve varieties), Samba-Duru (three varieties of the Duru group), and Mumuyic (one variety). It is not this relatively limited coverage of the Adamawa domain but rather the methodological treatment of the data that makes the study and its results difficult to interpret if not unusable. Besides the fact that the languages of the three groups are interspersed in the tabulation, the nature of the two particular sets of approximately 200 lexical reconstructions is simply counterintuitive. The first set (line "lc" for "Lakka") is confined to the Kebi-Benue family but seems to exclude the available data for Mbum and Mundang from the same group and would thus not represent an informative proto-language that is useful, for example, for any higher-order comparison. The second set (line "L_2") contains reconstructions of a far more abstract lineage – one that crosses the boundary between two of the three Adamawa "cores" invoked by Boyd (1989a). Although this lineage would comprise more than half a dozen of Greenberg's units, Boyd tries to derive its proto-language by comparing only Proto-Lakka and a single Duru variety. For Boyd's (1989a) scheme to be on the right track, his (1974) data would first make it necessary to establish one set of reconstructions based on all Kebi-Benue varieties and a second set based on the single Mumuyic and all three Duru varieties; only then would one investigate the higher-order unit the L_2 set is intended to represent. If Boyd's Proto-Lakka is already questionable, his second set is of hardly any use, including all of his quite detailed comparative remarks regarding sound changes, etc.

The failure to proceed according to canonical methodology is also evident in Boyd (1989b), another historically intended study dealing with numerals across Adamawa. The author assembles a large amount of data from virtually all groups given in Table 38 and entertains partly intriguing hypotheses on the possible

makeup and history of numeral roots. However, instead of attempting to reconstruct from the bottom up within each group, he tries to derive the majority of the immensely different Adamawa numerals from preconceived forms of such Adamawa-external units as Cross River and Plateau. At the same time, he does not give plausible reasons why these in particular should serve as an orientation for the historical-comparative evaluation of Adamawa nor does he justify why any unitary reconstructions should be expected for this group in the first place. Serious questions about how he represents and analyzes his data arise already for smaller units. For example, regarding the first of his purported Adamawa-internal groups, labeled A (comprising, according to the present terminology, Samba-Duru, Mumuyic, and Maya, extended further by *Nyingwom*), Boyd (1989b: 149) writes: "The roots for numerals in these languages are clearly related; furthermore, lexical similarities are equally apparent in the rest of their vocabularies … All thus appear by simple inspection to be members of a single larger unit". His relevant discussion for this group (Boyd 1989b: 158–164) shows, however, that for numerals alone the etymological coherence regarding 'two', 'three', and 'four' contrasts with a considerable diversity across the rest of the numeral paradigm.[17] The three arguably shared forms are, however, so widespread in Niger-Congo, that they cannot be diagnostic for his Adamawa A. Given the data in Table 39, one would have to ask why, according to such a criterion, an Ubangi family like Gbayaic does not also qualify as a member of this group.

Table 39: Lower numerals across Boyd's "Adamawa A" and in Gbayaic

No.	Unit	'two'	'three'	'four'
U16.E	Samba-Duru (minus Samba)	*-i.tV	*taa.r	*naa.r
U16.F	Mumuyic	*zi.ti	*taa.ti	*(d)nee.ti
U16.G	Maya	?	*taa.t	*naa.t
U16.M	*Nyingwom~Kam*	*yi.r.aak*	*cà.r*	*ná.r*
U17.A	Gbayaic	*ḷíí.tò	*tà.r(à)	*ná.r(á)

Overall, the most reliable result of comparative Adamawa research after Greenberg is the simple recognition that his original constituency and identification of 14 subgroups needs to be thoroughly revised. Moreover, the later attempts of

[17] That the hard-to-classify Duli-Gey is not even close to the rest of the purported group in the lower numerals, at least some of them apparently being Chadic loans (Boyd 1989b: 163–164), might be viewed as a minor problem, given that a dedicated inspection of the material on these extinct languages by Kleinewillinghöfer (2014b) contradicts Boyd's assumed classification.

subclassification are empirically weak if not entirely unsubstantiated and vague. While the first part of Boyd's (1988b: 236) following statement may no longer apply, its second part has not lost anything of its relevance after more than 25 years of additional research: "Les possibilités de comparaison au niveau général dans la sous-branche Adamawa (sans compter encore avec les langues oubangiennes) sont si limitées qu'on voit plus d'intérêt actuellement à concentrer les efforts de reconstruction sur des groupes individuels ou sur les sous-ensembles principaux" [The possibilities for comparison on a general level in the Adamawa subbranch (even without including the Ubangi languages) are so limited that it currently appears to be of greater interest to concentrate efforts toward reconstruction on individual goups or the principal subgroups].

The relationship of Adamawa, or better its more secure subgroups vis-à-vis Niger-Congo, is partly less problematic but also far from resolved. Greenberg (1963a: 10–12) provided promising grammatical evidence in some groups in the form of a) noun class affixes or b) remnants thereof (e. g., number marking) that correlate with assumed Proto-Niger-Congo forms. However, this has only been shown to hold for a minority of groups, namely Tula-Waja, Longuda, Bena-Mboi, and Samba-Duru for evidence of type a), and Buaic, Kebi-Benue, and Maya for type b) (cf. Jungraithmayr 1968/69; Kleinewillinghöfer 1992, 1993, 1996a, 1996b, 2011c, 2012a, 2012b, 2014a; Boyeldieu 1980a, 1986, 2012; and Elders 2006 for more details). The Niger-Congo membership of all other Adamawa groups rests on lexical affinities and/or their assumed relationship to any of the first-mentioned groups.

Importantly, the data concerning (earlier) noun classification do not strengthen the tacit assumption about the coherence of Adamawa; rather, they weaken it. Boyeldieu (1980a: 50) still remains inconclusive regarding the problem of whether the comparable features between Niellim from Buaic and Tula from Tula-Waja are common to Niger-Congo as a whole or help to define an entity like Adamawa. Kleinewillinghöfer's (1996b, 2010) hypothesis of relating at least Tula-Waja to Gur rather than to other Adamawa groups practically implies the abandonment of the traditional Adamawa unity.

U16.A Tula-Waja

The Tula-Waja family just mentioned consists of eight languages in northeast Nigeria that are relatively heterogeneous. It has been surveyed most recently by Kleinewillinghöfer (1996a, 1996b, 2012c), providing primarily lexical data based on comparative Swadesh lists and a more detailed discussion of the noun class system of some languages.

The family is remarkable from a lexical perspective in that it is unexpectedly diverse, as opposed to its otherwise more homogeneous profile. The considerable lexical replacement, which has particularly affected nouns, including relatively

stable vocabulary, is explained convincingly by the existence of linguistic taboo practices (Kleinewillinghöfer 1995) as well as intense borrowing from neighboring languages that are only remotely related (Jukunoid) or entirely unrelated (Chadic, Saharan, and the arguably isolated extinct substrate Centúúm~Jalaa) (Kleinewillinghöfer 1995, 2001, 2012c). The intimate contact relationship with Chadic languages even motivated Greenberg (1950a: 53) to join the group with his Afroasiatic family.

The Niger-Congo affiliation of Tula-Waja is fully supported by canonical typological traits, notably suffixal verb derivation and noun classification, as well as expected forms for 'person', 'tongue', 'three', 'four', 'five', and pronouns for first- and second-person singular. The profile of the attested gender systems makes the relationship uncontroversial. This can be seen in the gender system of Waja as described by Kleinewillinghöfer (1990b: 110–164): even if the wide range of etymological associations by the author may not hold up entirely, the evidence for cognate forms goes beyond the standard classes *1, *2, and *6A.

As mentioned above, Kleinewillinghöfer (1996b) argues that the noun classification systems of Tula-Waja languages in fact display such striking similarities with those of certain Gur languages that the two units must be more closely related. This view, which takes up ideas put forth by Jungraithmayr (1968/69) and has also been suggested by the lexicostatistical studies by Bennett and Sterk (1977: 249) and Bennett (1983: 36–37), has been favorably received by other scholars. This represents the first case where a promising link is established across Greenberg's Niger-Kordofanian groups beyond simply merging them. Since his groups appear to have been motivated by geographical rather than robust genealogical criteria, such a finding should be expected, though. This motivates the general approach assumed here, viz. treating the larger groups that lack convincing historical-comparative evidence, among them Adamawa, as pools rather than true families.

U16.B Longuda

Longuda is a dialect cluster in northeast Nigeria spoken east of the Tula-Waja family. The information provided by Kleinewillinghöfer (1996a, 2014c) attests to the fact that the historical-comparative profile of this lineage is in several respects similar to that of its western neighbor. Even the cultural background of lexical tabooing applies to it and accounts for a considerable lexical diversity between dialects (Kleinewillinghöfer 1995).

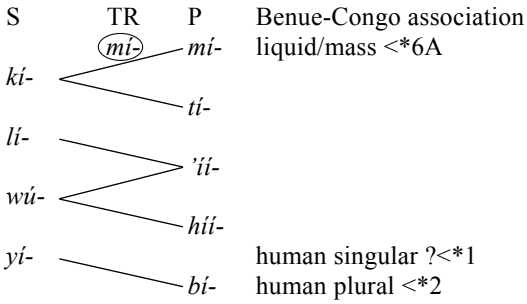


Figure 13: Gender system of Longuda (after Jungraithmayr 1968/69: 175–177)

Figure 13 gives the core of the gender system of the Gwaanda dialect as far as it can be extracted from Jungraithmayr (1968/69), including plausible etymological associations with Niger-Congo classes. The system is exemplified by the agreement classes as reflected in the relevant demonstrative prefixes, which, except for one class, only give good evidence for a thematic consonant; agreement classes and noun form classes fully correlate in the limited data of this source. A look at B. Newman (1978) also reveals the second typical Niger-Congo trait, viz. a fully functional system of derivational verb suffixes (cf. section 2.5.2.1.2.).

The similarity of Longuda to Tula-Waja with respect to its Niger-Congo affiliation is also reflected in the other features surveyed here: it has plausible cognates for ‘person’, ‘tongue’, ‘three’, ‘four’, ‘five’, and the second-person singular pronoun.

U16.C Bena-Mboi

Bena-Mboi (= Ɓena-Mboi) is the name proposed by Kleinewillinghöfer (1996a, 2011c) for the former Yungur group comprising seven languages spoken in northeast Nigeria, yet further east of Tula-Waja and Longuda. Apart from the lexical and noun classification data provided by Kleinewillinghöfer (1992, 1993, 2011c) very little is known about these languages.

However, the genealogical relation of the family to Niger-Congo can be argued for convincingly on account of its gender systems as documented by Kleinewillinghöfer (1992, 1993) and more recently by Van de Velde and Idiatov (2015). There are various promising affinities beyond the proto-classes *2 and *6A. Moreover, diagnostic lexical items as for ‘three’, ‘five’, ‘tongue’, and possibly even ‘person’ support this view. This picture contrasts, however, with the fact that the pronoun systems in Bena-Mboi do not show a single convincing match with common Niger-Congo forms.

U16.D Bikwin-Jen

According to Kleinewillinghöfer (1996a, 2015a), six languages of the Bikwin group and three languages of the Jen group form the Bikwin-Jen family in north-east Nigeria, located immediately south of the Tula-Waja family. Apart from some grammatical information in Jungraithmayr (1968/69) on the Bikwin language Burak, Kleinewillinghöfer's studies provide the bulk of the available information, which is essentially lexical but spans the entire group. The evidence he (1996a: 95–97) gives for joining Bikwin and Jen into one family is quite meager and is also far from obvious from inspecting Kleinewillinghöfer's (2015a) full lexical tables. It is thus possible that Bikwin and Jen may be separate within the Adamawa pool.

While none of the languages possess a functional system of noun classification, there is no indication, especially in Jungraithmayr's Burak data, that their typological profile diverges otherwise from the Niger-Congo mainstream. Since the status of Bikwin-Jen as a family is equivocal, no pseudo-reconstructions are provided here in the relevant tables; the reader is referred instead to Kleinewillinghöfer (2015a). However, positive evidence for a generic relationship to Niger-Congo can be identified in both Bikwin and Jen regarding the diagnostic items surveyed here, namely in likely cognates for the first- and second-person pronouns, the numerals 'three', 'four', and 'five', and 'tongue', although all these do not obviously point to unitary Bikwin-Jen reconstructions.

U16.E Samba-Duru

According to Kleinewillinghöfer (2015c), around 20 languages around and east of the northern border region of Nigeria and Cameroon can be classified as members of Samba-Duru, which joins two separate groups of Greenberg (1963a). However, the genealogical unity of all the languages is difficult to assess, because the comparative data like Boyd (1974) on the Duru group and Kleinewillinghöfer (2011a, 2012b, 2015c) mostly on the Vere, Gimme, and Doyayo groups are incomplete in not including in particular the crucial Samba unit.

The membership of Samba-Duru languages within Niger-Congo appears to be more robust, because clear links arise from an inspection of basic typological properties, diagnostic lexical items (cf. the forms for first- and second-person singular, 'three', 'four', and 'five'; and possibly for 'tongue' and second-person plural), and the existence and concrete formal profile of the attested gender systems.

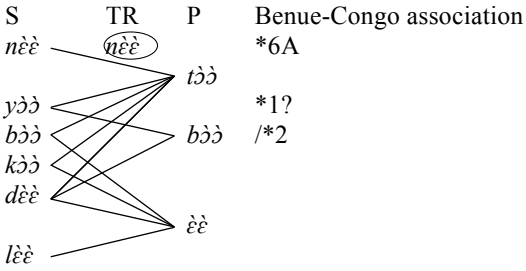


Figure 14: Gender system of Longto (after Kleinewillinghöfer 2012a)

Figure 14 gives the heavily crossed gender system of the Duru language Longto, which is established by eight agreement classes, represented above by the absolute pronouns (the short introduction of the source does not state whether some of the 11 class pairs are inquorate rather than productive genders). According to Kleinewillinghöfer (2012b, 2014a), the data on noun classification across Samba-Duru even suggests, similar to the Tula-Waja family, a relationship to the Gur pool.

U16.F Mumuyic

Mumuye is the demographically biggest language in the entire Adamawa pool and also provides the label for a small family of half a dozen languages spoken in northeastern Nigeria south of the Benue River. Shimizu (1979) is one of the rare cases in Adamawa research of a detailed dialectological and historical-comparative study of a number of varieties of Mumuye proper and two close languages, Pangseng and Rang, including a good number of lexical reconstructions.

The typological profile of the family conforms to the Niger-Congo mainstream except that a noun classification system does not exist. Shimizu (1979: 29–32) reconstructs a couple of verb extensions (including causative *-se), and on the basis of phonotactic arguments also nominal suffixes, which, however, do not show any obvious link to old Niger-Congo class markers. The reconstructed pronoun paradigm for first- and second-person singular and plural as well as ‘three’ and ‘four’, possibly even ‘tongue’, also support a Niger-Congo membership.

U16.G Maya

Yendang is not a single language but in fact a small family of a handful of languages formerly labeled after its major member but called here Maya following Kato, Yoder and Blench (n.d., see below). It is located immediately north of Mumuyic and in the past has been aligned with it genealogically. Since there is no demonstration of this assumed relationship, it is dealt with here separately.

Kato, Yoder and Blench (n.d.) present the most recent and extensive data, comprising comparative worldlists of a little under 400 items from four varieties, and propose Maya as the new group name. This is taken over here, because it seems more suitable than a term like Yendang(ic), which is oriented toward a single variety. A superficial inspection of these vocabularies makes the coherence of the group plausible. The scarcity of any relevant comments about clear etymological links also seems to justify the current treatment of Maya as independent from Mumuyic. Finally, the full pronoun paradigm for first- and second-person singular and plural as well as for the numerals for 'three', 'four', and 'five' can be related to the canonical Niger-Congo forms. This makes a general affiliation of Maya to this larger lineage very likely, even if the most diagnostic morphological evidence of noun classification is not attested.

U16.H Kebi-Benue

The name Kebi-Benue, originally coined by Mouchet (1938) and taken up in Elders's (2006) survey article, is used here for the family referred to in the past as Mbum or Lakka. It comprises more than a dozen languages spoken in Cameroon, Chad, and the Central African Republic – among them some of the demographically largest languages in the Adamawa pool.

Since Boyd's (1974) historical-comparative treatment of his "Lakka" deals only with parts of the family, Elders (2006) can be viewed as the first more comprehensive historically oriented survey. One of its major aims is to lay the methodological groundwork for a systematic reconstruction with a particular focus on diagnostic morphology. Without already attempting any grammatical proto-forms, he (2006: 74–75, 65–72) argues that the ancestral language is likely to have possessed suffix systems for both verbal derivation and noun classification.

Noun class agreement is absent today so that there is no gender system and, like in some other Niger-Congo groups, the inherited noun class suffixes have been regularized toward thematic consonants without any vowel distinctions. However, the set of reconstructable forms contains a good match with at least the proto-class *6A. At the same time, Anonby (2005) and Elders (2006) argue convincingly that the inventory of modern nominal affixes is far more extensive and that many of them are of a different and much more recent origin and must not be mistaken for reflexes of ancient Niger-Congo morphology. This caveat applies to some of the etymological associations made by Greenberg (1963a) and other authors within the traditional classification framework.

The morphologically based hypothesis that Kebi-Benue belongs generically to Niger-Congo is supported by the lexical items surveyed here: 'tongue', 'three', 'four' and the full pronoun paradigm, and possibly even 'person', match the expected canon.

U16.I Kimic

The group traditionally called Kim, after its major member, subsumes three minority languages spoken in southwestern Chad; one language, Goundo, is already moribund (Roberts 2009). Research on this family, which is renamed here Kimic, is quite limited and lacks a comparative treatment across all its members.

Before this background, it comes as no surprise that the genealogical classification of the languages has been problematic. Greenberg (1949a: 89, 92) treated Kim, a larger dialect cluster that was called Masa for a long time, as an isolated unit within Adamawa. In Tucker and Bryan (1956: 43–45) the group was misclassified as being related to Chadic languages, due to the polysemy of the then current ethnonym. Hoffmann (1972) rectified this error and reestablished Greenberg's position. Caprile (1972) aside, who listed Kimic languages together with the Kebi-Benue group, this has been the dominant approach ever since.

The general morphosyntactic profile of Kimic languages, which is adumbrated in Mouchet (1954), Iberg (1990), and Roberts (2009), is compatible with a Niger-Congo affiliation, although the more diagnostic traits of verb extensions and noun classes are not attested. The very limited lexical data give somewhat more positive evidence for the Niger-Congo hypothesis in that the tentative generalizations for the first- and second-person singular pronouns as well as the Kim numerals for 'three', 'four', and 'five' match the expected forms.

U16.J Buaic

Another Adamawa group of around ten languages, which are spoken exclusively in southern Chad, is the Buaic family (cf. Boyeldieu 1988 for a brief overview). Although the family has not yet been documented completely and the diagnostic lexical items of present interest could not be surveyed for lack of sufficient data, first studies with a comparative focus already exist (cf. Boyeldieu 1988, 2012) and support a generic Niger-Congo membership.

Although Buaic languages do not possess functioning systems for verb derivation and gender, there are salient morphological phenomena that can count as remnants thereof. Number-sensitive suffix alternations on nouns are especially complex and are fruitfully analyzed by Boyeldieu (1980a, 1986, 1988) as reflexes of an earlier canonical Niger-Congo class system allowing one to make even a couple of potential etymological connections. Boyeldieu (1980a) entertains in fact a more specific relation of the Buaic system with that in the Tula-Waja family. If accepting Kleinewillinghöfer's (1996b) proposed link between Tula-Waja and Gur, such an additional connection would have yet wider historical repercussions. The modern situation generalized for the entire family (cf. Figure 15) most probably arose from the loss of class agreement and the erosion of the marking on nouns, which has made the relation to the inherited system less transparent.

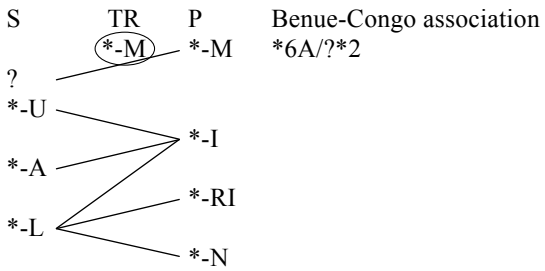


Figure 15: Reconstructed declension of Common Buaic (after Boyeldieu 1988: 283–284)

There is another historically interesting phenomenon arising from Boyeldieu's comparative work. The author (1980b) points out the existence of considerable lexical isoglosses between Buaic languages and their unrelated neighbors from Chadic, and the impossibility of currently determining the borrowing direction. As has been occasionally mentioned also for other groups, the extensive contact-induced lexical turnover, even of core vocabulary, poses immense problems for historical-comparative research in the Adamawa pool in general; some comparative lexical series blur genealogical boundaries on a yet larger scale. This should be a warning against roping in superficial lexical comparisons for the establishment of any kind of genealogical relationship.

U16.K Day

Day is one of the several isolated languages subsumed under Adamawa. It is spoken in southern Chad southeast of Sarh. It is described by Nougayrol in several works, notably a phonology and (largely nominal) grammar sketch (1979) and a lexicon (1980).

Its classificatory position has also been discussed controversially. Tucker and Bryan (1956: 42) listed it first as a Buaic language but viewed it subsequently (1966: 164–167) as a lexically mixed language with a perceived stronger grammatical component of Mundu-Baka from Ubangi (see U17.D). Later, it was simply subsumed under Adamawa (e. g., Boyd 1989a: 189) with reference to Nougayrol's work. However, Nougayrol (1979: 18) did not give any evidence to this effect but merely referred to Caprile's (1978) generic assignment of Day to Niger-Congo when writing in a very tentative fashion: "Cette hypothèse nous semble digne d'être retenue: le day n'est pas sans ressemblance, au moins sur le plan lexical, avec certaines langues classées dans le sous-groupe Adamawa du groupe Adamawa-Oubangui" [We believe this hypothesis is worth retaining: Day is not without affinity, at least lexically, to certain languages in the Adamawa subbranch of the Adamawa-Ubangi group].

Before this background, Day is effectively unclassified. The present restricted survey does not give any more clues. The unremarkable word order patterns aside, Day has not been shown to have typical Niger-Congo traits like verb extensions and gender marking. Searching for diagnostic lexical items, the evidence is equally meager, with very few signs of shared paradigmaticity: one can plausibly compare only 'three', 'four', and the second-person singular pronoun; the forms for 'tongue' and the first-person singular pronoun are less certain.

U16.L Baa~Kwa

Baa or, according to the exonym, Kwa, is a single language spoken in the vicinity of Tula-Waja and Jen languages but not obviously related to them or to any other Adamawa language. The only data available are provided by Kleinewillinghöfer (1996a, 2011b). Virtually nothing is known so far about the grammar of Baa, except that it does not seem to possess a gender system of the Niger-Congo type. Plausible cognate forms for 'tongue', 'four', 'five', and all surveyed pronouns suggest, however, that it belongs to the larger family.

U16.M Nyingwom~Kam

Nyingwom or, by the exonym, Kam, is another single Adamawa language that is isolated in genealogical and, in being spoken west of Dakoid, also geographical terms. The only modern information consists of a few details on grammar and a short word list (Kleinewillinghöfer 2015b). Similar to Baa, the language appears to lack Niger-Congo noun classification, but possesses forms for 'person', 'tongue', 'three', 'four', and 'five', which would support its membership in this lineage (the available pronoun data are too scanty to draw any conclusions).

U16.N Fali

The last unit to be treated in the Adamawa pool is Fali, a larger language complex spoken in northern Cameroon. Sweetman (1981) is a lexical dialect survey used for historical-comparative reconstruction and offers several hundred proto-forms. A detailed grammar by Kramer (2014) has been published recently. On the basis of these works, it can be concluded that Fali possesses a typological profile canonical for Niger-Congo, including verb extensions but excluding a typical noun classification system. Regarding the latter feature, it may be argued that there are possible reflexes of class *2 and *6A in a pronoun and some relevant nouns like 'blood' and 'oil', respectively. Its generic Niger-Congo affiliation is confirmed by plausible cognates for 'person', 'tongue', 'three', and 'four', as well as a full pronoun paradigm for speech-act participants.

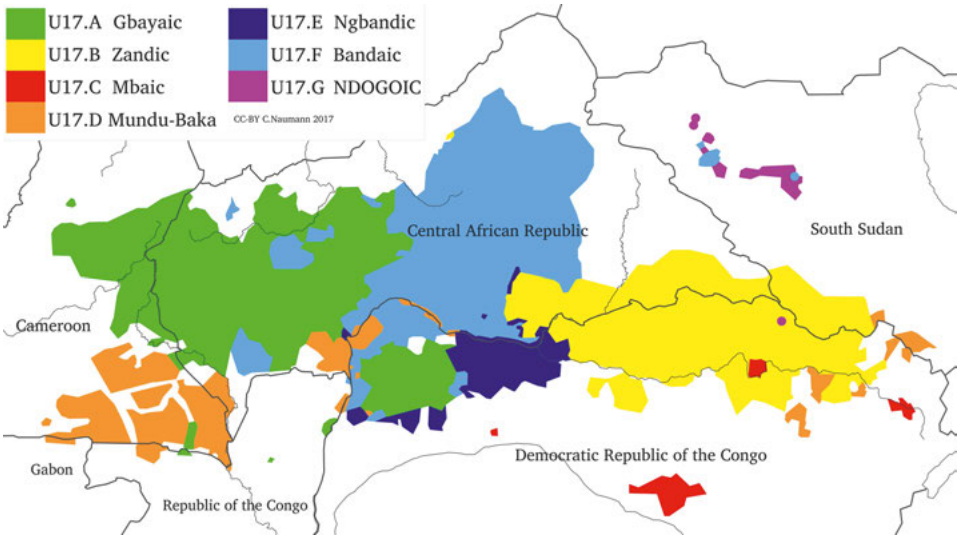
For the record, it has been repeatedly observed that Fali is difficult to relate to

other units in the Adamawa pool (Boyd 1988b: 233; Williamson and Blench 2000: 18). Under the present approach, this is not surprising, because many Adamawa units may well turn out to have their closer relatives outside this domain. Observe in this respect the comparisons between three lexical reconstructions of Proto-Fali (Sweetman 1981: 58) and Proto-Bantu (Bastin et al. 2002) in (6).

(6)

Proto-Fali	Proto-Bantu	
*džo:yu	*-jʊni	'bird'
*džɔ:yu	*-joka	'snake'
*džɔ:ŋgu	*-jʊngʊ	'pot'

It can be seen that in all three comparisons the first syllables match closely. While this of course does not imply a greater historical significance, such a finding makes it worth reiterating that the net should be cast wider if the genealogical assignment of individual Adamawa groups and the general family structure of Niger-Congo is to become more conclusive.



Map 10: Geographical location of UBANGI (U17)

U17 UBANGI

The Ubangi group is yet another genealogical pool normally presented heretofore as a Niger-Congo lineage. It is the southeasternmost subgroup located in central Africa (see Map 10).

Apart from the abandonment of Greenberg's (1963a) Adamawa-Ubangi by Bennett (1983) and other scholars, important stages of the classificatory history of Ubangi are presented in Table 40.

Table 40: The history of subclassification of Ubangi

Greenberg (1963a)	**Samarin (1971)**	**Bennett (1983)**	**Boyd (1989a)**	**Name used here**
1 Gbaya, …	Gbaya, …	Gbaya	Gbaya	Gbayaic
3 Ngbandi, …	Ngbandi, …	Sango-Ngbandi	Ngbandi	Ngbandic
6 Ndogo, …	Ndogo, …	Ndogo, …	Sere	Ndogoic
5 Bwaka, …	Ngbaka-Ma'bo, …	Mundu-Gbanziri	Ngbaka	Mundu-Baka
2 Banda	Banda	Banda	Banda	Bandaic
8 Mondunga, …	Mondunga, …	Mba-Mondunga	Mba	Mbaic
7 Amadi, …	Amadi, …	Ma		
4 Zande, …	Zande, …	Zande-Pambia	Zande	Zandic

Tucker (1940: ix, 15–20) prefigured the family by identifying a genealogical unit that at least included, in the present terminology, Ndogoic, Mundu-Baka, Bandaic, and Zandic within his purely geographical concept "Eastern Sudanic". Greenberg (1949a, 1963a) extended this group to his so-called "Eastern" by listing eight subunits without any internal structure. Tucker and Bryan (1956: 144–146) accepted a general affiliation of the individual units to Niger-Congo but observed that the group as such "cannot be justified …, except on the grounds of geographical expediency".

Accepting Ubangi as a clade, later hypotheses about specific internal relationships vary considerably, and they are difficult to understand because they lack virtually any empirical justification. Samarin (1971), who suggested changing the name Eastern to Ubangi(an) in line with Delafosse (1924: 498–504), referred to Bouquiaux and Thomas (p. c.), who at this time proposed joining four of eight subgroups into a single unit, reducing Ubangi to five subfamilies.

Based on a few proposed lexical innovations, Bennett's (1983) lexicostatistic study argued for a very different core group called Kã; Gbayaic, previously part of the core, was excluded from Ubangi altogether. A substantial change in Ubangi studies was the final recognition of the genealogical entity Mbaic, uniting Greenberg's groups 7 and 8 (see section U17.C). The last Ubangi-internal classification was offered by Boyd (1989a), again not based on concrete evidence but mere reference to his "understanding of available lexical data, much of which can be consulted in Moñino (1988)" (Boyd 1989a: 191). He excluded Gbayaic and Zandic from the Ubangi core; within this core he assumed a closer unit Sere-Ngbaka-Mba

(= Ndogoic + Mundu-Baka + Mbaic), which has also been popularized since then by the Ethnologue.

If any judgment is made on the above proposals, it has to rely so far on two survey works: Boyeldieu and Cloarec-Heiss (1986) and Moñino (1988). The first is a dialectometric study dealing with five of the seven Ubangi subgroups; it is based on five varieties from Gbayaic, two from Ngbandic, seven from Mundu-Baka, three from Bandaic, and two from Zandic, and presents the primary data consisting of 100-word lists. While it follows a lexicostatistic approach, it is far more fine-grained regarding linguistic details for cognacy judgment than mainstream analyses of this kind. Its overall results are given in Figure 16 (group names have been changed to my usage).

Gbayaic	**820**				
Ngbandic	144	**924**			
Mundu-Baka	162	220	**664**		
Bandaic	109	200	245	**721**	
Zandic	079	177	126	115	**539**
	Gbayaic	Ngbandic	Mundu-B.	Bandaic	Zandic

Figure 16: Dialectometric group distances across five Ubangi subgroups (Boyeldieu and Cloarec-Heiss 1986: 353)

Each subgroup is confirmed by internal lexical cohesion, evident at the elevated values marked in boldface in Figure 16. At the same time, genealogical relations between the groups are not suggested clearly by this particular empirical basis – the overall low values indicate lexical distance rather than proximity. Since Ndogoic and Mbaic are not included, this study cannot shed any light on Boyd and Pasch's (1988) and Boyd's (1989a) hypothesis about the existence of a Sere-Ngbaka-Mba unit.

Moñino (1988) is the second important work for the historical-comparative assessment of Ubangi. It also provides good-quality lexical data in the form of well-arranged lists of a little more than 200 items from seven Gbayaic, three Ngbandic, six Mundu-Baka, four Mbaic, two Ndogoic, eight Bandaic, and three Zandic varieties. This basis also allows non-specialists to evaluate lexical comparisons within and between the basic groups. A cursory inspection of these data does not reveal any obvious unity within Boyd's (1989a) Sere-Ngbaka-Mba that would exclude Bandaic and Ngbandic. Apart from the fact that Ndogoic and Mbaic do not emerge as lexically coherent groups with a sufficient number of lexical reconstructions to be compared with other groups, the search for the closest match of Mundu-Baka forms often does not point to these two units.

That superficial inspection of data can return very diverse results can be seen

at the comparisons made in the present survey. Here, a more likely core group of Ubangi emerges with Mundu-Baka, Ngbandic, and Bandaic, defined by some partly exclusive traits. These are notably a distinction of first-person plural vs. second-person plural conveyed essentially by an opposition of an open vs. close vowel quality, and a numeral paradigm for 'two' through 'four', where the roots are universally preceded by a segment *BV and in which the fricative consonant of the form *SI for 'two' appears to be a common innovation. Incidentally, this picture corresponds to the dialectometric results by Boyeldieu and Cloarec-Heiss (1986) given in Figure 16 in which the highest affinity values are precisely found with these three group pairs, viz. 200–245. Ndogoic would appear to be the next candidate for being joined to this core.

A second important contribution by Moñino (1988), which is relevant for the place of Ubangi languages within Niger-Congo, is that the authors, all language specialists, explicitly distance themselves from the assumption of a genealogical unity of all Ubangi groups vis-à-vis the rest of Niger-Congo: "Cet ensemble est considéré ici comme une base empirique d'analyse, et non comme une famille linguistique déjà donnée: ce qui est à établir et à démontrer est précisément son unité ou sa diversité originelle, ainsi que le degré de relation entre ces langues, … " (Moñino 1988: 18) [This group is considered here as an empirical basis of analysis, and not as a language family already given: it is precisely its unity or its original diversity as well as the degree of relationship between these languages that need to be established and demonstrated].

For the time being, it thus seems safer to consider Ubangi as a pool comprising at least seven lineages (as opposed to the five of Boyd [1989a] and the Ethnologue), whose exact genealogical affiliation to each other as well as to other Niger-Congo groups still remains to be determined. Before this background, the historical hypotheses proposed by Thomas (1979) and Bouquiaux and Thomas (1980) as well as Saxon (1982), which entail specific migration scenarios of individual Ubangi groups, must be considered with caution, because the linguistic basis of their genealogical subgrouping is either highly questionable or not identified at all.

With respect to the relation between Ubangi groups and Niger-Congo it can be generalized that they show a canonical typological profile but largely lack the most diagnostic evidence of verb extensions and, with one exception, noun classification. Recently, Dimmendaal (2008b: 841, 2011: 319–320) has rejected the Niger-Congo affiliation of Ubangi altogether, albeit without any explanation. One can only speculate that his claim arises from the fact that Ubangi groups do not possess the typical morphological Niger-Congo features and that the little evidence invoked by Greenberg (1963a) in this respect, notably purported reflexes in Mbaic (U17.C)and Bandaic (U17.F) of the inherited noun classification system, is equivocal and has indeed been partly refuted.

However, as is also shown below with respect to pronouns and other potentially diagnostic lexical items, Ubangi subgroups do not fare any worse than many

other assumed Niger-Congo members that heretofore have not been disputed by Dimmendaal and other scholars. Obviously, the genealogical problem can only be advanced by a dedicated historical investigation of the empirical data. In the following, the status of the individual groups is presented.

U17.A Gbayaic

Gbayaic is a well-defined lineage of around 15 languages distributed primarily in the west of the Central African Republic and in smaller pockets in the Democratic Republic of Congo, Cameroon and Congo-Brazzaville. The more recent historical assessment of this family, which turns out to be incompatible with Greenberg's (1963a) hypotheses, is a good example that more dedicated and focused historical-comparative research is indeed necessary and at the same time possible.

Bennett (1983: 39–40) was the first to question its Ubangi affiliation because his lexicostatistic research did not reveal any convincing evidence to this effect so that he accorded it an isolated position in his North Central Niger-Congo spectrum.

Moñino (e. g., 1995, 2010a, 2010b; calling the family Gbaya-Manza-Ngbaka) carried out an exceptionally detailed historical-comparative reconstruction, dealing with phonology, lexicon, and morphology and presenting among other things more than 1,000 lexical and grammatical reconstructions. Similar to Bennett (1983), the author questioned its Ubangi membership. In an admittedly superficial lexical comparison of Proto-Gbayaic with other Niger-Congo groups he (2010b) unexpectedly finds instead that its affinity with Proto-(Central)-Gur appears to be greater than with any other Ubangi unit.

While the exact place of Gbayaic within Niger-Congo has become an entirely open question, its membership as such can be supported by a full speech-act participant pronoun paradigm, the lexemes for 'three', 'four', and 'tongue', and possibly the third-person pronouns, which could go back to the human classes *1 and *2.

U17.B Zandic

Zandic, dominated by its largest language Zande, is a compact language family around the border triangle of South Sudan, the Central African Republic, and the Democratic Republic of Congo. Tucker's (1959) comparative study, which includes around 400 lexical series, dealt with four languages; another language, Geme was found later to also belong to the group. Tucker's (1959) family survey, Moñino's (1988) lexical material, and Boyd and Nougayrol's (1988) detailed discussion of Geme provide a good comparative picture, however, without offering any reconstructions.

While Zandic has verbal extensions, the most diagnostic Niger-Congo trait of gender marking is hard to identify. The (animate) plural prefix could be related to the noun prefix of class *2; moreover, Boyd and Nougayrol (1988: 74–76)

comment on the recurrent family-internal alternation in non-count nouns between the presence and absence of a final segment with *m*, which could arguably be interpreted as a reflex of a noun suffix of class *6A. In terms of lexical evidence, the speech-act participant pronouns for first- and second- person singular as well as second-person plural, the numeral 'three', and the common form for 'tongue' in its metathesized reflex are good Niger-Congo candidates.

U17.C Mbaic

As opposed to Gbayaic and Zandic, Mbaic is a small and geographically highly fragmented family of four languages spoken in the northeast of the Democratic Republic of Congo. Although already treated as a group by Bulck (1952) and Tucker and Bryan (1956), the family was not recognized by Greenberg (1963a), Samarin (1971), and Bennett (1983), who largely dealt with lexicon.

The conclusive establishment of Mbaic as a family is due to Pasch's (1986) reconstruction of a gender system of the Niger-Congo type, the only such case within Ubangi – just another example showing that morphological evidence should be favored over lexical data in genealogical classification.

Table 41: Some noun classes in Mbaic (Pasch 1986: 74, 142–143, 229–230, 273)

Class	**Exponent**	**Ndunga**	**Mba**	**Dongo**	**Ma**	**Proto-Mbaic**	**Partial meaning**	**Benue-Congo**
11	Noun suffix	*-mɛ*	*-me*	*-mo*	*-mo*	*-mo	liquid,	*6A
	Concord	*m*	*M*	*m*	-		mass	
1	Noun suffix	*Ø*	*Ø*	*Ø*	*Ø*	*-wo	human	*1
	Concord	*(w)*	*(w)*/*g*	*(w)*	-		singular	
7	Noun suffix	*-gɛ*	*-ge*	*-go*	*-wo*	*-go	human	?
	Concord	*g*	*G*	*Ø*	-		singular	
2	Noun suffix	*-yɛ*	*-V*	*-nyo*	*-yo*	*-yo	human	?
	Concord	*y*	*y*/*-V*	*ny*	-		plural	

It is not easy to argue, however, whether this proto-system is unfallible evidence for a Niger-Congo affiliation. Table 41 shows a few of the 15 proto-classes, some of which have been directly compared to established Niger-Congo classes. These classes, whose exponents are nominal suffixes and concords, are exclusively conveyed by thematic consonants without any distinctive role of the accompanying vowel. The only clear Proto-Mbaic counterparts of Niger-Congo classes can be proposed for *1 and *6A. However, the human gender in Mbaic does not obviously correspond to the Niger-Congo pair *1/*2, in view of the existence of an additional

human singular class and the form *yo of the human plural class. Given that the size of consonant inventories in Mbaic ranges between 24 and 32, the chance of coincidental similarity to reconstructed Niger-Congo class markers cannot yet be dismissed. So the particular data from gender marking, though certainly promising, is not yet conclusive evidence that this family is a member of Niger-Congo (see Greenberg [1949a: 93] for a similar remark concerning the single language Ndunga).

With respect to lexical relations, Mbaic displays a considerable internal heterogeneity, which is reflected by very low lexicostatistic values based on word lists of close to 200 items (Pasch 1986: 410–412). This suggests that the languages were subject to considerable divergence processes after separating from each other, perhaps triggered in particular by locally different contact influence, notably from Bantu in the south(west) and from Zande in the north. This restricted lexical coherence of the group also makes it difficult to arrive at proto-forms. However, the few more secure reconstructions emerging from the present survey, viz. for secon-person singular, 'four', and 'tongue', are all favorable for a Niger-Congo affiliation.

U17.D Mundu-Baka

The geographically largest Ubangi group, called here Mundu-Baka, comprises more than a dozen languages and ranges from northeastern Gabon to the western South Sudan. Like Mbaic, its territory is highly fragmented by languages from Bantu and other more compact Ubangi families such as Gbayaic, Zandic, Bandaic, and Ngbandic.

Bulck (1938) seems to be the first one to have delineated precisely the constituency of the family called by him Ubangi-Uele. Other names previously used for the family were mostly oriented to the language Ngbaka Ma'bo, but Ngbaka also refers to a prominent Gbayaic language (cf. Moñino's family label Gbaya-Manza-Ngbaka) and is hence prone to create confusion. Mundu-Baka used here refers to its eastern- and westernmost language, respectively. The term also alludes to a historically remarkable fact about the family: its westernmost speech varieties, notably Baka, are spoken almost exclusively by Pygmy foragers, most of which are no longer in contact with other non-foraging Mundu-Baka populations. The new term thus parallels the similar cases of two Central Sudanic families, Mangbutu-Efe (U22.H) and Mangbetu-Asua (U22.I), whose second terminological component also refers to a prominent Pygmy forager variety.

So far, very little published historical-comparative work exists on this Ubangi group. Paulin (2010: 73–105) contains a first attempt of a more systematic comparison based on the relevant lexical data in Moñino (1988), mostly in the form of schematic tables of segment correspondences and their relevant lexical series, but does not propose any reconstructions. A more comprehensive and informative study is Winkhart (2015): the author attempts to take all currently available lexical

and grammatical material into account, thus providing a more representative picture than Boyeldieu and Cloarec-Heiss (1986) and Moñino (1988) with their necessarily selective language choices, and he focuses on establishing grammatical and lexical proto-forms. Within the present restricted survey, the lexical items for 'three', 'four', 'tongue', second-person singular, and less clearly first-person singular would support the general Niger-Congo affiliation of Mundu-Baka.

U17.E Ngbandic

If one disregards the historically recent emergence of vehicular Sango, which today is the national language of the Central African Republic, the Ngbandic family is a small and geographically compact group of half a dozen languages centered on the upper course of the Ubangi River. In fact, it seems to be more appropriate to consider the majority of the varieties to form a single language complex in view of the lexicostatistic coherence evident in Figure 16 and Boyeldieu's (1982c: 17) following assessment:

> Parler de *langues* sango, yakoma, etc. me semble être un artifice de langage qui n'est fondé que sur la distinction de différents *ethnonymes* dont l'application elle-même n'est pas toujours claire … En fait il s'agit bien d'une seule langue (que l'on pourrait appeler *ngbandi*, par référence au nom le plus largement répandu) dont les variantes dialectales sont fort minimes … [To speak of the languages Sango, Yakoma, etc. seems to me to be an artificial usage that is only grounded in the distinction of different ethnonyms whose application is itself not always clear … In fact, there is just a single language (which can be called Ngbandi with reference to the most widespread name) whose dialectal variants are pretty minimal …]

Gbayi, which is sketched by Boyd (1988a), was identified late as a Ngbandic language. There are indications that it may be the result of a language shift by a Zandic-speaking group, namely that it is spoken in the neighborhood of the Zandic language Nzakara and that its alternative name Kpatiri is virtually the same as Kpatili, which is a spurious language entry of Zandic without any linguistic data. Gbayi is more deviant from the central dialect chain, which may well be due to recent contact-induced innovations. For external comparisons, it is thus justified to take data from the core dialects as the primary reference; in Boyeldieu and Cloarec-Heiss (1986) and Moñino (1988) such data come from a Yakoma variety.

If one looks for Niger-Congo affinities in Ngbandic, the forms for first- and second-person singular, 'three', and 'tongue' look as expected; a third-person singular pronoun and a nominal plural prefix could be argued to be reflexes of the classes *1 and *2, respectively; a slight possibility of affinity also exists for the word for 'person'.

U17.F Bandaic

Bandaic is, after Gbayaic and Zandic, a third Ubangi unit with a compact geographical distribution over a wide area. It is concentrated in the center-east of the Central African Republic but also spoken in pockets further west as well as in the west of the South Sudan and the north of the Democratic Republic of Congo. The study of this group, which encompasses many and partly diverse speech varieties, has been the particular focus of research conducted by France Cloarec-Heiss, who, since the 1970s has embarked on a full-scale documentation of the group-internal diversity and the reconstruction of parts of its history, including the question of how the modern distribution pattern came into being. Several important conclusions have emerged from her work.

First, according to Cloarec-Heiss (e. g., 1978, 1986, 2000) Bandaic comprises, on the one hand, a large and more homogeneous core that can be conceived of as a dialect cluster and, on the other hand, several smaller and peripheral varieties that are better attributed the status of languages which are nevertheless closely related to the core. The greatest diversity is found in the southern distribution area across the border between the Central African Republic and the Democratic Republic of Congo and the Ubangi River.

A second and historically important point detailed particularly in Cloarec-Heiss (1995, 1998) is that the Bandaic family as a whole shares a considerable number of linguistic traits with genealogically unrelated Bongo-Bagirmi languages (subsumed under Central Sudanic, U22.A), which are mostly spoken today in the north of Bandaic. This observation leads her (1998: 12) to the following historical interpretation:

> … le faible nombre d'éléments lexicaux d'origine SC et surtout la nature du vocabulaire qui présente des affinités avec les langues SC (biotope et culture), les traits phonético-phonologiques qui témoignent chez les Banda d'habitudes articulatoires différentes de celles des Oubanguiens, les resemblances morphosyntaxiques, amènent à poser l'hypothèse que les actuels locuteurs banda étaient à l'origine des populations SC qui ont rapidement adopté une nouvelle langue appartenant au rameau oubanguien [the moderate number of lexical elements of Central Sudanic origin and above all the nature of the vocabulary, that presents affinities with Central Sudanic languages (biotope and culture), the phonetic-phonological traits that testify to articulatory habits among Banda that are different from Ubangian ones, [and] the morpho-syntactic similarities lead to proposing the hypothesis that current Banda speakers were originally Central Sudanic populations that quickly adopted a new language belonging to the Ubangi branch].

Bandaic is also interesting from a methodological perspective in that it is an exemplary case for reminding historical linguists, particularly in the Niger-Congo domain, of the inadequacy of superficial inspection of language data and their facile interpretation in terms of genealogical relatedness. Greenberg (1963a:

12–13) proposed that the ubiquitous vowel prefixes on nouns in most Bandaic languages are a reflex of inherited Niger-Congo class markers. This hypothesis has been refuted by Olson's (2006, 2012) research, which explains the vowel prefixes as one of several reflexes of prothetic augmentation steered by word minimality constraints – a phenomenon that is also attested in similar form at least across Mundu-Baka (Winkhart 2015).

This does not exclude, however, that Bandaic is a member of Niger-Congo. Lexical elements typical for this group exist with the numerals 'three' and 'four', the first- and second-person singular pronouns; the word for 'person', which resembles that in Ngbandic, is as questionable as in that lineage. Also similarly to Ngbandic, the plural prefix might have its origin in the marker of class *2.

U17.G NDOGOIC

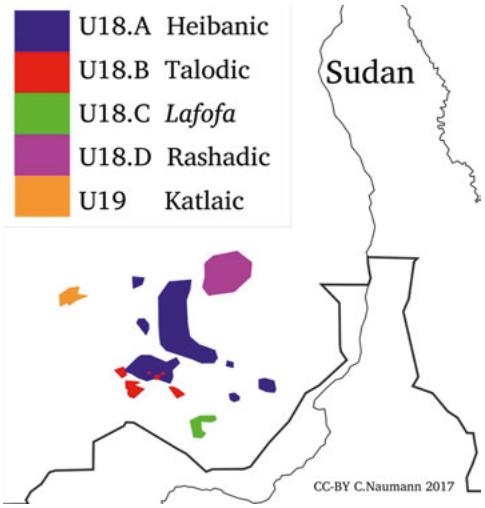
The small group of nine languages called here Ndogoic is distributed along the Congo-Nile watershed north of Zandic in South Sudan and the Democratic Republic of Congo. As opposed to Zandic, the group is geographically highly fragmented, in the south by the predominating Zandic speakers themselves and in the north by languages other than from Ubangi. The group's name varies across different publications; I follow here the early usage focusing on the largest language Ndogo (instead of Sere employed in more recent Ubangi surveys). Most of the quite restricted data on Ndogoic languages come from Santandrea (1950, 1961, 1969), who presents and discusses comparative grammatical data and word lists but does not attempt any kind of historical reconstruction.

Little is known about any of the Ndogoic languages. Ndogo itself was studied more extensively within early missionary contexts, while only Sere and (Belanda) Viri seem to have been subject to more recent linguistic research. These three languages together with Bai and Tagbu form a coherent subgroup that was established by Santandrea (1961) and is also acknowledged in current internal classifications of Ndogoic. The lexical Ubangi comparisons by Boyeldieu and Cloarec-Heiss (1986) as well as Moñino (1988) deal with Sere and Viri alone and thus represent only this core group.

The four remaining, northernmost languages, Feroge, Mangayat, Indri, and Togoyo, treated by Santandrea under the term Raga East, are yet harder to assess genealogically. For one thing, Santandrea's material is so far the only existing data, and may remain so, because at least the last three languages are said to be nearly or already extinct. Moreover, they display a greater diversity from the core group and even among themselves (cf. Santandrea 1969: 267), whereby Feroge and Mangayat go together against Indri and Togoyo. For example, the last two do not share typical Ndogoic features in the pronominal and numeral paradigms but display the widespread Niger-Congo pattern *mi/*mo in first- and second-person singular pronouns (Santandrea 1969: 103), found nowhere else in the group. Hence, it

cannot be excluded that a more systematic historical study will reveal that the four northern languages have to be separated from the Ndogoic core, and even from each other. This is also the reason to treat Ndogoic as a whole as a genealogical pool.

As with most Ubangi groups, the membership of Ndogoic in Niger-Congo rests so far on lexical material alone. In the present survey, this evidence exists for the Ndogoic core regarding the items for 'three' and 'four', probably 'tongue' and second-person singular, and least clearly 'person'.



Map 11: Geographical location of KORDOFANIAN (U18) and Katlaic (U19)

U18 KORDOFANIAN

Based on such survey studies as MacDiarmid and MacDiarmid (1931) and Stevenson (1956/7) on the highly diverse linguistic landscape of the Nuba Mountains of Kordofan (see Map 11), Greenberg (1963a) subsumed five lineages under his new Kordofanian unit. He based this on the existence of noun-class parallels and assumed lexical evidence, the group name being inspired by the fact that all are found exclusively in this area. Since then, Kordofanian has been subject to considerable redefinition, if not deconstruction. Its changing research history is summarized in Table 42; I have adapted here Schadeberg's (1989) labels according to the convention referred to in section 2.3.2.

Table 42: The history of subclassification of Kordofanian

Greenberg (1963a: 8–9)	**Schadeberg (1989)**	**Blench (2013c)**	**Present name**
Koalib	Heiban	Heiban	Heibanic
Talodi	Talodi	Talodi	Talodic
		Tegem-Amira	*Lafofa*
Tegali	Rashad	Rashad	Rashadic
Katla	Katla	Katla-Tima	Katlaic > section U19
Tumtum	Kadugli > section U20	–	–

The first major classificatory change resulted from Schadeberg's survey research on Kordofanian that upheld the group as a whole but excluded the Kadu(gli) family (cf. Schadeberg 1981f), which since then has been commonly treated under Nilo-Saharan (see section U20). A second, more recent change was caused by the first detailed documentation of another group comprising Katla and Tima, which since then tends to be viewed as an independent group within Niger-Congo (see section U19). Even the remainder of Kordofanian is treated here only as an areal pool, because recent studies do not consider it to form a proven genealogical entity nor to be securely related as a whole to Niger-Congo.

Thus, Blench (2013c), taking up his ideas expressed in several unpublished surveys, is the first published statement to the effect that the evidence for the unity of Kordofanian provided up to now is unconvincing. He proposes three groups as early separate offsprings from the rest of Niger-Congo; his alternative classification involves in particular separating Lafofa (aka Tegem-Amira) from Talodic and, in line with Dimmendaal (2011), joining Rashadic with Katlaic (aka Katla-Tima). Whatever the future of his proposals, his methodological approach is a step backwards: while Schadeberg's work provides and discusses substantial empirical data and involves diagnostic paradigmatic morphology, Blench's evidence is extremely limited and merely lexical, namely four comparative series for the separation of Lafofa, and nine in favor of his Rashadic-Katlaic group.

Hammarström (2013) takes a quite different approach. He refrains from making any new classificatory proposals but rather evaluates the evidence invoked so far for Kordofanian, both as a unit and as a member of Niger-Congo. Since the lexical material is viewed to be generally too sporadic and hence weak proof, primary attention is paid to the nominal classification systems of Heibanic, Talodic, Lafofa, and Rashadic. Their overall typology is certainly like that in secure Niger-Congo members, and Schadeberg (1981c, 1989) has "consolidated" them in a rather sketchy way for proposing tentative reconstructions entailing Niger-Congo correspondences that look impressive at first glance. Hammarström scrutinizes these

claims regarding the possible role of chance resemblances and brings forward typological evidence for an alternative explanation for the emergence of this noun classification type. Hence, even this morphological argument must remain unsettled until more description and conclusive historical research have been accomplished.

Accordingly, the four remaining units, Heibanic, Talodic, Lafofa, and Rashadic, are discussed individually, also with respect to the Niger-Congo hypothesis. This is justified, too, by the fact that a full and in-depth documentation of the languages is only now underway, so that previous historical conclusions may well turn out to have been simply premature.

U18.A Heibanic

Heibanic is the largest subgroup of Kordofanian, with ten languages spoken in the centre and the southeast of the Nuba Mountains. Schadeberg (1981a) is a first systematic historical-comparative study, based on phonological and morphological data as well as 200-word lists from all ten languages. It establishes several regular sound correspondences and preliminary proto-forms of about 110 lexical items as well as morphological paradigms for noun form and agreement classes and for personal and possessive pronouns.

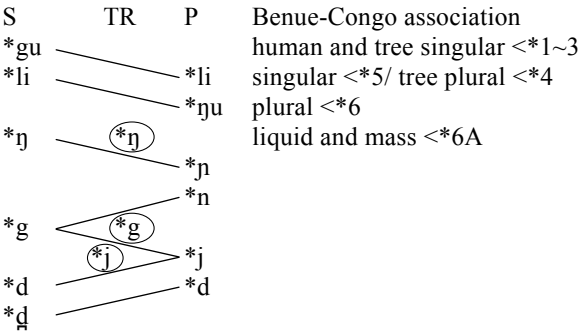


Figure 17: Gender system of Proto-Heibanic (after Schadeberg 1981a: 132–152)

The reconstruction of the proto-gender system is shown in Figure 17. To the extent possible, it considers genders established by agreement rather than noun form classes and excludes uncertain and likely inquorate genders. According to Schadeberg (1981c: 123), there exist suggestive associations with several of the commonly assumed Niger-Congo classes.

The curious case of the gender system of Laro is discussed by Schadeberg (1981a: 147–149, 1981d): the fact that this language does not share a single gender

with its otherwise obvious Heibanic relatives is proposed to be the result of conscious language manipulation. If this is indeed the correct explanation, that would be a disconcerting fact for historical-comparative methodology, which strives to recover presumably regular linguistic history.

Despite its widespread acceptance, the assumed relationship to Niger-Congo remains equivocal for the reasons outlined above. The lexical evidence surveyed here is expectedly equally inconclusive: while one could argue for a few affinities such as with 'tongue' and 'you (plural)', these could just as well be spurious look-alikes – a problem holding for all Niger-Congo candidates in the Nuba Mountains. The typological structure of Heibanic languages conforms to Niger-Congo trends, and the noun classification system is certainly a promising trait to inspect with a new systematic reconstruction using the far more extensive data currently coming in.

U18.B Talodic

Talodic refers to the second-largest family within Kordofanian, with a little less than ten languages spoken in the southwest of Heibanic, for which Schadeberg (1981b) provides a historical-comparative study parallel to that for this other family. Considering five of eight Narrow Talodic languages and Lafofa, he establishes the unity of the former (see section U18.C for Lafofa), and presents parallel historical-comparative data sets like, for example, 150 preliminary lexical reconstructions. Norton and Alaki (2015) is a recent survey of the family and also

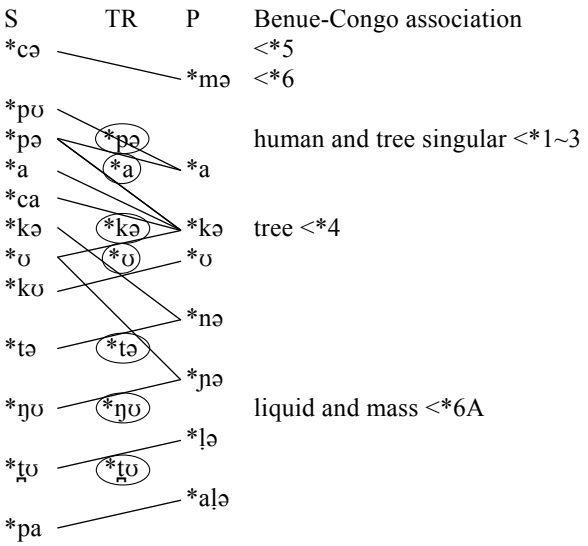


Figure 18: Declension system of Proto-Talodic (after Norton and Alaki 2015: 107–112)

resumes the historical-comparative work. Since they take into account the entire group, their results largely supersede Schadeberg's. They provide a full subclassification based on various methods, regular sound correspondences, and close to 300 proto-forms for both lexical and grammatical items.

Norton and Alaki's (2015) extensive discussion of the gender system reveals a more complex and partly different picture compared to Schadeberg (1981b), which also affects the claims regarding similarities between Talodic and common Niger-Congo. Figure 18 presents the recent reconstruction of the prefixal declension system on nouns, having to assume that the gender system based on agreement is largely similar, as well as the assumed Niger-Congo associations according to Schadeberg (1981c: 123). While certain similarities may be reflexes of a genealogical relationship, they are far from conclusive. A similar equivocal impression emerges from the typological profile of the group and the inspection of the lexical data dealt with here.

U18.C Lafofa

Lafofa, also called Tegem, subsumes three closely related varieties spoken in or close to the Liri mountain range. The location itself hosts, besides the southeasternmost Talodic language Nding (Schadeberg 1981b: 15), Lafofa proper. According to Manger (1994: 40–43), this variety derives from a 19th-century immigration from Tegem in the east, one of the two Lafofa localities outside the range; the third variety is called El Amira and is spoken south of the mountains. The unit is so little known that it is still unclear whether the differences between the varieties require the assumption of more than one language, as claimed by Blench (2013c: 580). The only substantial data available are found in Stevenson (1956/7, vol. 41: 43–46), Tucker and Bryan's data synopsis (1966: 270–288), and the later material by Schadeberg (1981b).

As opposed to earlier authors, Greenberg (1950d: 390) and Schadeberg (e. g., 1981b) allied Lafofa with Talodic; the second author (ibid.: 158) writes on the basis of his own data:

> The relatively isolated position of Tegem (Lafofa) has been obvious at all stages of comparison. … Indeed, we may ask on what grounds Tegem should be classified with the other TALODI languages. … Although a comprehensive subclassification of Kordofanian is outside the scope of the present study I am convinced that Greenberg's position is the correct one … This is not only supported by lexical resemblances but also by, e. g., their sharing labial consonants as prefixes for classes 1 (*b-) and 6 (*m-).

Hammarström (2013: 551–553) presents a critical assessment of the concrete evidence on which the hypothesis is based, considering it too weak and equivocal. The in-depth study by Norton and Alaki (2015: 68–70) corroborates this; they conclude that "Talodi and Lafofa are unrelated as far as the structure of their lexicons

is concerned" (cf. also the few comparative data presented here). This is in line with another feature distinguishing Lafofa from Talodic (and Heibanic), viz. its variable word order patterns, including head-final features; these are shared with Rashadic, the Kordofanian group treated subsequently, with which at least Tegem proper shared a common history connected to the Tegali kingdom (Manger 1994: 41–43). In view of all these observations, Lafofa is best treated as a separate unit in the Kordofanian pool and should be considered a research priority in the future.

U18.D Rashadic

Rashadic, spoken in a compact area in the northeast of the Nuba Mountains, comprises two dialect clusters, commonly referred to as Tagoi and Tegali after one dialect each. First research already goes back to the 19th century, for example by the Tutschek brothers in Germany on the Tumale dialect of Tagoi. Nevertheless, with only three modern studies (Schadeberg and Elias 1979; Schadeberg 2013; Alamin 2015), Rashadic is by now the least known Kordofanian family. Schadeberg (2013) provides a survey, including some new data, which serve here to give an approximate profile of this small lineage.

The limited extent of Rashadic documentation contrasts with the fact that it is in some respects puzzling and thus important for historical-comparative research. Crucially, the two dialect clusters are transparently related genealogically on account of diagnostic lexical and other data but they differ with respect to the feature of noun classification (see already Stevenson 1956/7, vol. 41: 46). That is, Tegali nouns neither have relevant class affixes nor do they trigger concord but Tagoi has a fully-grown gender system of the Niger-Congo type involving noun phrase-internal agreement.

A systematic analysis of the noun classification system in Tagoi is difficult on the basis of Schadeberg's (2013) data. On the one hand, there is no or only insufficient information on the agreement behavior of the important group of prefixless nouns, which include kinship terms and loan words (but see Schadeberg and Elias 1979: 19). On the other hand, it is not possible to separate noun form classes of prefixed nouns and their pairings from the potentially diverging agreement patterns. Nevertheless, Table 43 and Figure 19 give an attempt to extract the system from Schadeberg's (2013) lexical material and some more information in Schadeberg and Elias (1979). The table gives all nominal stems that are cognate in the two varieties dealt with, viz. Tagoi proper and Turjok, and whose class assignment is identical.

Table 43: Declension system across two Tagoi varieties (after Schadeberg 2013)

Class pair	DERIVATIONAL MEANING and lexemes	Benue-Congo association
k/s~h	Vegetation: bark, branch, flower, leaf, tree Body: belly, bone, feather, guts, hair, head, liver, mouth, nail Animate: louse, man, person~woman Other: clothes, cloud, fire, mountain, river, year	
k	Environment: daylight, earth, night, sand, smoke, woods	
c/ɲ	child, finger, hand, moon~month	
w/y	Animate: bird, dog, gazelle, snake, people~women; in Turjok: Human + tree species (cf. Schadeberg and Elias 1979: 20–21)	*1~3/*4
y	rain, smell, sun~day, wind~air	
y/ŋ	egg, eye, heart, nose, stick, stone; in Turjok: Tree fruit (cf. Schadeberg and Elias 1979: 30)	*5/*6
ŋ	LANGUAGE; Mass nouns: ashes, blood, water	*6A
t/ŋ	back, breast, horn, leg, star, tooth	
t/y	neck, rope, skin, tail, tongue	
t	LOCATION; grass	

The resulting system schematized in Figure 19 could be argued to have reflexes in Niger-Congo, as Schadeberg proposes (1981c: 123), provided this picture holds up when considering all Tagoi varieties.

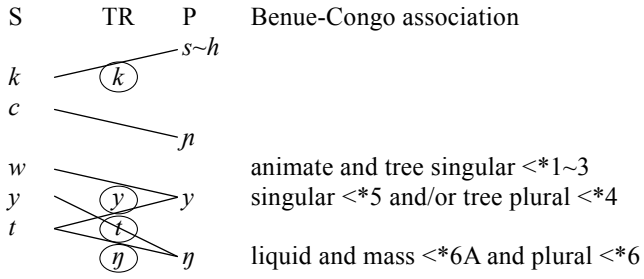


Figure 19: Declension system of two Tagoi varieties (after Schadeberg 2013)

An equally important but entirely open issue is the historical status of the system in Rashadic as a whole. While scholars like Stevenson (1956/7, vol. 40: 102), Tucker and Bryan (1966: 270), and Blench (2013c: 576–577) assume that the situation in Tagoi is the result of contact, Schadeberg (1981c: 121) holds the loss of such a system on the part of Tegali to be more probable implying the existence of such a system in Proto-Rashadic.

The typological profile of Rashadic is ambivalent vis-à-vis Niger-Congo stand-

ards. While its noun classes (in Tagoi), verb extensions, and normally head-initial noun phrases make it look "canonical", less typical features also exist, namely head-final noun phrases, at least in Tegali (cf. Schadeberg 2013: section 2.4, ex. 15, 17; section 4, ex. 24, 26, 31, 40, 41, 51), and verb-final clauses in the family as a whole. The superficial lexical comparisons carried out here do not give clear hints either: nothing in the way of familiar paradigms emerges, but individual items like 'person', 'tongue', 'you (P)' and 'three' are arguably related to common Niger-Congo forms.

A possible genealogical link closer at hand, namely to Katlaic was entertained first by Stevenson (1956/7, vol. 41: 51) and taken up recently by Dimmendaal (2011: 91, 324; 2013) and Blench (2013c: 579); it is treated subsequently in section U19. Overall, Rashadic has an indeterminate genealogical status, echoed by Sasse's (1981c: 160–163) purely methodologically intended contribution according to which even an Afroasiatic link could be entertained, if one is satisfied with genealogical hypotheses based on sporadic similarities.

U19 Katlaic

Katlaic is located in the northwestern part of the Nuba Mountains (see Map 11) and comprises Katla-Julud and Tima. Until recently little was known about the family, but our knowledge has now increased considerably thanks to two documentation projects (see Schneider-Blum [2013: XII-XIV] for the extensive work on Tima and Hellwig [2013] on Katla). Since language specialists have removed the group from the Kordofanian pool, similar to Kadu, it is presented here separately.

The unity of the small family is obvious, but noticable structural differences between the two major units exist. They are motivated historically by various inferred contact events, whereby according to Dimmendaal (2009a) the special character of Katla-Julud emerged through shift-induced interference from Temeinic (U35) of Nilo-Saharan. So far, hardly any publication deals systematically with historical-comparative reconstruction within Katlaic or at least presents comparable data for inspection, so that any discussion relevant here cannot refer to established or even preliminary proto-forms.

Nevertheless, the external genealogical position of Katlaic was addressed recently by Dimmendaal (e. g., 2009a, 2009c, 2013), involving several new proposals that divert from Greenberg's Kordofanian hypothesis. The following is a summary of his (2011: 91, 324) conclusions:

> … Katla and Rashad differ considerably from the two Kordofanian language clusters Heiban and Talodi. Also, although the Katla group does have a noun-class system, several of the actual forms do not appear to be cognate with those reconstructed for the two Kordofanian subgroups Heiban and Talodi by Schadeberg … In actual fact, there appears to be more grammatical evidence for a closer genetic affiliation between the Katla plus Rashad group and Niger-Congo subgroups like Benue-Congo and Kwa …

> The Katla plus Rashad group consequently are better treated as an independent, early Niger-Congo split off.

The author (2010b: 215 fn. 4, 2011: 297, 2013) refers primarily to derivational verb suffixes and assumed remnants of an earlier noun-class system that look similar to forms reconstructed specifically for Bantu and/or Benue-Congo rather than generally for Niger-Congo. If his claim were to be substantiated, it would have important implications for the history of the entire family. However, the available data are unfortunately too rudimentary and thus remain inconclusive. Moreover, synchronic and diachronic analyses are not sufficiently separated, which is particularly evident with respect to the alleged remnants of a noun class system as treated by Alamin Mubarak (2009, 2012) and Dimmendaal (2013). Under the assumption that Katlaic is Niger-Congo and is thus expected to have had a typical noun classification system, the description of modern Tima is intricately interwoven with the genealogical hypothesis. That is, its numerous nominal prefixes, which encode number, derivational functions, and grammatical relations and possess diverse productivity, are analyzed even synchronically as "noun classes" in as much as they are more or less plausible formal and/or functional matches of such elements in other Niger-Kordofanian languages. An alternative, historically unbiased analysis would simply diagnose a complex system of nominal declension and derivation with some features that are also motivated areally, notably irregular number with four partly lexicalized singular/singulative markers, including zero, and one plural/collective counterpart whereby noun phrases only display number agreement employing the most productive prefixes, namely singular *kV-* and plural *I-*. Tima also has prefixes deriving language names (*dV-*) and deadjectival abstract nouns (*bV-*) as well as an elaborate set of locative prefixes. It is true that typical Niger-Congo languages, including Bantu, conflate all these functions morphologically within their noun classification system, and it comes as no surprise that Dimmendaal finds Tima prefixes that look similar to some in the large inventory of Proto-Bantu classes. This also applies, in accordance with his hypothesis, to Rashadic but, as per Alamin Mubarak (2009: 33) and against his explicit claim, also to three prefixes found in Heibanic languages as well, namely *kV-*, *lV-* and *d-*, encoding singular, locative, and language nouns, respectively. Moreover, a formal and semantic profile of nominal prefix morphology similar to that for Tima can be found in other languages of the wider area, for example, in West Nilotic (see the discussion revolving around Tables 22 and 23 in section 2.5.2.1.3.), for which Dimmendaal would not want to claim any connection to Niger-Congo. Such an overall inconclusive picture calls for reconstructing first Katlaic, Rashadic, and the other Kordofanian families and testing various low-scale proposals before a wider comparison can be undertaken.

2.5.4. Summary

The above survey of the Niger-Kordofanian domain has recognized 14 basic classificatory units, whereby seven of them are identified as genealogical or areal pools that are broken up further into genealogically more reliable entities. In some cases, even these may turn out not to represent true phylogenetic clades, as is the case with various subgroups in Benue-Kwa and with Ndogoic in Ubangi. The entire group inventory exceeds far more than 50 entities, which obviously confronts scholars interested in an exhaustive and systematic historical-comparative evaluation with an enormous task, similar to the situation in the proposed Trans-New-Guinea family. An assessment of these numerous subgroups with respect to the individual-identifying evidence outlined in section 2.5.2. is, however, less complex. On the level of the 14 basic units, I identify three pragmatically oriented categories concerning the likelihood of Niger-Congo membership and call them "robust members", "promising members", and "weak members", if assessed with respect to the evidence identified above as diagnostic within the historical-comparative method. In view of the limited amount of data discussed here and the overall superficial evaluation, it goes without saying that my assignment of some groups to one or another category must entail a considerable amount of subjective ad-hoc judgement. It is hoped that specialists are soon in a position to rectify any misinterpretation on my part. Table 75 in section 2.9 summarizes the results in a schematic form.

The first set of robust family members comprises the following six units (numbers of pool subgroups in parentheses): Benue-Kwa (>20), Dakoid, Atlantic (7), Gur (8), and Adamawa (14). Since Kordofanian groups are not part of this set, the implied lineage is appropriately called Niger-Congo, parallel to Greenberg's original usage. With close to 1,300 languages, this is still an exceptionally large lineage both on the continent and globally.

In order to arrive at a first empirically sound subclassification, I venture that it is safer to start working with this set of language groups instead of already roping in data from any other less secure unit. Regarding subgrouping, it is far too early to give any concrete proposals in this context. However, an inspection of some of the data collated here help to illustrate potentially fruitful paths for future research. That is, some presumably innovative morphological and lexical traits assemble across these core groups in a way that may be suggestive of possible genealogical signals.

Table 44 deals with four items, all of them partaking in some form in a paradigmatic structure: the second-person singular pronoun 'you', the noun for 'person' embedded in the inherited gender system, and the numerals 'five' and 'two'. They are chosen because they display to different degrees significant changes that are arguably innovative and unidirectional vis-à-vis the assumed proto-forms.

The first phenomenon is the final lenition and ultimate truncation of the inher-

Table 44: Potential innovations defining a partial Niger-Congo subclassification

Classificatory unit		'you'		'person'					'five'			'two'		
Code	Name	***mV**^{back}		(-)1/2(-)	***nV**^{front}		***tV**$^{?back}$		***nV**^{back}			***RV**^{front}		
U16.N	*Fali*	*m*	*u*	–	*n*	*i*	*d*	*u*	–			–		
U16.B	Longuda	m	O	-E/bE	(n)	yI	(r)	Ø	Ø	ny	O-	–		
U16.A	Tula-Waja	m	O	-Ø/b(U)	n	I	(r)	Ø	Ø	n	U-	–		
U15.A	(Oti-Volta)	b	V	-V/ba	n	i	t	(V)	Ø	n	u	Ø	l	e
U6.M	Yoruboid	b'	V	ɔ/ɛ-	n	ĩ	Ø	Ø	rɷ	˜	ɑ̃́	Ø	j	ì
U6.I	Ukaan	(h)	O	ɔ̀/à-	n	í	Ø	Ø	tʃɔ̃̀	n	Ṽ	wà	Ø	Ø
U7	(*Samba Daka*)	*w*	*èè*	–	*n*	*èé*	Ø	Ø	*tO*	*(ŋ)*	*o-*	*ba*	*r*	*a*
U6.C	(Ninzic)	?		u/ba-	n	E	t	Ø	tó	ŋ	Ø	pah	Ø	Ø
U6.A	(Ekoid)	?		ǹ/(b)à-	n	ɛ̀	Ø	Ø	Dɔ̂	n	Ø	ba	(l)	Ø
U6.A	(Bantu)	Ø	u	mu/ba-	n	Ø	t	u	taa	n	o	bV	d	i

Note: (…) = data only from a subentity of the classificatory unit, ? = no data, – = not attested

ited lexeme 'person'. Given the limited evidence, this change is not fully clear regarding the final back vowel but quite secure for the preceding alveolar plosive. This type of root reduction does not define any lineage but reflects with all probability multiple, independent events that are related to the well-known areal phenomenon of becoming "Kwa-like" in the wider Gulf of Guinea coast area (see section 2.5.2.3. above and section 3.2.3.4 below). This is comfirmed by the observation that the same set of lineages display similar processes affecting also the two numeral stems recorded in the table.

The second assumed innovation set is onset changes in the second-person singular pronoun *mV^{back} > *BV^{back} > V^{back} (see Güldemann [2017] for more discussion). Again, parts of the process chain seem to have happened more than once independently, e. g., the denasalization of initial *m* (cf. the ongoing process in Bandaic of Ubangi), so that the fact that Oti-Volta and the Benue-Kwa groups share this isogloss does not have to be interpreted as a genealogical signal.

The two changes displayed in the last two table columns, namely the incorporation of (? class) prefixes in the inherited simpler numeral roots for 'five' and 'two' (cf. Miehe [1997b, 2001] for similar phenomena in Gur languages), may be the diagnostic for further genealogical subgrouping, because it is less likely that the same element was recruited multiple times in already separate lineages.

A final phenomenon is recorded in Table 44 in connection with the human gender of the noun 'person', for which it has been proposed, albeit without uni-

versal agreement (see section U6.A), that in traditional Bantu and its assumed immediate Bantoid relatives the noun prefix of class *1 (and a few other classes) has been expanded by an initial nasal.

Bringing these various changes together in an evolutionary scenario for Niger-Congo, they partly correlate but also amend some previous subclassification hypotheses. The areally mediated and hence irrelevant root reduction aside, the innovative form of 'five' (and the less diagnostic change *m* > *B* in the pronoun) would define according to the present data a subfamily comprising Benue-Kwa and Dakoid, under the possible exclusion of some Kwa groups, for example, Ga-Dangme. A further subgroup within this clade is potentially established by the lineages having the numeral 'two' with a prefix BV-. Finally, one possible hypothesis about nasal prefix innovation would define Bantu. It goes without saying that all such discussion here is not meant to propose any robust hypothesis but rather to outline a possible methodological frame that may advance historical-comparative work within one of the largest linguistic lineages on the globe.

The second category of basic classificatory units within Niger-Kordofanian, namely promising members, subsumes on account of the above data the core of Kru (i. e., excluding Siamou), Pere, the Dogon family, Bangime, and the Ubangi pool (with seven subgroups). For none of these units is there a published, convincing demonstration of their Niger-Congo membership nor do the data employed here make a stronger case in this direction. At the same time, their typological profile and/or some of the paradigmatic lexical data are quite compatible with the idea that they could be heavily restructured (or less evolved?) Niger-Congo families. As opposed to Dimmendaal (2011: 319–320), I consider the Ubangi lineages to be in fact the strongest candidates within this list. Although they largely lack the expected morphological traces of Niger-Congo, in terms of paradigmatic lexical elements they fare much better than a number of other promising groups.

This is opposed to the Kordofanian pool (with four lineages) and Katlaic, which I see as being in between the categories of promising and weak members. Some of their morphological traits look typologically quite like those in Niger-Congo, notably the recurrent gender systems, but the weak signal of internal coherence regarding both typological structure and lexical elements complicate the picture considerably.

The third and last category of Niger-Kordofanian units, termed weak members, comprises Ijoid, Siamou of the Kru pool, and Mande. These display hardly any individual-identifying evidence that points specifically to a genealogical affiliation to Niger-Congo. It appears to be just as possible that any potential isoglosses, if they exist, are coincidental, or equally likely, contact-induced due to their geographical position close to secure Niger-Congo lineages.

2.6 The Nilo-Saharan domain

2.6.1. Classification history and lineage inventory

Greenberg, as the founder of the Nilo-Saharan hypothesis, only developed it in several steps, which shows the complexity of the general linguistic picture in this domain. This is recapitulated briefly with reference to the groups as presented and labeled here. Revolving around the genealogical assessment of Nilotic, which had always attracted scholarly attention (cf., e. g., Murray 1920; Conti Rossini 1926; Verri 1950), Greenberg (1950b, 1950d) first advanced his proposal for an East Sudanic family, then comprising Taman, Nara, Nubian, Dajuic, Nilotic, Surmic, and Jebel, which he still separated from many other groups that he would later join to it. Greenberg (1954) expanded this East Sudanic by Central Sudanic, Kunama, and Berta (which then subsumed the Non-Gaam Jebel languages) to form the yet larger Macro-Sudanic family. The final Nilo-Saharan concept only took full shape with Greenberg (1963a), which involved two separate changes. First, he integrated Kuliak, Temeinic, and Nyimang (apparently entering the discussion without any previous mention) in the East Sudanic branch of Maco-Sudanic, renaming this Chari-Nile. Second, he expanded the new Chari-Nile with the addition of Songhay, Furan, Saharan, Maban, and "Coman" (then comprising Koman proper and Baga aka Gumuz) to form Nilo-Saharan in its final form. Three units came to be associated with this macro-unit only later, namely the extinct Meroitic, the newly discovered Ethiopian remnant language Shabo, and the Kadu family of the Nuba Mountains that Greenberg had classified as Kordofanian.

Most of the later genealogical research with a scope over Nilo-Saharan as a whole became the enterprise of two scholars, namely Bender (e. g., 1981b, 1989b, 1991b, 1996b, 1996c, 1996d, 2000b) and Ehret (e. g., 1983, 1989, 2001). The first author also has the merit of providing the first more extensive data on a number of languages and small families in the Sudan-Ethiopia area that were still virtually unknown at Greenberg's time. Looking at the research of the two scholars, a peculiar picture emerges. For one thing, both frameworks seem to have been developed largely in parallel to one another with little fruitful interaction, although they emerged at the same time with the same range of data. This goes far beyond idiosyncratic terminological conventions, which hamper scientific communication and, for non-specialists, make it difficult to appreciate the similarities and differences of the hypotheses. An illustration of this situation is the appearance of Bender (2000b) and Ehret (2000b) side by side in a single volume with little reference to one another, let alone a discussion of the major controversial issues. Since Bender (e. g., 1996c, 1996d) devotes extensive discussion to Ehret's different research results, the failure to engage with contrary scholarship applies especially to Ehret's approach. For example, while the reference list of his major 2001 study on Nilo-Saharan classification and reconstruction does contain 15 of Bender's works, these are mostly

sources of language data; he hardly deals with Bender's comparative works that would serve as the starting point of a critical discussion of competing proposals.

Figures 20 and 21 present the later versions of Ehret's and Bender's subgrouping proposals; their terms are maintained but are keyed to the classificatory units to be discussed in section 2.6.3.

NILO-SAHARAN
Koman
U41 Gumuz
U40 Western Koman
Sudanic
U22 Central Sudanic
Northern Sudanic
U24 Kunama
Saharo-Sahelian
U27 Saharan
Sahelian
U26 For
Trans-Sahel
Western Sahelian
U23 Songay
U28 Maban
Eastern Sahelian (~ East Sudanic)
Astaboran
U31 Nara
Western
U33 Nubian
U29 Taman
Kir-Abbaian
Jebel
U38 West Jebel
U39 Bertha
Kir
Nuba-Mountains
U35 Temein
U30 Nyima
U34 Daju
Surma-Nilotic
U37 Surmic
U36 Nilotic
U21 Rub

Figure 20: Nilo-Saharan classification after Ehret (2001: 70–71, 88–89)

NILO-SAHARAN
U23 A Songay
U27 B Saharan
U21 K Kuliak
Satellite-Core
U28 C Maban
U26 D Fur
U22 F Central Sudanic
U39 G Berta
U24 H Kunama
Core
E Eastern Sudanic
Ek
U33 E1 Nubian
U31 E3 Nera
U30 E5 Nyima
U29 E7 Tama
En
U37 E2 Surmic
U38 E4 Jebel
U35 E6 Temein
U34 E8 Daju
U36 E9 Nilotic
U40 I Koman
U41 J Gumuz
U20 L Kadu

Figure 21: Nilo-Saharan classification after Bender (2000b: 55)

Comparing the two schemes, the second noteworthy point concerning their work becomes apparent, namely how little agreement there is regarding the group's internal composition. While a first difference is Ehret's articulated tree structure as opposed to Bender's far more vague conceptualization of his subgroups and their relative position, this may merely reflect a different degree of confidence in the results of their proposals. Far more serious for an assessment of the current status of Nilo-Saharan is the fact that a number of lineages are accorded very different positions in the family structure, as shown in Table 45 for six important units. Since Bender and Ehret have based their proposals on empirical details drawn from effectively the same database, this is surprising – if one tree structure depicts the situation accurately, then the other structure must be wholly incorrect.

Table 45: Major divergences between the Nilo-Saharan classifications by Bender and Ehret in relation to Greenberg (1963a)

Lineage	Bender (2000b)	Greenberg (1963a)	Ehret (2001)
Kadu	"Core"	not Nilo-Saharan	not Nilo-Saharan
Koman	"Core"	1st-order outlier	1st-order outlier
Baga	"Core"	1st-order outlier	1st-order outlier
Songhay	1st-order outlier	1st-order outlier	in 5th-order "West. Sahelian"
Berta	2nd-order satellite	in "Chari-Nile"	in 5th-order "East. Sahelian"
Kuliak	1st-order outlier	in "East Sudanic" core	in 5th-order "East. Sahelian"

This problem carries over to yet another major classification proposal advanced by Dimmendaal; his Nilo-Saharan subgrouping is shown in Figure 22.

NILO-SAHARAN
- Northeastern
  - U28 Maban
  - Clade without name
    - U27 Saharan
    - U26 Fur and Amdang
    - U24 Kunama
    - Eastern Sudanic
      - Northern
        - U29 Taman
        - U32 Meroitic
        - U33 Nubian
        - U31 Nara
        - U30 Nyimang
      - Southeastern
        - U38 Jebel
        - Southern
          - U34 Daju
          - U35 Temeinian
          - U37 Surmic
          - U36 Nilotic
  - U39 Berta
  - U21 Rub
- U22 Central Sudanic

Figure 22: Nilo-Saharan classification after Dimmendaal (2014b: 592–593)

Table 46: Basic classificatory units in the Nilo-Saharan domain

No.	Lineage	1	2	3	4	Geographic location
U20	Kadu	6				Nuba Mountains
U21	Kuliak	3	X			Northeast Uganda
U22	Central Sudanic	65				from northeastern DRC to southern Chad
U23	Songhay	10				Niger bend into Sahara
U24	Kunama	1		X	X	Ethiopian escarpment
U25	Shabo	1	X	X		Ethiopian escarpment
U26	Furan	2	X			Western Nile watershed
U27	Saharan	10				Central Sahara
U28	Maban	10		X		Western Nile watershed
U29	Taman	4		X	X	Western Nile watershed
U30	Nyimang	2		X	X	Nuba Mountains
U31	Nara	1		X	X	Ethiopian escarpment
U32	Meroitic	1	X	X	X	Middle Nile (extinct)
U33	Nubian	13				Western Nile w., Nuba M., Middle Nile
U34	Dajuic	7		X		Western Nile watershed, Nuba Mountains
U35	Temeinic	2	X	X	X	Nuba Mountains
U36	Nilotic	51				South Sudan, Uganda, Kenya, Tanzania
U37	Surmic	10				Ethiopian escarpment
U38	Jebel (2)	4	X	X		Ethiopian escarpment
U39	Berta	1		X	X	Ethiopian escarpment
U40	Koman (2)	4		X		Ethiopian escarpment
U41	Baga	?3	X	X		Ethiopian escarpment
	Total	~200				

Note: (n) = Number of potentially separate subgroups; 1 = Number of languages; 2 = No grammar sketch before 1965; No comprehensive modern published description: 3 = before 2000; 4 = today

Dimmendaal, as the currently most active scholar with a Nilo-Saharan scope, has dealt with various structural features across the domain and has presented his view on genealogical classification in passing (cf., e. g., 2010a: 18, 2014a: 3, 2014b: 592–593). He goes furthest in altering Greenberg's original and later proposals by excluding four lineages from the family – Kadu, Songhay, Koman, and Baga~Gumuz – albeit without any empirical justification. These are all listed in Table 45 as groups that are also highly controversial between Bender and Ehret. However, Dimmendaal's change does not seem to lead to a more consensual family tree but just to a third one. In general, beyond the recognition of Central Sudanic and a similar East Sudanic core as well as the unanimous exclusion of Shabo, there is little that the three classifications converge on. This enormous disagreement alone must cast doubt on the validity of Nilo-Saharan as it is currently conceived.

This suspicion is confirmed by another noteworthy fact. A Nilo-Saharan membership has met with considerable skepticism if not outright rejection in virtually all lineages that specialist linguists have subjected to a more detailed historical evaluation. As will be shown below, this holds for Songhay, Kuliak, Central Sudanic, and Saharan, whereby the specialist opinion on the latter three families collides with all versions of Nilo-Saharan. The fact that such a situation only concerns four units does not imply agreement on the remaining ones but is merely an artifact of the absence or scarcity of historical-comparative research on most of them. Hence, Heine's (1992: 32) assessment is still adequate today: "The Nilo-Saharan family, in particular, must be regarded as a tentative grouping, the genetic unity of which remains to be established." Accordingly, the following discussion recognizes first of all 22 basic classificatory units, as listed in Table 46.

2.6.2. Diagnostic evidence

2.6.2.1. Morphology

Due to the gradual development of Greenberg's Nilo-Saharan, it is not easy to get a transparent picture about the purported grammatical evidence supporting the group and how it is actually distributed across its member lineages. Table 47 attempts to give such an overview, also taking the different classificatory levels into account. A cross in a cell merely records that at least one language of a lineage displays a purported reflex of a feature but by no means that there is anything in the way of a normal reconstruction of such an element for the relevant proto-language. Since East Sudanic is a relatively stable entity across all Nilo-Saharan classifications, its detailed treatment is deferred to section 2.6.4.2. Suffice it to say at this point that the picture within East Sudanic is not qualitatively different from that in Nilo-Saharan seen in Table 47 and discussed in the following.

Here is not the place to discuss all the evidence in Table 47 in detail. Overall, while a list of 47 morphological traits looks impressive at first glance, Green-

berg's data are not acceptable within standard historical linguistics. The necessary criticism against interpreting them in terms of genealogical inheritance is almost identical to that raised, for example, by Güldemann (2008b: 145–146) against Greenberg's evidence for "Khoisan". That is, the superficially promising case for Nilo-Saharan results from a composite of problematic practices, including the overhasty interpretation of partly fragmentary and poorly understood data, a disregard of standards in historical-comparative reconstruction and diachronic typology, the admission of insufficient representation of language groups and probably coincidental resemblances, and a failure to consider the effects of possible language contact.

As Table 47 reveals, the diagnostic value of the grammatical material is already challenged by its highly irregular distribution with regard to both the general feature frequency in the hypothetical family and the number of features within individual lineages. Thus, a robust representation across the whole range of features is only attained by the East Sudanic core itself with attestations in 43 of 47 traits, followed with a wide margin by Central Sudanic, which is claimed by Greenberg to display 27 traits. As mentioned already, the satisfactory picture in East Sudanic is in fact only apparent, which is discussed in more detail in section 2.6.4.2 below but is already indicated in Table 47 by the non-conforming behavior of the three lineages Greenberg added later, Temeinic, Nyimang, and Kuliak.

An equally ambiguous picture emerges in Table 47 when evaluating the status of individual features vis-à-vis the different language groups. Since Nilo-Saharan subgroupings are highly controversial, it is adequate to evaluate feature representation across all lineages rather than only according to nested tree structures proposed by Greenberg or anyone else. Before this background, only two of the 47 features appear to be attested fairly regularly across Nilo-Saharan, namely the first-person singular pronominal *a* and the second-person singular pronominal *i~e*. A third-person singular pronominal, *n*, is the next best candidate feature. As Greenberg (1963a: 109–111) and later authors (e. g., Bender 1989b, 2000d) have argued, the purported vocalic isoglosses in pronominal elements, which are recurrently independent of number, may count as a case of paradigmatic and thus stronger evidence. However, this idea disregards findings of cross-linguistic research concerning pronouns (Gordon 1995; Nichols and Peterson 1996; Rhodes 1997; Nichols 2001). That is, these elements tend to recruit unmarked speech sounds and display closed-set phonosymbolism in their restricted paradigms, which in turn highly facilitates chance resemblances. Moreover, closed-set phonosymbolism between unmarked speech sounds has been argued to be a possible result of macro-areal convergence (cf. Nichols and Peterson [1996, 2005] and Nichols [2001, 2012] for two cases in Eurasia and the Americas, and Güldemann [2017] for one in central Africa). Looking at the Nilo-Saharan case, both observations provide an equally good non-genealogical explanation for the invoked pronominal affinities.

Table 47: Greenberg's (1954, 1963a) grammatical evidence for Nilo-Saharan

Feature	No. in Greenberg (1950b, 1954)	No. in Greenberg (1963a)	East Sudanic				Chari-Nile or Macro-Sudanic			Nilo-Saharan					
			Original 7 groups	Added: Temeinic	Added: Nyimang	Added: Kuliak	Central Sudanic	Kunama	Berta and/or Non-Gaam Jebel	Songhay	Saharan	Maban and/or Mimi	Furan	Koman	Baga (aka Gumuz)
1S in *a*	1	1	X	X	X		X	X	X	X	X	X	X	X	
2S.SBJ in *i~e*	2	2	X	X	X		X	X		X	X	X	X	X	
2S/P.POSS in *u*	3	3	X	X			X								
3S in *e*	–	4	X												
3 DEM in *T*	4	5	X								X				
3S in *n*	–	6	X		X		X	X	X		X		X		
3 SBJ in *K(V)-*	–	7	X				X								
2P in *w*	–	8	X							X	X				
2P in *t*	–	9	X						X						
3P in *i*	–	10	X				X								
REL~ADJ in *m*	6	12	X				X	X		X	X			X	
PR.DEM~REL in *T*	7	11	X												
REL~ADJ in *K*	8	13	X							X		X			
F in *N*	9	14	X				X								
M in *m*	–	15													
S in *a~o*	–	48	X									X			
S/ABSTR in *T*	10	23	X	X	X			X			X	X			
Units in *tVt*	–	24	X	X											
S/P in *n/K*	5	32	X				X					X			
S/P in *T/k*	–	33	X										X		

P in *K*	11	25	X	X	X		X					X			
P in *T*	12	26	X						X			X			
P in *N*	13	27	X							X		X			
P in V^{front}	14	28	X	X			X	X	X			X			
Special P on nouns	15	29	X												
A.P in *r*	–	30	X							X					
'name' as P	–	31	X				X						X		
NOM.S in *i*	16	16	X												
GEN.S in *a~o*	17	17	X				X								
GEN in *n~ŋ*	–	18			X		X	X				X	X		
LOC.S in *T*	18	20	X				X	X							
LOC in *l*	19	21	X		X		X	X			X				
ACC in *K*	20	19	X				X				X	X			
LOC.P in *n*	21	22	X												
NOMZ in *a-*	–	34	X		X		X	X							
NOMZ in *k-*	–	35	X				X				X				
Moveable *k-*	–	36	X				X	X	X		X				
Verb class prefix	–	–					X	X							
COP~tense in *a*	22	–	X				X								
FUT in *P*	24	43	X												
PST in *K*	–	42	X				X	X			X				
NEG in *m~b*	25	46	X								X		X		
NEG in *k*	–	45	X				X								
INCH in *N*	26	39	X												
DAT on verb in *k*	27	38	X	X							X				
CAUS in *T*	–	40	X					X			X				
PASS/ITR in *a~o*	–	41	X							X					
REFL in *r*	–	47	X				X				X	X			
P on verb in *K*	23	37	X				X				X	X	X		
P on verb in *l*	–	44					X	X							

The unspecific characterization and thus unmarked nature of the phonetic material involved and its shortness are in fact a problem throughout the feature list in Table 47, which is compounded by lose semantic and morphosyntactic matching between the elements compared.

An ambivalent interpretation also remains in the rare case where Greenberg tries to explain the assumed historical background of a purported isogloss in more detail, notably in his treatment (1981) of the mysterious "moveable *k*" on nouns of Proto-Nilo-Saharan. Stevenson (1981), a contemporary work dealing with the variable presence vs. absence of initial elements on Nyimang adjectives, is telling in this respect. For one thing, the relevance of the phenomenon for adjectives goes against Greenberg's generalization regarding the expected hosts of his *k(V)*-prefix. More important is the fact that Stevenson gives prefixed Nyimang adjectives and their presumed cognates in other Nilo-Saharan languages without such prefixes, whereby their forms are also *a-* and *t(V)-*, as shown in (7) (potential prefix in boldface).

(7)

	Family	Subbranch	Language	Form
a.	'boiling~to boil'			
	Nyimang	–	Dinik	***gú****gulàl*
			Ama	***(a)****walài*
	Nubian	Nile	Mahas	*wal*
	Nilotic	West	Shilluk	*w(a)al(o)*
			(Dho)Luo	*walɔ*
		East	Bari	*walala*
			Teso	***(ai)****waliwal*
	Surmic	Southwest	Murle	*malac*
b.	'(to be) blind'			
	Nyimang	–	Ama	***to.****ŋodù*
			Dinik	***tɔ́.****ndɔ*
	Nubian	Kordofan	Kadaru	***ṭu.****nḍu*
			Midob	***tu.****ŋŋur*
		Nile	Dongolese	***du.****ŋgur*
	Central Sudanic	Bongo-Bagirmi	Bongo	*ngu'du*
	Nilotic	East	Bari	*mo'do.ke*
			Teso	*mudu.kaka* (or *mudu.ana*)
			Maasai	*modoo.k* (or *modoo.ni*)

Stevenson (1981: 158, 163)

According to Greenberg's logic, one would be tempted to posit the existence of yet other proto-affixes – an idea that Bender and Ehret have indeed entertained excessively in their search for Nilo-Saharan cognates. Alternatively, however, one

may just conclude that there is a considerable likelihood of finding a lexical root in one language whose shape and meaning happens to be similar to a form in another language that displays an additional initial or final segment. Thus, coincidental (partial) likeness seem to account for Murle *malac* in (7a) and for the forms of Bongo and East Nilotic in (7b). Thus, there may be no prefix involved in (7b) after all but simply a lexeme of the approximately reconstructed form *TUŋUD(U) (cf. Rilly 2010: 424).

The above caveat is, of course, not to say that frozen lexicalized morphology of the type described does not exist in some of the lineages at issue nor that all cross-lineage comparisons proposed in relation to such a phenomenon are invalid. After all, some families are indeed likely to be related genealogically, like Nyimang and Nubian (see section 2.6.4.2.), and some (may) have been in contact, for example, certainly Nyimang and Kordofan Nubian. What is in doubt here is that the evidence given so far allows the secure reconstruction of such "moveable" segments to an all-comprising Proto-Nilo-Saharan. Greenberg's data are also compatible with another hypothesis, namely that the linguistic affinities across otherwise diverse lineages are the result of a composite of partly unrelated factors, namely some genuinely genealogical relations on a lower level, a considerable amount of multiple and long-standing language contact, and simply coincidental similarity of compared grammatical material that is phonetically reduced and hence unmarked.

Such an explanation can also be applied to subsequent morphological comparisons, which often focus on the central geographically compact area of the Nilo-Saharan domain. A case in point are the three articles by Bryan dealing with what she calls "syndromes" in number and person marking (cf. also Tucker's [1975: 35–43] discussion with respect to two of the three features); they all take up or independently replicate comparisons contained in Greenberg (1963a). Thus, Bryan assembles extensive data on a *T/K* distinction rendering singular vs. plural on predominantly nominal elements (1959), on an *N/K* distinction expressing singular vs. plural on predominantly pronominal and verbal elements (1968), and on an *I/U* "coloration" on pronominal items referring in particular to a high-vowel feature in the second person, as opposed to an open vowel in the first person, with a variable tendency toward either *i* or *u* according to different grammatical factors and in different languages (1975). The distribution Bryan reports for these abstract features across lineages in northeastern Africa is summarized in Table 48.

While Bryan explicitly stated that the syndromes must at least partly involve language contact, she did expect that her contributions would also inform genealogical classification (1975: 75):

> It is hoped that this exercise in morphotypology will contribute to the verification of at least some previous classifications and provide material towards sub-classification within established language groups; contribute towards a greater understanding of some of the sound changes that take place in the languages under discussion, and so eventually towards the establishment of philologically reliable starred forms.

Table 48: Bryan's (1959, 1968, 1975) areal "syndromes" of number and person marking

No.	Classificatory unit	Bryan (1959)	Bryan (1968)	Bryan (1975)
NIGER-KORDOFANIAN				
U18	Kordofanian			
A	Heibanic	T/– ?	–/K	–
B	Talodic	–	–/K	–
D	Rashadic	–	–/K	–
NILO-SAHARAN				
U20	Kadu	T/K	N/K	(I/U)
U21	Kuliak	–/K ?	–	–
U22	Central Sudanic			
A	Bongo-Bagirmi	–/K ?	N/K ?	I/U ?
C	Kresh	–	N/K ?	I/U ?
F-I	Moru-Mangbetu	–	N/K	I/U ?
U23	Songhay	–	–	(I/U)
U24	Kunama	–	–	(I/U)
U26	Furan	T/K ?	N/K ?	(I/U)
U27	Saharan	T/– ?	–	(I/U)
U28	Maban	T/– ?	N/K ?	(I/U)
U29	Taman	T/K	N/K	I/U ?
U30	Nyimang	T/– ?	–/K	I/U ?
U31	Nara	–	–/K	(I/U)
U33	Nubian	T/– ?	–/K ?	I/U
U34	Dajuic	T/K	N/K	I/U ?
U35	Temeinic	T/K	N/K ?	I/U ?
U36	Nilotic	T/K	N/K	I/U
U37	Surmic	T/K	N/K	I/U
U38	Jebel	–	–/K	I/U
U40	Koman	–	–	I/U
AFROASIATIC				
U45	Cushitic	T/K	–	–

Notes: Presence of feature is: partial = -/X or X/-, questionable = ?, unlikely = (…); – = unit not mentioned

Unfortunately, no proto-forms have been reconstructed since then for any of the secure low-level lineages, let alone for larger ones. Instead, the later comparisons remain as abstract as Bryan's and Greenberg's and continue to target the highest possible classificatory level of Nilo-Saharan – this in spite of the fact that Niger-Kordofanian and Afroasiatic languages are involved already in Bryan's data, which implies that some similarities must be due to contact or coincidence.

Such insufficient methodological rigor carries over to studies on a smaller scale. An exemplary case is Edgar's (1991a: 121–122) comparison of number suffixes (or their absence) between the two neighboring families Taman and Maban. Table 49 gives the distribution of abstract thematic elements according to their number value, whereby those that cannot be securely reconstructed are given in parentheses.

Table 49: Suffixal number morphology in Taman and Maban (after Edgar 1991a: 122)

Suffix forms		Ø	*V*	*N*	*T*	*K*	*S*	*R*
S	Taman	X	X	(X)	X	(X)	–	–
	Maban	X	X	(X)	(X)	X	–	(X)
P	Taman	(X)	X	X	(X)	X	–	–
	Maban	(X)	X	X	X	(X)	(X)	(X)

Note: Frame = full form-meaning correspondence

My partly different arrangement of Edgar's information shows that full form–meaning "matches" only emerge in the first three columns, which are those with hardly any historically diagnostic value, viz. the absence of any marking and unspecified vocalic and nasal segments. None of the somewhat more specific consonantal exponents, *T*, *K*, *S*, and *R*, show a complete congruence between Proto-Maban and Proto-Taman. In addition, even in the case of a "full match" between compared markers of the above type, their real cognacy is still far from certain, as they all abstract from different language-specific features regarding exact consonant characteristics, additional vowels, suprasegmentals, possible allomorphy, etc. In unspecific comparisons lacking solidly reconstructed proto-forms the possibility of being confronted with chance resemblances in elaborate morphological paradigms that commonly display unmarked segments is simply as likely as finding remnants of shared inherited grams.

This can also be shown by means of an inverse exercise, namely the inspection of complex and partly irregular synchronic morphology that can accumulate within a language group that definitely goes back to a single ancestor. For example, Storch (2005: 380–395) summarizes the large range of nominal affixation across West Nilotic languages. Without going into detail, a look just at her tables of singular

and plural suffixes reveals that the notorious thematic elements of Nilo-Saharan number marking, *N*, *T*, and *K*, indeed occur but in fact in both number values. The author unfortunately does not advance specific proto-forms that could reveal any bias of a number value toward a thematic element; at the face of it, one can only diagnose that the search for synchronic *N*-, *T*-, or *K*-like segments in a relatively small group like West Nilotic secures success in any number value, apart from yet other elements. In the large set of diverse languages and families subsumed under Nilo-Saharan, many of them known to display complex morphology and its historical layering, a similar search for a somewhat more specific pattern, say singular *N* vs. plural *K*, is thus bound to be successful also across possibly unrelated lineages.

Coincidental similarity is yet more likely for single markers that so far lack any paradigmatic aspect. Dimmendaal (2010a), for example, surveys differential object marking in Nilo-Saharan and entertains the hypothesis that one can reconstruct an accusative marker for the assumed proto-language, albeit without other case markers within a larger paradigm. Table 50 repeats Dimmendaal's data, supplemented with some cases that he did not include.

Table 50: (Differential) object marking in Nilo-Saharan after Dimmendaal (2010a)

No.	Lineage: language	OBJ1	OBJ2	OBJ3	Comment
U21	Kuliak	***-k****a*			
U24	*Kunama*	*(-k-)*		*-si*	
U25	*Shabo*	***-k(a)***			Kibebe (2015: 146–153)
U26	Furan: *Fur*		*(-gɪ)*	*-sɪ*	
U27	Saharan: several	*ga, a*			
U28	Maban: several		*-ko, -gu*		
U29	Taman: *Tama*		*-ɪŋ, -kʊŋ*		cf. Rilly (2010: 390–391) vs. comitative-instrumental *-gi*
U30	Nyimang: *Ama*		*-ʊŋ*		cf. Rilly (2010: 391–392)
U31	*Nara*	*-ga* ?			cf. Rilly (2010: 287, 391)
U32	*Meroitic*	*-ɣa* ?			cf. Rilly (2010: 393–398)
U33	Nubian: several	*-ga, -ka*	*-gi*		cf. Rilly (2010: 390)

Note: boldface = obligatory rather than differential object marking

This data survey shows again a synchronic picture that may well reflect a mixture of a promising genealogical signal, namely a potentially inherited object marker in a group of northern East Sudanic languages subsuming U29-U33 (see section

2.6.4.2), besides other elements that are partly similar by chance. The range of languages affected is also significant from a geographical perspective in that all groups but Kuliak pertain to a non-genealogical macro-area, Chad-Ethiopia, that is characterized among other things by elaborate case systems (see, e. g., Güldemann 2010).

Isolated comparisons of grams between individual lineages suffer from the same problems, although here reconstructions are expected to be easier. For example, Griscom (2015) has recently discussed some kind of historical relation between Koman and (West) Nilotic, because both groups possess a preposition of the form KV^{front} that shares a similar polyfunctionality pattern. Being confident that the two units are genealogically related at some level, the author attributes this isogloss to some Nilo-Saharan proto-stage. But this disregards the real possibility that independent proto-languages are involved that, by mere coincidence, had a preposition with a similar shape and an appropriate semantic profile to undergo similar grammaticalization processes. Moreover, the author admits that grammaticalization may have involved areal contact.

2.6.2.2. Lexicon

The situation regarding diagnostic lexical evidence for Nilo-Saharan parallels that for the morphological domain. The early critics aside (e. g., Tucker and Bryan, as cited in section 2.2.2, and Goodman 1970), Greenberg's (1963a) lexical data has been assessed more systematically from a statistical perspective by Mikkola (1998, 1999). Although his procedure of working with superficially similar forms of individual languages may itself not find acceptance among many historical linguists, he points out the significant problem of coincidence and concludes (1998: 83):

> The results are in good accordance with the hypothetical status of Nilo-Saharan as a genetic unit, being something like an African counterpart for 'Eurasiatic' …
> Until someone is capable to confirm the (partial?) validity of Nilo-Saharan, at least the 'outliers' might more cautiously be regarded as independent families. After the vigorous and unsound criticism expressed by Bantuists and Nilo-Hamiticists against Greenberg, accepting the Nilo-Saharan status of some 'marginal' languages as a part of his whole African classification might have been too easy.

Bender and Ehret are the most prolific later authors on lexical comparison in Nilo-Saharan. Their oeuvre, culminating in two monographs with extensive lexical data, Bender (1996d) and Ehret (2001), is not only extensive but unfortunately also difficult if not impossible to evaluate in detail for various reasons, alluded to already in section 2.6.1. One first practical but major barrier is that a detailed assessment of the empirical facts would require one to do most of the research anew, because the innumerable pieces of data belonging to a great number of languages from a yet larger number of sources are not referenced transparently. For

this and other reasons, I must follow here another strategy in the form of an indirect and summary critique, notably by looking at the public reception of their work by other scholars and/or by putting into perspective some early studies that are more restricted in genealogical and thus empirical scale, implying that if already low-level hypotheses are doubtful, then their full Nilo-Saharan hypotheses are likely even more so.

The review of Ehret (2001) by Blench (2000c, published in 2001) is particularly relevant in this regard, because it compares both works cited above. What emerges is an overall negative picture of the methodological approaches of both authors and hence the resulting state of Nilo-Saharan historical work in general – drawn by a scholar who himself is a strong proponent of the hypothesis. While I refrain from repeating Blench's numerous queries or, at this stage, adding additional ones from my perspective, one point deserves to be mentioned at the outset. Blench (2000c: 302–303) observes that both works are unlikely to have been subject to "normal review procedures", which should be surprising, given the evident impact of such works even outside linguistics. Looking at other relevant studies it becomes clear that their entire Nilo-Saharan oeuvre emerged under their own steam without having been confronted with any serious scrutiny by fellow historical linguists: most works were published in conference proceedings and/or under their own editorship rather than by journals or publishers known for a reliable peer review. According to Blench, however, there seems to be an overall positive tradeoff effect between the disadvantages of unrefereed publications, lax editing included, and the fact that the studies sidestepped the peer assessment of potentially overly critical non-specialists. Consequently, when engaging with these texts, all readers, especially those who are interested in and knowledgable about historical-comparative questions, need to determine for themselves whether (or to what extent) any potential dissatisfaction with the two major Nilo-Saharan reconstructions and related works is due to their own personal biases (theoretical or otherwise), to editorial problems, or to other, more substantial deficiencies in the studies themselves.

It is, however, instructive to have a closer look at the cases in which other historical linguists have inspected and evaluated the works of the authors in more detail, which is possible for some of Ehret's early works. With respect to the usefulness of his concrete linguistic results, Voßen's (1983: 182) evaluation of the East Nilotic reconstructions in Ehret (1974) and Ehret et al. (1974) is representative and reiterates points made above: "… a serious problem with Ehret's reconstructions is his failure to provide proofs for them. Neither were attestations regularly provided, nor did the author find it necessary to explain the linguistic facts the reconstructions were based on. It is understandable, therefore, that these contributions are judged with reservation." The reviews of two of Ehret's historical monographs, namely Newman (1974) on Ehret (1971) dealing with South Nilotic history and Hetzron and Tálos (1982) on Ehret (1980) reconstructing South

Cushitic of Afroasiatic, amount to harsh critiques with respect to the author's handling of data and methodology as a whole. While Newman does not go into any empirical details, his summary assessment (Newman 1974: 648) speaks about the book in a benevolent but certainly not flattering fashion as a "triumph of art over science, of intuition over empiricism, of imagination over methodology. In the final analysis, it is the triumph of the talented chef who turns out a remarkable meal, but whose cookbook is not to be recommended at any price."

Being more familiar with the languages at issue, Hetzron and Tálos (1982: 244–245) comment somewhat similarly:

> Assuming that all the rules work properly (which would require a great deal of time and energy to check) and even making allowance for the excessively complicated format …, the deductive system used by Ehret, starting out of an artificial construct which through rules constructed to do just that lead to a real situation, arouses some suspicion. We are not blaming the author for the fact that his rules do work, but suspect that they may fail some requirements of naturalness. … In summary, Ehret may be entirely right and his reconstructions perfect. Yet the unrealistic perfection of his derivations, his teleological method, the lack of adequate treatment of minor details and of some explanation of how he reached each one of his deductions, make one hesitate to decide whether this is a brilliant intellectual game or serious linguistics. As we said before, the second possibility is by no means excluded, but some malaise always remains.

An inspection of the later historical-comparative studies on the reconstruction and classification of South Cushitic, especially Kießling (2002) and Kießling and Mous (2003), reveals that the reviewers' malaise was justified: today, South Cushitic in Ehret's terms is not even recognized as a genuine family (see section U45).

These two early studies by Ehret still have the merit of providing some new data the author had collected on South Nilotic and South Cushitic languages. His later work draws almost exclusively on secondary sources, and Blench (2000c) and Dimmendaal (2011: 314–318), both supporters of Nilo-Saharan, make it abundantly clear that the type of criticism raised in early reviews unfortunately carries over to this. Hence, with Ehret's enterprise as a whole, despite the possibility of containing many interesting ideas and details of analysis, there only remains the widespread skepticism against his general approach and the gnawing question about the validity of his bold and far-reaching hypotheses. That this does not only concern the higher genealogical levels becomes clear from the repeated weakness of his evidence for low-scale proposals, to be mentioned partly in section 2.6.4.1.

Bender undertook primary field work on a number of Nilo-Saharan languages and thus had a greater first-hand exposure to empirical data, and he has also engaged more with the work of other scholars. However, his way of arriving at probative evidence and his consideration for the reader's chance to evaluate it does not differ considerably from Ehret's approach. Since I have not come across more detailed reviews of his Nilo-Saharan work, I present a few examples of lexicon reconstruction from one of his early studies.

Table 51: Comparative series for ‘dog’ (after Bender 1981b: 258-7, 266)

Language group	Language	Root 1	Root 2
NILO-SAHARAN			
U21 Kuliak	Ik	*nok*[a]	
U22 Central Sudanic			
A Bongo-Bagirmi	Sara		*bísī*
	Baka		*ɪsï*
G Lenduic	Baledha		*tsée*
I Mangbetu-Asua	Mangbetu		*nesi*
U26 Furan	Fur		*asa*
U28 Maban	Maba	*nok*	
U29 Taman	Tama		*wi*
	Mararit		*wīš*
U31 Nara	Nara		*wəs*
U34 Dajuic	Shatt		*iis*
U36 Nilotic			
West	Burun	*gɔk*	
West	Naath	*jiok*	
South	Nandi		*sese*
AFROASIATIC			
U42 Semitic	Amharic		*wɪššа*
U45 Cushitic	Sidamo		*wɔšš-ico*
U46 Omotic: C Ari-Banna	Ari		*aksi*
NIGER-KORDOFANIAN			
U18 Kordofanian: D Rashadic	Orig (aka Tagoi)		*wùsù*
U17 Ubangi: B Zandic	Zande	*ango*	

Note: see Bender’s footnote 4 for the data from Amharic and Sidamo

Table 51 presents his data on Nilo-Saharan words for ‘dog’. His overall approach to lexical comparison becomes clear when he (Bender 1981b: 258) writes about these two and other similar series:

> What is the explanation of these form-meaning similarities? Two possibilities can be dismissed at once: chance convergences or separate roots in most cases. The similarities are too widespread and pervasive (beyond the examples given, of course) to give any credibility to these. Two other possibilities are more attractive: the items are essentially all roots and show phonological correspondence of root consonants, or the initial and final elements are more often affixes.

Bender unfortunately only refers to additional probative data and also leaves it to the reader to determine the exact “form–meaning similarities” observed by him. For the sake of the argument, regarding his comparisons for ‘dog’ I take them to be something like *OK~KO* for root 1 and some sibilant in the alveo-palatal region for root 2, which can even fade away entirely, as in Tama *wi*. *Pace* Bender, “chance convergences”, whatever this means precisely, *are* produced in widespread distribution across compared lexemes and lineages by exactly this type of vague similarity. According to Blasi et al. (2016), root 2 even turns out to be within the realm of global biases in sound–meaning associations and is thus a poor diagnostic for any historical hypothesis on an African scale.

The example in Table 51 illustrates another recurrent problem, namely that more than one proto-form for a single meaning is entertained without bothering to consider their very existence and plausible scenarios as to how these reflexes ended up in their modern disparate distributions, even within one and the same family, as in Nilotic. What makes the argumentation even more difficult to comprehend is that the author regularly throws in purported reflexes of the relevant root from languages that are by his own assumption unrelated, like Zande from Niger-Kordofanian for root 1, and Amharic, Sidamo, and Ari from Afroasiatic as well as Orig from Niger-Kordofanian for root 2. By excluding chance similarity, he is forced to admit potential borrowing, which he in fact assumes for the Amharic-Sidamo isogloss. One is then left to wonder why language contact cannot also explain some identified similarities between purported members of Nilo-Saharan.

(8)	a.	‘foot’	*ɔ́ll-ɔ̀k*	Tese	(Temeinic)
			g-ɔ́l	Sara	(Bongo-Bagirmi, Central Sudanic)
	b.	‘red’	*k-arey*	?	(Songhay)
			aro	Kenzi	(Nubian)
			ə’rɛɛ-ŋku	Nara	
	c.	‘warm’	*k-onna*	?	(Songhay)
			on-ok	Lotuho	(Nilotic)

(Bender 1981b: 258)

What Bender means by his idea that "the initial and final elements are more often affixes" can be seen from the examples in (8). Greenberg's (1981) "moveable k", which was briefly discussed already in section 2.6.2.1., does not only oscillate in terms of presence vs. absence but also morphotactic position. Apparently inspired by the variable position of cognate class affixes in Niger-Kordofanian, Bender (1981b: 262–263) seems to expect the reader to view it as a virtue of the hypothesis to allow for the association of an initial element in one language with a final one in another. While possible in principle, here hardly any constraints exist for linking any "prefixal" segment in a single word of a single language with a similar "suffixal" segment in another single word of another single language.

A few authors have dealt with lexical comparisons across Nilo-Saharan with a focus on a lexical subdomain, for example, Zelealem (2004) and Blažek (2009a) on numerals. In terms of tangible reconstructions, their success is not different from that of Greenberg, Bender, and Ehret, first and foremost because they have followed the same unreliable methods.

2.6.2.3. Typology

Nilo-Saharan languages are typologically very diverse, and it is hard to find traits that either are synchronically shared across the entire spectrum of the group and/or can be easily argued to be historically related to each other by principles of diachronic typology. Moreover, as soon as a feature has a wider distribution in the Nilo-Saharan domain, it often has an areal component in that neighboring lineages outside Nilo-Saharan share it.

One of the first domains that brought this to light was word order. Nilo-Saharan languages are distributed according to Heine's (1976a) continental survey across all his four major types. There is a geographically compact block of head-final languages (= Heine's type "D"), namely U24–33, which he argues belongs to a linguistic macro-area called "Chad-Ethiopia" (cf. Güldemann, this volume, chapter 3.2, see also Dimmendaal 2008a). About the same number of Nilo-Saharan units are overall head-initial (= Heine's types "A" and "C"), including several groups with verb-initial languages like Nilotic (U36), Surmic (U37), Kadu (U20), and Kuliak (U21). Finally, there are some languages allocated to type "B" because they combine syntactically head-initial and head-final characteristics, notably in the west in eastern Songhay (U23) and in the east in parts of Central Sudanic, for example, Moru-Madi (U22.F). These basic distinctions in word order partly serve to structure my survey of basic classificatory units in section 2.6.3.

Another domain displaying notable typological diversity across Nilo-Saharan is grammatical relations in terms of case marking, alignment type, etc. Iggesen's (2005) global survey of languages with peripheral case marking provided a first instructive picture on case marking in Africa with a prominent role of languages assigned to Nilo-Saharan. The relevant African languages in his sample are Kanuri,

Fur, Maba, Kunama, Dongolese (Andaandi), Krongo, Turkana, and Murle, all subsumed under Nilo-Saharan, but also three additional cases outside it, namely Gimira from the Omotic family Ta-Ne, and Oromo and Somali from Cushitic. Quite a few languages from other African lineages can be added, for example, Ik (König 2002), Shabo (Kibebe 2015), Tama (Dimmendaal 2009b), Ama (Stevenson 1938), Nara (Reinisch 1874), and in a less typical form also Gaam (Stirtz 2011) and Berta (Andersen 1995) from Nilo-Saharan as well as Dime (Mulugeta 2008) and Sheko (Hellenthal 2010) from Afroasiatic. What is important beyond the involvement of not only the Nilo-Saharan but also the Afroasiatic domain is that all the languages cluster in a large zone comprising the Chad-Ethiopia area already mentioned above and the neighboring region along the African Rift Valley. Nilo-Saharan languages outside this sphere, to the extent known, do not have the feature. Looking at the alignment patterns for case-marked arguments, a wide variety of types is attested in Nilo-Saharan, including ones that are cross-linguistically rare (see König 2008 for a general survey of core case in Africa). That is, cases of unremarkable plain nominative-accusative systems aside, all the following less common types are recurrently reported, too: differential object marking as a subcase of nominative-accusative (Dimmendaal 2010a), marked nominative (König 2006; Dimmendaal 2014a), and even ergative-absolutive (König 2012). Overall, the diversity and distribution of different systems of case marking and alignment in Nilo-Saharan does not invite a genealogical explanation but seems to reflect rich cross-linguistic variation with certain areal and typological biases.

Another linguistic feature that has been entertained to be particularly typical for Nilo-Saharan and thus an arguably old trait, suggesting its possible reconstruction for the proto-language, is the tripartite system of nominal number marking. It is a feature known for quite some time to be typical in the geographical domain (cf., e. g., Tucker 1975: 23) but was only documented and discussed on a larger scale by Dimmendaal (2000). The system typically comprises the three marking patterns singulative (i. e., overt morpheme for singular but zero for plural), plurative (i. e., overt morpheme for plural but zero for singular), and replacive (i. e., overt morphemes for both singular and plural). While indeed recurrent in Nilo-Saharan, its interpretation as a genealogical signal is questionable. First, a language can in principle develop this kind of semantically based number-marking on its own, because it is cognitively based and hence a universal option, as acknowledged by Dimmendaal himself and foreshadowed already by Westermann (1947). Geographically isolated cases are indeed found elsewhere in Africa (cf., e. g., Willms [1972: 171–172] for such phenomena in the Berber language Tamazight, and Schreiber [2010] for the discussion of entrenched general number in Mande languages as the basis of marked singular and plural forms). Yet more important is the fact that the distribution in Nilo-Saharan is only partial but that the attestations cluster again in an areal fashion, involving similar cases outside the purported family, notably in Kadu languages (cf. Reh 1985a), which are no longer viewed

as Nilo-Saharan by Dimmendaal himself, and in languages subsumed under the Afroasiatic domain like Aari of Ari-Banna (Hayward 1990: 442–444) and Cushitic in general (Appleyard 2011: 46; Mous 2012: 361–362). This overall picture makes tripartite number marking a good candidate for a feature with a universal linguistic basis that in Africa is an areal (rather than genealogical) diagnostic.

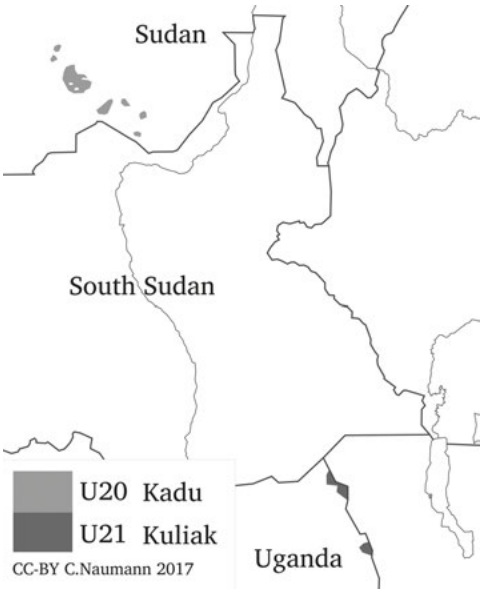
Table 52 provides a summary of the structural traits discussed above; it shows that the diversity within Nilo-Saharan is enormous and as such not different from that in a random sample of unrelated lineages – a picture that could be replicated by discussing other linguistic features. While this does not exclude the possibility that Nilo-Saharan groups are nevertheless all related genealogically, it certainly does not support such an idea. This fact is corroborated by the observation that even clusters within this domain with a unitary profile seem to have diverse causes. That is, besides the possibility of inheritance within genuine smaller families other relevant scenarios are contact-induced convergence (notably in the Chad-Ethiopia area) and universal correlation (e. g., between head-finality and dependent marking). Last but not least, under the genealogical hypothesis for Nilo-Saharan as a whole, its modern heterogeneity should be explained ultimately by processes of historically plausible and empirically well-grounded changes from earlier to later language states within the appropriate phylogenetic structure of the assumed lineage. While some attempts in this direction have been made, it has not been done in any sufficient and convincing way. For example, Dimmendaal (2007: 56–65) purports to trace a trend in parts of Nilo-Saharan from head-final syntax with dependent-marking and elaborate case inventories toward head-initial syntax with head-marking and restricted case systems. However, this scenario disregards half of the assumed lineages in concerning only what is assumed to be the East Sudanic branch, which itself has not been proven yet (see section 2.6.4.2).

In general, the above discussion should have made clear that previous scholarship on Nilo-Saharan has not yet identified paradigmatic morphology nor a sufficient body of robust lexical proto-forms comparable to that in the Niger-Kordofanian domain against which the likelihood of an individual unit's membership in such a large family can be evaluated. Accordingly, the discussion in section 2.6.3. below has to proceed differently: it reports the status of the internal coherence of a classificatory unit according to the literature but only briefly mentions its proposed more specific genealogical associations; these are discussed in more detail in section 2.6.4.2.

Table 52: Typological features viewed as common across the Nilo-Saharan domain

No.	Lineage	Word order	Peripheral case	Attested alignment by case marking	Tripartite number
U25	*Shabo*[1]	HF	*Shabo*	NOM	–
U23	Songhay[1]	HI	–	–	–
U20	Kadu[1]	HI	*Krongo*	–	X
U21	Kuliak	HI	*Ik*	NOM	X
U22	Central Sudanic	HI	–	–	–
U24	*Kunama*	HF	*Kunama*	**NOM**	–
U26	Furan	HF	*Fur*	**NOM**	X
U27	Saharan	HF	*Kanuri*	**NOM** ERG	–
U28	Maban	HF	*Maba*	**NOM**	X
U29	Taman	HF	*Tama*	**NOM**	X
U30	Nyimang	HF	*Ama*	NOM	–
U31	*Nara*	HF	*Nara*	NOM	–
U32	*Meroitic*	HF	?	NOM	–
U33	Nubian	HF	*Dongolese*	**NOM**	X
U34	Dajuic	HI	–	–	X
U35	Temeinic	HI	?	?	X
U36	Nilotic	HI	*Turkana*	NOM M.NOM ERG	X
U37	Surmic	HI	*Murle*	NOM M.NOM	X
U38	Jebel	HI	*(Gaam)*	–	(X)
U39	*Berta*	HI	*(Berta)*	M.NOM	–
U40	Koman[1]	HI	–	(NOM) (ERG)	–
U41	Baga~Gumuz[1]	HI	–	(M.NOM)	–
U46.C	Ari-Banna (Omotic)[2]	HF	*Dime*	NOM	(X)
U46.A	Ta-Ne (Omotic)[2]	HF	*Gimira*	NOM M.NOM	–
U46.B	Maji (Omotic)[2]	HF	*Sheko*	NOM	–
U45	Cushitic[2]	HF	*Oromo*	NOM M.NOM	X

Note: ERG = ergative-absolutive, HF = head-final, HI = head-initial, M.NOM = marked nominative, NOM = nominative-accusative (**with differential object marking**), (…) = non-canonical, – = feature(s) absent, ? = no information
Frame = Non-Nilo-Saharan: [1] according to Dimmendaal (2014b); [2] Afroasiatic



Map 12: Geographical location of Kadu (U20) and Kuliak (U21)

2.6.3. Basic classificatory units

U20 Kadu

The family, called here Kadu after Schadeberg's (1994) proposal, comprises close to ten languages spoken west and north of the town Kadugli in the south(west)ern part of the Nuba Mountains in Sudan (see Map 12). Since Reh's (1985a) study on Krongo is the only comprehensive published grammar, it is still incompletely documented, like many other languages in this area.

Early scholars studying languages of the Nuba Mountains did not have great difficulty in recognizing the unity of Kadu, because it is obvious through relatively superficial inspection. This can be verified with the comparative lexical and phonological data presented, for example, by Schadeberg (1994), Hall and Hall (2004), and Dafalla (2006), although none of these studies have attempted to reconstruct parts of the proto-language.

Where Kadu belongs, in terms of a wider genealogical perspective, is an unresolved question. Greenberg (1950d, 1963a) considered, in addition to lexical material, the salient number-marking prefixes that partly interact with a (sex-based) gender system to be sufficient evidence for an affiliation with Kordofanian, and by extension Niger-Kordofanian. This was convincingly refuted by Schadeberg (1981f: 301–304), as already mentioned in section 2.5.2.1.3., and Reh (1983:

45–47). The nominal prefix system pertains in fact to the tripartite number-marking pattern, which Dimmendaal (2000) has shown to be recurrent in the geographical region and which is found in many other Nilo-Saharan as well as some Afroasiatic lineages, where it is paired with sex-based genders (see Neuhaus [2008] for a recent transparent analysis of the Krongo system).

Schadeberg (1981f: 304) concluded his study with "recommend[ing] that Kadugli [aka Kadu] may be included in the search for substantial Nilo-Saharan comparison". Several scholars like Dimmendaal (1987b), Bender (e. g., 1989b, 2000b), and Stevenson (1991) followed this line of thinking, and a Nilo-Saharan affiliation of Krongo has indeed been the mainstream belief for some time. Ehret (1995a, 2000a) opposed this hypothesis on the basis of a restricted comparison between 100+ lexical and a few grammatical items specific to Krongo and alleged proto-forms of various African supergroups, and fell back on proposing a closer Niger-Kordofanian connection, with the possible proviso of the occassionally entertained higher-order link to Nilo-Saharan. There is, thus, extensive flux if not arbitrariness of opinion, and it comes as no surprise that Blench's (2006b: 102) latest, empirically broad approach, which ropes in lexical, morphological, and typological considerations, entertains every genealogical relationship that is possible within and beyond Greenberg's four-way scheme for African languages, except for a link to the Khoisan domain. The hypothesis that until recently has been least popular in African historical linguistics, namely the possibility of genealogically isolated entities, has finally found an explicit voice for Kadu with Dimmendaal (2010a, 2014b).

U21 Kuliak

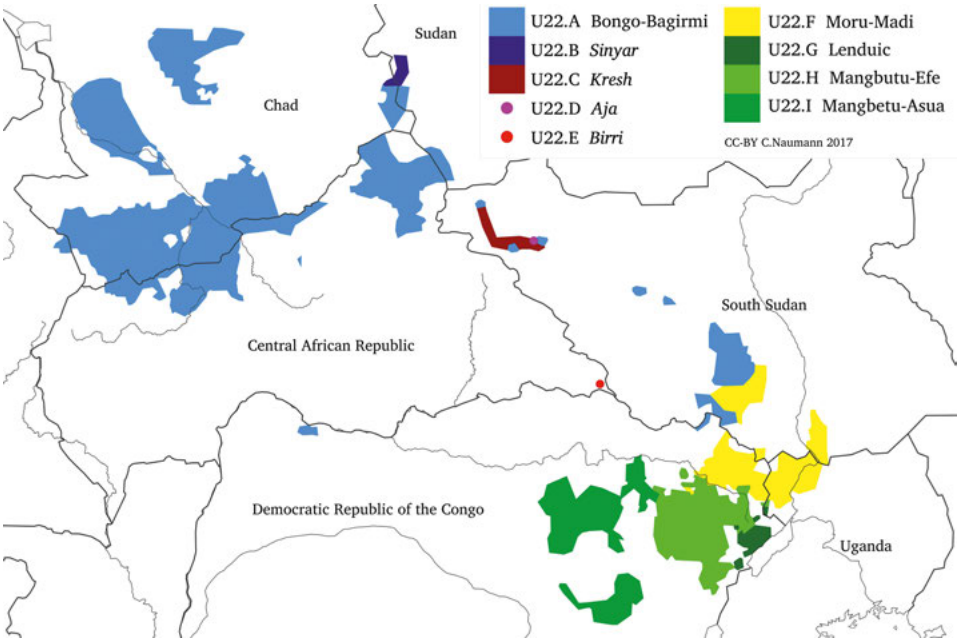
Three remnant languages, Ik, So, and Nyang'i, form a language family in northeastern Uganda (see Map 12) commonly called Kuliak since Heine's (1976b) comparative study. An assumed fourth language, Dorobo, dealt with in the earlier literature, has been argued by Schrock (2015) to be (a dialect of) Ik. During the earliest research, Nyang'i was already close to extinction so that only two languages are decently known and described. Since several monographs, most recently Schrock (2014), and additional articles are dedicated to the major member Ik, this language even counts today as one of the best documented ones in Africa.

The internal coherence of Kuliak is demonstrated by Heine's (1976b) study, which compares phonology, lexicon, and grammar, identifies regular sound correspondences, and reconstructs around 200 lexical proto-forms. Ehret (1981a), who calls the family "Rub" in later publications, proposed refining Heine's phonological and lexical reconstructions. Serzisko's (1989) structural survey provides additional typological evidence for the unity of Kuliak languages but does not propose any concrete morphological proto-forms. Being engulfed by Nilotic languages of different subbranches, it comes as no surprise that lexical and other affinities

between the two families are considerable; a particularly strong link between early stages of Kuliak and South Nilotic is discussed by Heine (1976b: 69–72) and Rottland (1983, see also 1996).

Similar to Kadu, the external relationship of Kuliak has been an intensively debated issue. Greenberg (1963a) promoted it from an isolated unit to a member of his East Sudanic but remarked hesitantly "The position of Nyangiya [aka Kuliak] remains somewhat uncertain and its assignment here is to be considered tentative" (Greenberg 1963a: 128). Tucker (1967a) in turn suggested a possible genealogical relation to Afroasiatic (aka "Erythraic") (see also Zaborski 1975: 61–62). Laughlin (1975) is a lexicostatistic study comparing Kuliak languages among themselves and with a wide variety of languages in (north)eastern Africa (without, however, presenting the comparative data). His results support the coherence of Kuliak as opposed to all other comparanda but fails to find diagnostic evidence for any relation beyond the group (see in particular his reservation [Laughlin 1975: 328] against the diagnostic value of isolated lexical isoglosses). Heine's (1976b) historical-comparative study as well as Sasse's (1981c: 152–160) methodological exercise end with the same cautious assessment by pointing out that both Greenberg's and Tucker's hypotheses are not supported by regular correspondences and lack convincing paradigmatic morphological evidence.

A number of scholars reviewed (parts of) the growing database on Kuliak and kept entertaining the above two links. Most treatments uphold Greenberg's hypothesis, either in the form of an East Sudanic affiliation of Kuliak (Bender 1981b; Ehret 1981b; Fleming 1983b) or its more peripheral position in a Nilo-Saharan family tree (Bender e. g. 1991b; Dimmendaal, e. g., 2014b). Lamberti (1988) undertook a dedicated study of Kuliak's affinities with Afroasiatic languages with a focus on Cushitic and Omotic (see already Sasse's [1981c: 152–160] discussion). However, due to Lamberti's (1988: 127–130) unorthodox conception of historical language relationships, it remains unclear whether one should infer a genealogical or contact hypothesis from his exposition. In general, to the extent that scholars linking Kuliak with other families discuss concrete data, they only provide unsystematic and almost exclusively lexical similarities, rather than evidence according to historical-comparative standards, and they also include isoglosses potentially induced by contact. Before this background, Laughlin's (1975: 333) conclusion remains as relevant today as at his time, namely that "the So complex languages [aka Kuliak] will remain a thorn in the empirical side of theories of East African ethnolinguistic relations", or at least of classificatory approaches that are "blemished" by genealogically isolated entities.



Map 13: Geographical location of Central Sudanic (U22)

U22 Central Sudanic

With more than 60 languages Central Sudanic is the largest subgroup within the Nilo-Saharan domain with a far-flung distribution in central Africa (see Map 13).

It arguably displays the most robust evidence in favor of a genealogical interpretation. Its classificatory history is given in Table 53. The idea of a family with the approximate extent of the current Central Sudanic took first shape in particular with Tucker (1935: 865–876; 1940: viii, 3–21), who recognized a likely genealogical group comprising at least Bongo-Bagirmi (in a wider concept than today), Moru-Madi, and Mangbutu-Efe within his purely geographically intended "Eastern Sudanic". Greenberg (1949a: 87) extended this unit by a few more groups, albeit without any subclassification; he also introduced the new term "Central Sudanic", reusing the term "Eastern Sudanic" for a very different genealogically intended group (see section 2.6.4.2. below). Tucker and Bryan (1956: 141–143, 1966) are less committed to a Central Sudanic unit but insist on the dichotomy of Bongo-Bagirmi vs. Moru-Mangbetu.

This bipartite structure is taken up in much of the later research. It is often recast as an opposition of a western vs. an eastern branch, which also corresponds to syntactic differences involving in particular word order distinctions according to Heine's (1976a) opposition of type A vs. B. In accordance with such an assumed

Table 53: The history of subclassification of Central Sudanic

Greenberg (1949a: 87)	**Tucker and Bryan (1956: 1–19, 141–143)**	**Greenberg (1963a: 109)**	**Bender (1992)**	**Boyeldieu (2010)**
not treated	Sinyar	not treated	5 Sinyar	Sinyar*
Bongo, Baka	Bongo		6 Bongoid	
Sara	Sara	1 Bongo, …	4 Bagirmi-Sar,	
Bagirmi	Bagirmi			Bongo-Bagirmi
Kara	Kara		Fongoro,	
Yula	Yulu-Binga	3 Binga, …	Yulu-Binga	
Kredj	Kresh proper	2 Kreish	7 Kresh	Kresh*
not treated	Aja	not treated	Aja	Aja*
unknown	unknown	unknown	not treated	Birri*
Logbara, …	Moru-Madi	4 Moru, …	1 Moru-Madi	Moru-Madi
Lendu	Lendu	7 Lendu	8 Baadha	Lenduic
Momvu-Balese	Mangbutu-Efe	6 Mangbutu, …	2 Mangbutu	Mangbutu-Efe
Mangbetu	Mangbetu	5 Mangbetu, …	3 Mangbetu	Mangbetu-Asua

Note: * without comprehensive published description

genealogical configuration, some studies have focused on evaluating Bongo-Bagirmi and Moru-Mangbetu on their own. Thus, after Tucker and Bryan (1956, 1966) and Larochette (1958b) had presented some scattered data in support of Moru-Mangbetu as a unit, this set of languages was the subject of various types of comparative research. Demolin (1988) and Bokula (1991) focus on lexical data and the first identification of phonological change and cross-family correspondences. Another relevant study is Ernszt (2006), which addresses the widespread existence across Moru-Mangbetu of such verb-prefixal elements as *k- and/or *ɔ/o- in nominalized verb forms, a vowel of a predominantly open~front quality with centripetal function, a front vowel with causative function, and an alveolar consonant and/or a mostly close vowel with pluractional function. Although the results of all these studies certainly seem to suggest a Moru-Mangbetu family, the indivudal groups are still treated here separately, because the authors do not commit to conclusively demonstrating the group's status as a family by means of a systematic establishment of proto-forms under exclusion of other possible relatives (cf. Greenberg [1971: 433–435] for a similar treatment). Bongo-Bagirmi has received far more attention in this regard; it is dealt with in section U22.A.

Other works have addressed the reconstruction of Central Sudanic as a whole. Bender (1989b, 1991b) deals with grammatical elements of the assumed proto-language within his general assessment of Nilo-Saharan, and Bender (1992) attempts to reconstruct its lexicon. While these studies point out suggestive commonalities across Central Sudanic, specialists do not accept these as reliable reconstructions (cf., e. g., Boyeldieu 2006: 151, fn. 1). In Bender's approach, where Central Sudanic is referred to idiosyncratically as "Family F", Bongo-Bagirmi is viewed as the core "Fc (= central)" in opposition to a non-genealogical set "Fp (= peripheral)" that comprises the four Moru-Mangbetu groups as well as Kresh and Aja.

Boyeldieu (2006), Ernszt (2006), and Anderson (2015) are more recent comparative works with a Central Sudanic scope. The first study identifies a number of lexical matches that show regular sound correspondences regarding initial labial-velar consonants across Central Sudanic, whereby 19 of 35 comparative series also bridge the divide between Bongo-Bagirmi and Moru-Mangbetu. The second work, already referred to above, argues that shared verb prefixes in Moru-Mangbetu also have apparent historically related counterparts in Bongo-Bagirmi. The third study attempts to reconstruct morphosyntactic patterns of predicates of Proto-Central Sudanic: one type in the perfective domain has cross-reference verb prefixes, while the other type in the imperfective domain has so-called STAMP morphs (portmanteau morphemes encoding subject, tense, aspect, modality and polarity) resulting from the fusion between pronouns and auxiliaries. Boyeldieu and Nougayrol (2008: 15–16) and Boyeldieu (2010) are good summaries of the present discussion, the last work speaking of "if not (yet) decisive, strong indices in favour of the genetic unity of C[entral] S[u]D[anic] (except Kresh?)."

Here, Central Sudanic is represented as a family based on these optimistic specialist assessments and on substantiating data that had not yet been assembled in this form. It concerns two paradigmatic domains that have also been used in section 2.5.2. to evaluate relations among assumed members of Niger-Kordofanian, namely pronouns and lower numerals.

Regarding pronouns, Boyeldieu (2010) still speaks merely about "similarities in the S1-S2 [first- and second-person singular] forms of the independant pronouns". Güldemann (2017), to which the reader is referred for more details, argues that the data justify the reconstruction of a full unitary pronoun paradigm for speech-act participants, as shown in Table 54.

Table 54: Speech-act participant pronouns in an early stage of Central Sudanic

Person	Singular	Plural
1	*V.ma	*V.mV^{high}
2	*`V.ma	*`V.mV^{high}

Table 55: Lower numerals across Central Sudanic lineages

Lineage	**'one'**	**'two'**	**'three'**	**'four'**	**'five'**	**Source**
A **Bongo-Bagirmi**	⁎kV.DV	⁎ḍiyo	⁎mu.ta	⁎(-)sɔ	⁎m(u)i	Boyeldieu, Nougayrol, and Palayer (2015)
B *Sinyar*	*kʌ.llʌ* *a.lla*	*roo* *ou.rié*	*mu.ṭra* *o.ttra*	– *o.ssa*	– *moï*	Doornbos and Bender (1983: 74); Grossard (1925: 329)
C Kresh	⁎'ba.l(a)	*'biir/* ⁎rɔ.m(V)	⁎tO.t(V)	⁎sO.s(O)	⁎sal(a)	Santandrea (1976: 78)
D *Aja*	*kpá(a)*	*'bira*	*bu.ṭo*	*ba'di*	*nieŋ̊u*	Santandrea (1976: 78)
E *Birri*	*ì.lá*	*úkw.àà.rì*	*ɔ́kɔ́.trɔ́*	*ùkú.wödî*	*ìnyí-g.ìlä*	Santandrea (1966: 198)
F **Moru-Madi**	⁎-lɔ	⁎(-)ri	⁎(-)na	⁎(-)su	⁎nji/⁎tou	Boone and Watson (1996: A88–90)
G **Lenduic**	⁎(-)dî	⁎-R(y)ɔ	?	⁎(-)Θo	⁎(-)mbU	Bokula and Irumu (1994: 240)
H **Mangbutu-Efe**	⁎-dî	⁎-Ue	⁎-na/⁎-mu	⁎-to	⁎-mbo	Bokula and Irumu (1994: 231–232)
I **Mangbetu-Asua**	*ka.na	*-o.ru	*-ta	*-sʊ.wa	*-zɛrɛna	Demolin (1992: 49, 15, 48, 40, 10)
Proto-Central S.	? ⁎-(kV).DV	⁎-RiO	? ⁎-tV	⁎-thO	? ⁎-mbu	

Note: probable cognates right-aligned

Since a pronoun pattern as in Table 54 is not evident in Proto-Bongo-Bagirmi including Sinyar (though not excluded for a yet earlier stage), the question whether this group belongs to a larger Central Sudanic unit hinges on the existence of other probative evidence. In addition to some suggestive lexical data (cf., e. g., Tucker and Bryan 1956: 141) and the promising grammatical elements referred to above, some more supporting evidence comes from the lexical paradigms of lower numerals. These are presented across the whole group in Table 55. While all five numerals display affinities that can be argued to bridge the divide between Bongo-Bagirmi and Moru-Mangbetu (the relevant forms are given on the right side of each column), the data are more conclusive for 'two' and 'four', whose forms allow for robust approximate reconstructions across the entire Central Sudanic domain. Regarding the considerable diversity seen in the table it should be taken into consideration that some languages are extremely poorly documented and understood, and some additional information available indicates that a greater amount of homogeneity can be expected after a deeper analysis. This holds, for example, for Birri when taking a couple of additional sources into account. Thus, its form for 'five' cannot be inherited, because it is literally 'one hand' and the numerals from 'six' to 'nine' follow a quinary system whereby the base in Seligman's (1918: 56) vocabulary is not 'hand' itself but *i.saR*, which is quite likely the same as Kresh *sal(a) 'five'. Given that Junker (1888/89: 87) gives *ila* not as 'one' but as 'alone', it is then questionable whether all forms reported are really even canonical cardinal numerals.

U22.A Bongo-Bagirmi

The approximately 30 languages subsumed under Bongo-Bagirmi are distributed in a large east–west belt spanning southern Chad, the northern Central African Republic, and the adjacent southwestern South Sudan border area, and also transgressing the border with the Democratic Republi of Congo and Sudan and having outliers much further west on both sides of the Ubangi River. The group tends to be viewed as the core unit of Central Sudanic (cf. Bender's classification referred to above) – this for at least two reasons: it is the largest unit in terms of geographical size and number of languages, and it has received the greatest attention regarding historical-comparative research.

Its genealogical unity was recognized relatively early on, although the first more systematic attempts at historical reconstruction were only made in such studies as Thayer (1974) and Saxon (1980). These early works have been superseded by the extensive descriptive and comparative research by French linguists, who call the family Sara-Bongo-Bagirmi (see, e. g., Boyeldieu 1995, 2000, forthcoming; Boyeldieu and Nougayrol 2004, 2008; Boyeldieu, Nougayrol, and Palayer 2015). Due to the hundreds of lexical as well as grammatical proto-forms related by regular segmental and even tonal correspondences, Bongo-Bagirmi counts

as one of the continent's families with the best state of historical reconstruction. In addition to providing a sound basis for comparison with other likely relatives within Central Sudanic, this work has also identified various languages that used to be affiliated with Bongo-Bagirmi but are more problematic as members of the core group, notably Sinyar, Kresh, and Aja, to be discussed below.

Based on the linguistic findings, some important conclusions have also been proposed regarding the prehistory of the Bongo-Bagirmi family. First, its geographical origin is viewed to lie in its eastern domain around the border region between the Central African Republic and South Sudan, from which it expanded to its modern distribution area in southern Chad and along the Chad–Central African Republic frontier (cf., e. g., Boyeldieu 2016, forthcoming). This westward expansion is associated with a considerable amount of linguistic innovation in the relevant languages, which suggests that the eastern Bongo-Bagirmi languages are closer to their Central Sudanic relatives not only in geographical but also in linguistic structural terms. Second, languages of or closely related to Bongo-Bagirmi are likely to have had a wider distribution in the past, in particular in areas toward the southwest, due to the fact that Bandaic languages of Ubangi (U17.F) arguably display a strong linguistic Bongo-Bagirmi substrate suggesting widespread language shift from the latter to the former (see Boyd 1978; Cloarec-Heiss 1995, 1998).

Its external genealogical link to other members of Central Sudanic, although assumed for a long time, has been more difficult to establish. However, as discussed above, even scholars like Boyeldieu and Nougayrol, who require the same methodological rigor for this question as applied in the internal evaluation, appear to favor a positive answer.

This problem is intimately related to the overall conceptualization of the relation between Bongo-Bagirmi and Moru-Mangbetu, which may turn out to be addressed better by shifting the research perspective. Bongo-Bagirmi is the largest group and can be projected back in time due to firm reconstructions so that other Central Sudanic groups tend to be measured against this established historical "yardstick". Indeed, this situation seems to have led Bender (e. g., 1989b, 1991b, 1992) to view Bongo-Bagirmi as the Central Sudanic "core" and the individual Moru-Mangbetu groups as the "periphery". However, instead of asking how this periphery is similar to the Bongo-Bagirmi core, one could conceive of these groups as the Central-Sudanic core pool from which Bongo-Bagirmi branched off as a peripheral clade, which is likely to have involved also contact influence from unrelated languages. Some of its unique characteristics would thus have arisen later, and this new profile was brought into its modern territory due to a not-so-ancient expansion. Such a scenario is compatible with two major findings: first, the considerable pronominal homogeneity of Moru-Mangbetu, which would reflect the original state in the family but was lost in Bongo-Bagirmi (see above), and second, the relative homogeneity of Bongo-Bagirmi despite its large geographical

expansion, which would mimic the situation that holds for Bantu within the Niger-Congo panorama. Under this hypothesis, it would only be the features Bongo-Bagirmi shares with the rest that are more diagnostic for early Central Sudanic.

U22.B Sinyar

Sinyar is spoken in Sudan a little north of its border triangle with Chad and the Central African Republic. It used to be subsumed conventionally under Bongo-Bagirmi, in spite of the extreme scarcity of relevant data and thus without hardly any empirical substantiation. The word list in Doornbos and Bender (1983) aside, Boyeldieu (2013, 2015) presents the bulk of the modern empirical material. With his sound background of comparative Bongo-Bagirmi this author remains undecided about the genealogical affiliation of Sinyar.

Table 56: Sinyar features and genealogical classification (after Boyeldieu 2013)

Typical for Bongo-Bagirmi	**Specific to Sinyar**
– part of the lexicon (including 'basic')	– part of the lexicon (including 'basic')
– part of the personal pronouns	– noun plurals in *-ŋà*, some animates in *-àar*
– number marking of subject for second and third person with verb suffixes	– double case-marking system – verb root alternation according to TAM
– infinitive in *t-* with vowel-initial verbs	– intensive/frequentative verbs in *-r-*
– adjectives in *k-* with vowel-initial verbs	– "factitive"/causative verbs in *-oo/-uu*
– subject focalizer in *k(V)-*	– no tonal alternation on verbs

Table 56 shows features that point to the membership of Sinyar in the Bongo-Bagirmi family (left column) as well as others that are unique to it (right column). On this basis, Boyeldieu deems the two opposite historical scenarios to be equally possible (both imply the existence of some unidentified non-Bongo-Bagirmi contact language): either pre-Sinyar was Bongo-Bagirmi but underwent heavy restructuring, involving at least partly intensive language contact, or it was a non-Bongo-Bagirmi language that borrowed a substantial amount of features from some Bongo-Bagirmi language(s).

Table 57: Speech-act participant pronouns in Proto-Bongo-Bagirmi and Sinyar

Lineage	**1S**	**2S**	**1P**	**2P**	**Source**
Bongo-Bagirmi	*má	*(?)í	*jE	*SE	Boyeldieu and Nougayrol (2004: 35)
Sinyar	*maa(-)*	*ì-*	*cE-*	*sE-*	Boyeldieu (2013)

Table 57 shows the closeness of the shared speech-act participant pronouns, involving the complete paradigm, which also interact with the equally shared number marking of subjects on the verb. According to Table 55 above, the lower numerals represent another small lexical paradigm common to both units. I assume that these two sets of elements are unlikely to have been borrowed by a non-Bongo-Bagirmi language. This observation and the overall profile of the feature survey in Table 56 suggest that Boyeldieu's first hypothesis of a genealogical relation between Sinyar and the Bongo-Bagirmi family is more plausible. Pre-Sinyar may well have lost inherited traits, such as the verbal tone contrast and parts of the lexicon, and innovated the features listed in the right column of Table 56. The geographical location of Sinyar in the northern periphery of the Bongo-Bagirmi family certainly does not contradict such a hypothesis.

U22.C Kresh

Kresh (aka Gbaya), spoken in the western Bahr El Ghazal in South Sudan, is a set of closely related speech varieties that are proably best characterized as a language complex; such peripheral varieties as Dongo and Woro are sometimes presented as languages (cf. Santandrea 1948, 1950, 1976). Although older linguistic material in works such as Gaudefroy-Demombynes (1907: 302–314), Meinhof (1917/18), Struck (1930), and Santandrea (1976) has been supplemented by Brown (e. g., 1991a, 1991b, 1994) with more up-to-date data on individual structural topics, there is no comprehensive description of any variety as yet.

In terms of historical-comparative research on Kresh it is again Boyeldieu (notably 2000: 155–160, 305–310) who has addressed the question of its widely assumed relation to Bongo-Bagirmi in some detail. Since he points out a number of specific features that Kresh shares with the reconstructed core of Bongo-Bagirmi (including clear grammatical parallels and close to 100 suggestive lexical comparisons) it is more than plausible that the two are genealogically related. At the same time, other features of Kresh, notably its pronoun system, which deviates partly from that in Table 54 (see Güldemann (2017) for more details), represent evidence that builds a genealogical bridge between Bongo-Bagirmi and the remainder of Central Sudanic, which is a crucial reason for adopting here this wider hypothesis. The geographical and genealogical affinity of Kresh to the two following languages, Aja and Birri, is of particular relevance in this respect.

U22.D Aja

Aja, which is spoken in the immediate geographical vicinity of Kresh, is commonly considered to be its closest genealogical relative. This idea goes back to Santandrea (1948, 1976) who is the only scholar presenting more substantial linguistic data on Aja and considers it to be "midway between Kresh and [the gene-

alogically unrelated Ubangi language] Banda" (Santandrea 1948: 98). However, a more detailed inspection of Santandrea's (1976) comparison makes clear that he only provides a crude assessment of synchronic proximity that does not distinguish between similarities due to inheritance and those arising through contact. This observation is echoed by the pronominal comparison in Güldemann (2017) in that Aja displays the system in Table 54 above but aligns with Kresh at best on a higher level that may include the equally isolated language Birri, to be treated in the following section. A more conclusive assessment depends on a systematic study using all available linguistic data on Aja and roping in all other languages that are candidates for having a closer genealogical relationship with it.

U22.E Birri

Birri (not to be confused with Belanda [B]viri of Ndogoic [U17.G]) is yet another isolated and little-known language within Central Sudanic, spoken in the southeasternmost corner of the Central African Republic. The only substantial data on this little-known people, whose language is endangered according to Sommer (1992: 316–317), are provided again by Santandrea (1950 on ethnography, 1966 on linguistics).

Suggestive lexical affinities in Santandrea's (1966: 101–105) superficial comparison of Birri data concern predominantly Kresh and Aja as well as languages of Moru-Madi (U22.F) further southeast. Vorbichler (1969, 1979b: 433–434) takes up an earlier suggestion by Calonne-Beaufaicts, also mentioned but doubted by Santandrea (1966: 82–83), and argues for another, even closer relationship of Birri to another southern family, Mangbutu-Efe (U22.H). That is, 170 out of a total of 400 available Birri words are said to be shared with these languages and to involve also regular sound correspondences; his argument looks promising in displaying considerable and detailed resemblances but is unfortunately not laid out exhaustively. Birri also possesses syntactic features that can count as an affinity with geographically distant Moru-Mangbetu languages in the south, notably word order features of Heine's (1976a) type B like head-final genitives, postpositions, and the marked preverbal position of object pronouns in certain auxiliary constructions (cf. Santandrea [1966: 201, 211–214, 233] for relevant data). The pronominal data suggest that the closest affiliation of Birri is with Kresh and Aja (see Güldemann 2017). The overall picture would suggest that within this central group Birri may establish a genealogical bridge to Moru-Mangbetu in the south(east) as does Kresh to Bongo-Bagirmi in the north(west).

U22.F Moru-Madi

Moru-Madi consists of not more than 10 partly internally divergent languages, which are spoken around the border triangle of South Sudan, the Democratic

Republic of Congo, and Uganda. After Tucker's (1940) first substantial comparative treatment, such later works as Bokula and Irumu (1994: 208–216) and Boone and Watson (1996) provided more complete data across the entire family that include word lists of more than 200 items as well as lexical and phonological distance matrices and show the very close genealogical relationship between all speech varieties. Kilpatrick (2006) is a more recent comparative treatment of pronouns.

Moru-Madi is the first of four Central Sudanic families that are commonly subsumed under the larger Moru-Mangbetu grouping. After the earlier sketchy studies by Tucker (1940), Tucker and Bryan (1956, 1966), and Larochette (1958b), more recent treatments like Demolin (1988), Bokula (1991), and Ernszt (2006) have substantiated this hypothesis with both lexical and grammatical material. The pronominal data discussed in more detail by Güldemann (2017) strongly point in the same direction. A more convincing assessment is hampered by partly incomplete documentation and the persistent lack of robust reconstructions, which would be possible to achieve without much effort at least regarding the available comparative word lists.

U22.G Lenduic

Lenduic comprises the languages Lendu and Ngiti, spoken in the northeast of the Democratic Republic of Congo close to the border with Uganda. While only the second one is described by Kutsch Lojenga (1994) comprehensively, the close relation between the two can be discerned clearly from the comparison of 120 lexical items provided by Bokula and Irumu (1994: 235–242). While it was thought in the beginning to be closely allied to Moru-Madi (Tucker 1935, 1940), it is now treated as a separate unit. However, no systematic extensive data collation let alone an attempt to reconstruct parts of Proto-Lenduic exist as yet, so that its exact position within Moru-Mangbetu and Central Sudanic remains to be worked out in detail.

U22.H Mangbutu-Efe

A family of a little more than half a dozen languages in the northeastern Democratic Republic of Congo west of Lenduic is called Mangbutu-Efe. Efe refers to one member language spoken by Pygmy foragers that is most closely related to Lese but today is also in contact with other languages of the Mangbutu-Efe group and beyond. The unity of the family can be deduced by superficial inspection, for which Bokula and Irumu (1994: 226–234) provide again the most systematically presented data. The languages were studied intensively by Vorbichler, who also dealt with historical-comparative issues and the linguistic relation between pygmy foragers and farmers (e. g., 1965, 1967/68, 1971, 1974a, 1974b, 1979a, 1986). Given the fact that only half of the languages are properly documented and a com-

prehensive historical study of Mangbutu-Efe beyond isolated comparisons does not yet exist, its wider genealogical assessment faces the same problems as the two preceding families.

U22.I Mangbetu-Asua

A fourth small family, with three languages, is spoken in the northeast of the Democratic Republic of Congo west of Mangbutu-Efe. It comprises another language specific to pygmy foragers, Asoa, which is also aptly referred to in the group name. After earlier works touching on comparative aspects, notably Vekens (1928) and Larochette (1958a), Demolin's (1992) phonetic-phonological study includes an extensive lexical family survey with more than 250 reconstructions (see also Bokula and Irumu [1994: 217–225] for additional lexical material). These data as well as the comparative discussions by Demolin (1988) can serve as a sound starting point for advancing with the reconstruction work on the level of Moru-Mangbetu and beyond.

U23 Songhay

The geographically most isolated language family subsumed under the Nilo-Saharan domain is Songhay, spoken along and around the Niger bend and northwards in widely dispersed locations of the Sahara, the extreme outlier being Tabelbala in Algeria (see Map 14). Similar to the case of Dogon and its French research tradition, Songhay had been perceived for a long time to be a dialect cluster. With the extensive documentation and description of different varieties undertaken by Jeffrey Heath in the 1990s, it became clear that Songhay is in fact a diverse family of around ten distinct, albeit closely related, languages.

A first full survey of the family and a proposal of subclassification of the "dialects" was provided by Nicolaï (cf., e. g., 1981, 1983). Based on much better documentation, this has been superseded by the recent classification efforts of Souag (e. g., 2012) dedicated to the historical-comparative framework, whereby also loanword research at different time depths plays an important role. Souag proposes a historical scenario for the development of the family that involves widespread language shift, whereby its modern geographical and genealogical profile emerged from a first expansion starting in a southeastern location on the Niger and a second dispersal from its western realm into areas north of the river.

Such a history can readily explain why early Songhay seems to have been influenced heavily by contact with Mande, especially its Soninke-Bozo branch (see below), and why a second contact phase in the northwest was characterized by a strong impact from Berber not restricted to Tuareg (cf., e. g., Christiansen and Christiansen 2007; Kossmann 2007, 2008/09; Souag 2010a, 2010b, 2015a, 2015b). The extent of the contact with Touareg in the Sahara has gained the rele-

Map 14: Geographical location of Songhay (U23)

vant languages the questionable fame of "mixed" varieties (Nicolaï 1990b; Wolff and Alidou 2001). The important role of external language interference is responsible for an enormous typological diversity within the family that is partly tied to a northern or a southern areal alliance of the languages.

In view of these contact signals it comes as no surprise that the external classification of Songhay has been and still is controversial. While Westermann (1920/21: 202–213) and Delafosse (1924: 542–548) had recognized affinities to Gur and Mande within the "Western Sudanic" framework, Greenberg (1963a) transferred the group to his Nilo-Saharan. Evidence continued to be presented for both affiliations. Nicolaï (1984: 7–58) argues for considerable lexical similarities with Saharan, subsumed under Nilo-Saharan. For Mande, aligned with Niger-Kordofanian, similarities do not only exist in the lexicon but more strikingly in the

domain of morphology, as outlined by Mukarovsky (e. g., 1965, 1966d), Nicolaï (1977, 1984: 59–144, 2006), and Creissels (1981); unfortunately, inheritance and contact have never been disentangled. One idea entertained for interpreting this apparent ambivalence of Songhay (and Mande) is that it provides a genealogical bridge between the two macro-groups. The indeterminacy of such ideas and the real problem of contact-induced data signals are indicated by Zima's (1988, 1990, 1995) research on Songhay's lexical links in a third direction, namely Chadic belonging to Afroasiatic. Moreover, Greenberg's and other scholars' evidence for Songhay's commonly accepted Nilo-Saharan membership has been rejected as insufficient and shown to be riddled with errors by family specialists like Lacroix (1971), Nicolaï (1990a, 2003), and Zima (2007).

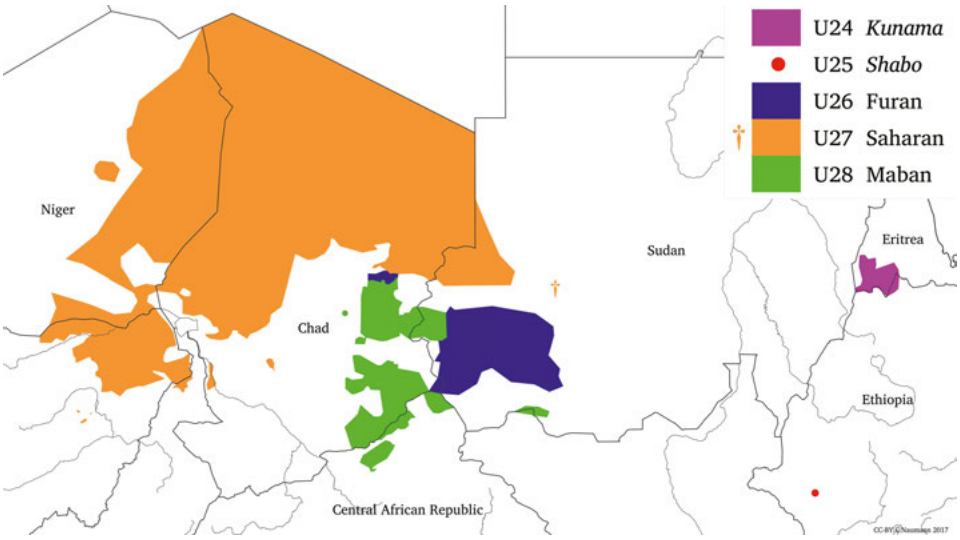
Nicolaï not only opposed the Nilo-Saharan hypothesis but tried to replace it with an alternative historical scenario related to the undeniably strong signals of language contact in various modern Songhay languages, and presumably in Proto-Songhay, too. Nicolaï's (1984: 145–159, 1987) first proposal of a creole origin was replaced by his (1990a, 1995) idea that Songhay started out as a mixed language with, roughly speaking, a morphosyntactic Mande base and a lexicon of unknown origin. Nicolaï (2003, 2006, 2009) eventually hypothesized that this incoming lexical contribution stems predominantly from an "Arabic-Berber" vehicular language. These ideas were not received very favorably (cf., e. g., Dimmendaal 1992; Kossmann 2005b), although this critique did not strengthen the widely accepted Nilo-Saharan link either. One major problem of Nicolaï's approach is that it cannot account for the existing Songhay-specific features that exist in both lexicon and morphosyntax. A natural consequence is the conjecture that Songhay is an isolate lineage, as expressed by Kossmann (2005b: 102):

> But what if the lexifier language of Songhay cannot be identified, not because our methods are insufficient, but because the language was a real language isolate, the last member of an otherwise extinguished phylum not connected genetically to any other language family in the traceable linguistic past? […] And why could this isolated language not have had a Mande-like syntax and morphological structure? Would one still need the mixed language hypothesis?

This view has finally found its way into African language classification in that Dimmendaal (e. g., 2008b) has excluded Songhay from Nilo-Saharan.

U24 Kunama

Kunama is an isolated group of dialects spoken in southwestern Eritrea (see Map 15). Differences between varieties can be considerable (cf. Thompson 1983: 282–283), whereby it has not been determined conclusively whether more peripheral ones are better viewed as separate languages (see, e. g., Bender [1971: 202] on the considerable lexicostatistic distance of Ilit). This open question contrasts



Map 15: Geographical location of *Kunama* (U24), *Shabo* (U25), Furan (U26), Saharan (U27), and Maban (U28)

with the relatively extensive descriptive literature on the central Marda and Barka varieties. It comprises a fuller early documentation by Reinisch (1881–1890), a number of works in Italian produced in missionary contexts, and more recent linguistically oriented studies like Thompson (1983, 1989), Idris (1987), Bender (1996b, 2001), and Connell, Hayward, and Ashkaba (2000).

A first attempt to classify Kunama was made by Reinisch (1881: 99) in proposing an affiliation with Nubian languages. Conti Rossini (1926) and Verri (1950) entertained a connection to Nilotic – a term, however, not used then in the narrow sense of today. In this context, Greenberg (1954) started to subsume Kunama under Nilo-Saharan. Only before this background can it be understood that Bender (1971: 202–203) concludes in a wider lexicostatistic study on languages of northeastern Africa that "Kunama [together with Ilit] remains as isolated within Nilosaharan as before" although both word lists score in fact higher with those from close-by languages of Afroasiatic (other than neighboring Semitic) rather than with Nilo-Saharan ones. Mukarovsky (1987d) takes up this apparent contradiction and adduces lexical similarities to Omotic and Cushitic to conclude that such a connection is the better hypothesis, without, however, attempting to establish any regular correspondences.

In the present treatment of Nilo-Saharan lineages, Kunama is listed as the first unit of a block of ten typologically similar and geographically largely coherent units (U24–U33) that display many head-final syntactic traits.

U25 Shabo

Shabo, formerly also called Mikeyir, is an isolated and endangered language that was not known to Greenberg (1963a). Bender (1977: 13–14, 1983b: 349–354) seems to have been the first to identify it as a distinct linguistic entity. The language is spoken by a forager group of not more than 1,000 speakers in western Ethiopia (see Map 15) that is embedded in the agricultural Majang, who speak a Surmic language (U37). For a long time Anbessa (1991, 1995) and Fleming (1991) provided the only material beyond earlier word lists. A full description of the language only appeared with Kibebe (2015), where the language is referred to as Chabu.

This recent study promises to also set the classification issue on a stronger footing. In the past, the literature discussing the possible genealogical relationship of Shabo exceeded that dealing with its actual documentation and description, as has often been the case with newly discovered African languages that are not obviously related to any established lineage. In a first assessment, Bender (1977: 18) reported a lexicostatistic similarity between Shabo and neighboring Majang of more than 20 %, while the value is maximally 11 % with any other Surmic language, drawing the plausible conclusion that high lexical similarity to Majang is contact-induced. He (1983b: 349–354) nevertheless proposed a Nilo-Saharan affiliation because of more generic lexical affinities. Later studies like Anbessa and Unseth (1989) and Fleming (1991, 2002b) followed this evaluation. Ehret (1995a), in his far-flung, essentially lexical-comparitive enterprise, is the first to separate Shabo from Nilo-Saharan – a view shared by all later versions of Nilo-Saharan classifications (see section 2.6.1.).

However, Kibebe (2015: 11) shows that, whatever conclusion is drawn in this and similar cases, short word lists from little-known languages are unlikely to yield anything in the way of reliable results. Thus, Bender's (1983b) material only contained 92 appropriate words (with 17 still having minor errors) of a total of 134, and Ehret's vocabulary was reasonably adequate in only 111 of 144 items. Given the generally superficial nature of their approaches, it is clear how this problem alone increases the likelihood of faulty as well as interesting but missed comparisons.

A more systematic attempt of classifying Shabo based on a phylogenetic assessment of comparative typological data and qualitative evaluation of some specific morphological features was pursued recently by Schnoebelen (2009). He concludes that at present Shabo should be treated as an isolate and propagates a new trend toward a more reliable standard approach to genealogical language classification in Africa (Schnoebelen 2009: 283):

> To classify Shabo alongside other languages will require an explanation for the uniqueness of Shabo's pronoun system, cases, and verbal morphology. Most likely this will require the use of the comparative method since archeology and genetic profiling are

unlikely to be available. Application of the comparative method would be a significant advance, not just for classifying Shabo, but for understanding the pre-history of Nilo-Saharan and other Central/East African peoples.

U26 Furan

Fur, the sociolinguistically central language of the earlier Darfur Sultanate, is still today a major language in the west of Sudan (see Map 15). Three monographs (Beaton 1968; Jakobi 1990; Waag 2010) give a good though still incomplete picture of its overall grammatical structure.

For a long time, Fur was considered to be an isolated language. After Tucker and Bryan (1956: 53) reported on a third "Mimi" language spoken in central-eastern Chad (cf. section 2.3.3 above and section U28 for the other two Mimis) and Jungraithmayr (1971a) published some lexical data on this language, Greenberg (1972b) proposed its relation to Fur on the basis of both morphological and lexical matches. This genealogical assessment is confirmed by additional information despite the still restricted documentation (cf., e. g., Doornbos and Bender [1983: 54, 65] for further lexical comparisons and Jungraithmayr [1981: 269] for a diagnostic pronominal paradigm). This second language, called today Amdang (cf. Wolf 2010), is still hardly known, though, and a reconstruction of the Furan proto-language is a desideratum for historical-comparative work.

This is also one reason for the fact that the exact place of Furan in Nilo-Saharan is indeterminate apart from the common view that it is an isolated and purportedly early offshoot from the bulk of the group.

U27 Saharan

The Saharan family straddles the northern half of Chad, northeastern Nigeria, eastern Niger, southern Libya, and western Sudan, having thus one of the largest geographical extensions in Africa (see Map 15). However, due to the overall low population density in the Sahara, it comprises just a handful of languages or dialect clusters. The group is classified either into three branches, namely north-(central) (= Tedaga-Dazaga complex) vs. (south)western (= Kanembu-Kanuri complex with a central role in the Kanem and Bornu Empires around Lake Chad) vs. (south) eastern Zaghawa and Berti, or more commonly into two branches, namely western Teda-Daza and Kanembu-Kanuri vs. eastern Zaghawa and Berti.

Prefigured already by Nachtigal (1881: 194–212), the family was more firmly established through the work by Lukas (cf., e. g., 1934, 1936b: 333–341, 1939, 1951/52, 1978), who dedicated a considerable part of his research career to what he called initially the "Kanuri group". Later labels like "Central Saharan" (Greenberg 1949a, 1950d, 1954) or "East Saharan" (Lukas 1951/52) were finally replaced by the simpler modern term. A more systematic application of historical-compar-

ative techniques to concrete and fuller empirical data from all relevant languages and the demonstration of the unity of the entire family are contained in a number of works by Petráček (1967, 1970, 1975, 1978) and Cyffer (1981a, 1981b, 1983, 1991, 1995, 2000a, 2000b, 2006b). The second author in particular has reconstructed central components of the complex morphological proto-system, notably concerning the marking of person and number, tense–aspect–modality, and verbal derivation.

A very low lexical coherence across the family, as observed by Petráček (1971) and Cyffer (1995, 2000b), is partly responsible for the hitherto existing lack of systematic lexical reconstructions and regular sound correspondences (cf. Awagana [2011] for a first still rudimentary attempt). This diversity seems to be partly a function of the large geographical spread of the family. The languages that expanded more recently into the southeast (Zaghawa, Berti) and southwest (Kanembu-Kanuri) are thought to have been subject to a considerable amount of external contact influence. The linguistic interaction of the historically and demographically most important language Kanuri in its areal context west of Lake Chad involving languages of the Chadic family has been investigated in more detail by Cyffer (1995, 1996, 2000a, 2002, 2006a, 2006b). An even earlier areal relationship between Saharan and Chadic is assumed by Jungraithmayr (1989).

The external relationship of the family remains unresolved in view of the fact that specialists have not issued any new empirical support for Greenberg's Nilo-Saharan hypothesis or have even contradicted it. Cyffer did not take a clear position but repeatedly entertained language contact as a likely alternative explanation for isoglosses of Saharan with other nearby languages. Petráček (1985, 1989) went further and explicitly opposed the received Nilo-Saharan affiliation by offering a detailed critique of lexical and morphological isoglosses proposed by Greenberg, Ehret, and Bender. One major problem he identifies is that these scholars had all pursued a data selection oriented toward Kanuri, which is known to often possess forms that are not representative for a realistic Saharan proto-language. Petráček investigated instead external genealogical links of Saharan to Afroasiatic – an idea already entertained previously, for example, by Mukarovsky (1981); unfortunately, his discussion of those data that may count as promising genealogical signals is so telegraphic and abstract that a transparent (re)evaluation remains a future task for specialists of the two lineages concerned. It should be taken into account, too, that contact is at this stage an equally attractive explanation, as acknowledged by Petráček himself.

U28 Maban

Maban designates a group of fewer than ten languages spoken in two large pockets in the southeastern corner of Chad, encroaching on both Sudan and the Central African Republic (see Map 15). The earliest research on its largest member,

Maba, the major language of the former Wadai Empire (not to be confused with the Nilotic language Mabaan), was followed by descriptive work on Aiki (aka Runga) by Nougayrol (1989) and on Masalit by Edgar (1989). A comprehensive and modern grammar of Maba is Weiss (2009).

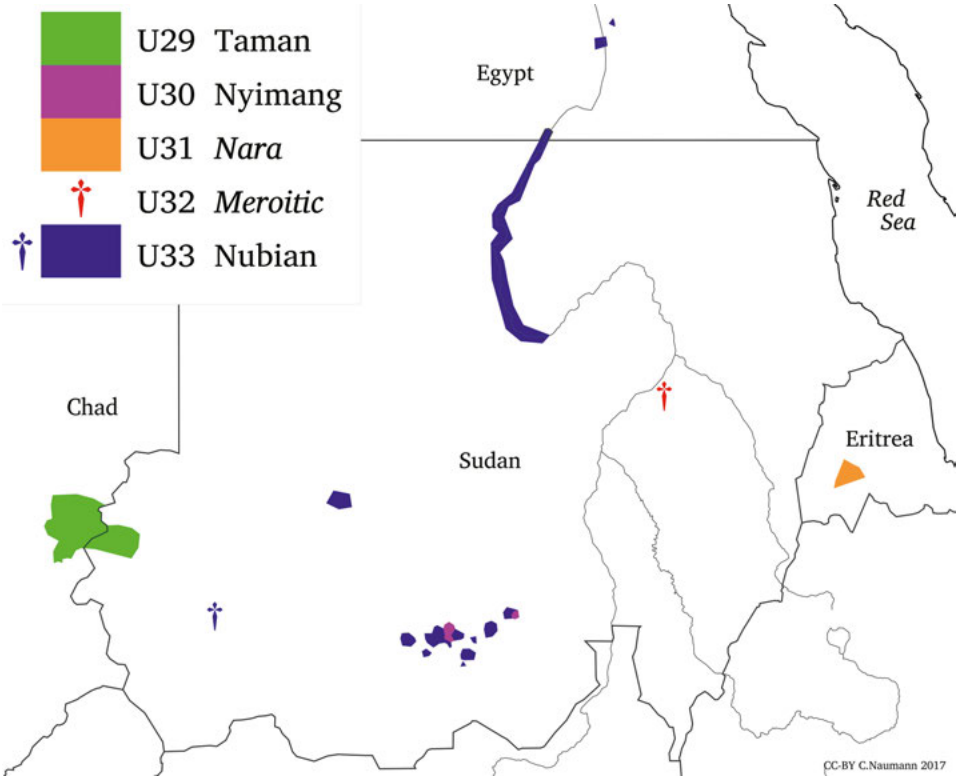
The family took concrete shape in the first half of the 20th century, notably through the work of Lukas (e. g., 1934, 1936b: 341–344), although he did not yet recognize its separation from the Taman language Mararit (see section U29). A conclusive delineation of the family based on extensive lexical data is due to Edgar (1991a, 1991c). The author assembled close to 250 comparative lexical series, without, however, reconstructing lexical proto-forms, and started to establish regular sound correspondences. Clear evidence for a genealogical entity can also be identified in the morphological domain (cf. Tucker and Bryan 1966: 193–205). A particularly diagnostic feature is a full paradigm of person markers that are reflected in both independent pronouns and subject prefixes in the complex domain of verb inflection; the latter includes a quirky allomorphy of the second-person singular form, as discussed by Tucker and Bryan (1966: 195, 200–202), Schadeberg (1981e: 313), Wolff (1989), and Edgar (1991a: 114–115).

Greenberg (1950d: 388, 1963a: 130) claimed that the Maban family had external links with the two extinct "Mimi" languages, a proposal that was widely accepted by later scholars. But since both were encountered in the political realm of the Wadai Empire, they would have been in intensive contact with at least Maba, if not other members of Maban. The two languages are attested only by old word lists collected by Decorse (see Gaudefroy-Demombynes 1907) and Nachtigal (see Lukas and Völckers 1938), so that they are effectively unclassifiable and were thus dealt with already in section 2.3.3. Starostin (2011) gives a detailed critical discussion of Greenberg's hypothesis concerning the Mimi connections. He concludes that, if anything, Nachtigal's lect might be a distant sister of Proto-Maban. However, given that the limited lexical comparisons are mostly ambivalent between a possible explanation in terms of contact and inheritance, even this must remain a working hypothesis. Starostin's study is also important for narrow Maban, because it is based on a detailed discussion of probable lexical reconstructions of its proto-language that partially goes beyond Edgar (1991a, 1991c).

Within the Nilo-Saharan domain, Maban is one of the families that is given quite different positions: according to Bender (2000b) and Dimmendaal (2014b) it is peripheral and isolated, while Ehret (2001) views it as close to Songhay and more deeply integrated in the assumed family tree.

U29 Taman

Less than a handful languages or dialect clusters, none of which is comprehensively described, form the small Taman family (= Greenberg's "Merarit" group). It is named after its major member Tama (the term Taman distinguishes the family



Map 16: Geographical location of Taman (U29), Nyimang (U30), *Nara* (U31), *Meroitic* (U32), and Nubian (U33)

from the single language; Tamanic is an unsuitable term, because there is already an Austronesian language group of this name). Spoken in a compact area in western Chad and eastern Sudan north of the Maban languages (see Map 16), Taman was also under the historical influence of the Wadai and Darfur Empires (cf. Doornbos and Kapteijns [1984] for a historical and ethnographic survey).

The research history of Taman is also very similar to that of Maban. Lukas (1933, 1938) gave a first outline of the family, starting out from Nachtigal's pioneering research. The problem of distinguishing Taman and Maban languages was reiterated by erroneously classifying Kibet with Taman (cf., e. g., Tucker and Bryan 1956: 56). Similar to his two comparative Maban studies, Edgar (1991b, 1991d) subsequently defined the extent of Taman conclusively and assembled more comprehensive data. These bear witness to the unity of the group in the form of shared morphological patterns in pronouns, nominal number marking, and verb structure as well as close to 230 comparative lexical sets linked by regular sound correspondences; unfortunately, proto-forms are lacking (see Rilly [2010:

208–210] for some comments on this issue from a recent perspective). Owing to the problematic language-dialect distinction, the number of linguistic entities and their classification differs between Edgar's account and that in Bombay (2007) and is thus not yet conclusive.

Edgar's (1991b: 111–112) observation that Taman's verb morphology is quite distinct in its narrower areal context appears in a different perspective when considering Bryan's (1955) detailed comparison with the geographically distant Surmic languages and her historical evaluation of it. This is compatible with Greenberg's (1963a) hypothesis about Taman being a member of his East Sudanic – an issue discussed in more detail in section 2.6.4.2. In the present listing of basic classificatory units, Taman is the first group in a coherent block of ten that are currently viewed as members of East Sudanic, whereby the five families with a head-final profile (U29–U33) precede the five with a head-initial one (U34–U38).

U30 Nyimang

Nyimang is a small family in the northern part of the Nuba Mountains in Sudan (see Map 16) comprising the two languages Ama (aka Nyima) and Dinik (with the two varieties Afitti and Ditti). Their relationship had been recognized early (cf. Kauczor 1923; Kauczor and Drexel 1930/31) despite the small amount of documentation at this time. Most of the lexical and grammatical material available today, the majority being on Ama, goes back to Roland Stevenson's work, which was either still published by himself (1938, 1956/7, vol. 41: 171–183, 1981) or by colleagues (Stevenson, Rottland, and Jakobi 1992; Bender 2000c). More recent research has been done, for example, by Voogt (2009, 2011) on Dinik and Fiedler (2013) and Norton (2015) on Ama. However, both languages still await a full documentation.

Bender (2000c) and Rilly (2010: 291–295) contain first preliminary attempts to reconstruct parts of the phonology and lexicon of Proto-Nyimang. Rilly provides ca. 125 proto-forms out of a 200-word list, which appears to be in conflict with Bender's (2000c: 118) observation that the cognation rate between the two languages is not higher than around 50%. Another historically relevant point is made by Rottland and Jakobi (1991), who discuss a considerable amount of lexical borrowing on the part of the two Nyimang languages from Kordofan Nubian (cf. section U33), including, for example, the numerals 'six' to 'nine' and 'twenty'.

The East Sudanic affiliation within Nilo-Saharan aside, the exact position assumed for Nyimang varies. Ehret (e. g., 1989, 2001) aligns it closely with another small family, Temeinic (U35), that is spoken close by in the Nuba Mountains and subsumed under the southern East Sudanic cluster. Most other authors, notably Bender (1989b) and Rilly (2005), join Nyimang with Taman and other northern East Sudanic groups, which Map 16 shows to be mostly geographically distant.

U31 Nara

Nara (also Nera and pejoratively Barya~Barea) designates a group of four dialects spoken around Barentu in western Eritrea (see Map 16). An early but partly outdated description was produced by Reinisch (1874), based on the notes by Werner Munzinger. Since then, little work has been invested in the documenation of this language. The few later studies (Bender 1968; Thompson 1976; Hayward 2000b; Abushush and Hayward 2002) are short and deal with specific topics, except for Thompson's sketch. Hence, the language is too insufficiently known to be evaluated properly in generalogical terms, which is compounded by the possible existence of potentially considerable dialect differences.

Reinisch (1874) assumed Nara to be related to Cushitic languages. Apart from Greenberg (1963a), all later Nilo-Saharan classifications reiterated Lang's (1926) impression of a lexical affinity to Nubian by closely joining Nara with Nubian and Taman within East Sudanic. Mukarovsky (1987b) raised doubts about this idea and repeated the hypothesis that Nara is related to Afroasiatic languages. This in turn was countered by Rilly's (2005) recent and so far empirically richest discussion of the East Sudanic hypothesis (see section 2.6.4.2), which for the first time tries to apply historical-comparative techniques rather than referring merely to superficial similarities.

U32 Meroitic

Meroitic, the language of the Meroe civilisation (300 BC–400 AD) along the Middle Nile in northwestern Sudan (see Map 16), is an extinct language attested by a script deciphered in the early 20th century by Griffith (see, e. g., 1911). Due to the nature of the data, the language is attested very incompletely, so that its description can only be fragmentary. Rilly (2007a) and Rilly and Voogt (2012) document the considerable progress made in the recent past and, among other things, give an up-to-date survey of its known linguistic structure, including further support for its assumed head-final syntactic organization and grammatical elements pertaining in particular to the nominal domain. Nevertheless, a large portion of Meroitic words, phrases and sentences remain elusive.

In terms of lexicon, Rilly and Voogt (2012: 183–185) present 64 words that are not loans or names of deities and places and that have a relatively robust interpretation in both meaning and form; only few of them belong to the stable vocabulary. This represents little material to work with for the purpose of lexical comparison.

The limited linguistic understanding of Meroitic has led some scholars to refrain from classifying it genealogically, notably Greenberg (1963a, 1971) and Hintze (1973, 1989) – the latter also cautioning against the rash acceptance of such genealogical concepts as East Sudanic or the yet larger Nilo-Saharan, with which Meroitic tends to be compared. Nevertheless, the literature dealing with

the classification of Meroitic is considerable. The two major competing hypotheses affiliate the language with either Afroasiatic or Nilo-Saharan. Zyhlarz (1930), inspired by Meinhof (1921/22), argued for Meroitic being a Cushitic language but Hintze (1955) convincingly refuted his evidence. With the background of Greenberg's new African classification and taking up an earlier idea by Griffith about some relation between Meroitic and Nubian, Trigger (1966) proposed an East Sudanic membership; his arguments were in turn rejected by Bender (1981a). Both opposing hypotheses have recent reissues. Rilly (e. g., 2004, 2007a, 2007b, 2010: 351–410) has argued extensively for the East Sudanic hypothesis. His ideas have gained particular momentum because he combines a contextualized philological and historical approach to Meroitic with detailed linguistic research on the African languages that are its potential relatives, and he is thus able to propose numerous isoglosses in basic syntax, morphology, and lexicon with Nubian, Nara, Taman, and Nyimang, to be discussed in more detail in section 2.6.4.2. Nevertheless, possible Afroasiatic links of Meroitic are still defended, for example, in Lipiński's (2011) review of Rilly (2010) as well as by Rowan (2006), who invokes a typological argument concerning phonotactics.

U33 Nubian

Nubian, the last family in the block of head-final and northern East Sudanic lineages, is attested in five geographically widely dispersed pockets (see Map 16), whereby two of them, Haraza and Birked, no longer exist as vital languages. The remaining units are Midob in southern Darfur, the two Kordofan or Hill Nubian dialect clusters of the Nuba Mountains, and the complex of Nile Nubian varieties comprising not only two modern dialect clusters but also Old Nubian of the medieval Christian kingdoms of Sudan, which is attested in written documents from the eighth century on. A fuller comparison across the family has become possible only recently with the ongoing, detailed documentation of the partly endangered Kordofan Nubian varieties.

Recognizing the relatedness between Nubian languages as such was not a problem, and this facilitated early historical-comparative work, for example, by Murray (1923) and Zyhlarz (1949/50), the latter dealing in particular with sound correspondences of root-initial consonants. A phase of lexicostatistic investigation (e. g., Thelwall 1982b) was followed again by the more detailed comparative analysis of lexicon and some morphology by Bechhaus-Gerst (1985, 1989, 1996, 2011), resulting among other things in close to 100 proto-forms. The author focused on the internal diversity of the Nile Nubian languages and challenged the previously common assumption that these form a node in the family tree, advancing instead the idea that the two languages immigrated into the Nile Valley at different times. In his comparative evaluation of Meroitic, Rilly (2010: 211–288, 420–529) also embarked on historical-comparative research on Proto-Nubian, coming to differ-

ent results with respect to both the reconstructions, comprising around 200 lexical proto-forms, and the derived family history. Given the disagreement between these two major strands of research, the internal classification of Nubian remains unlear. Other recent comparative studies, refraining from historical conclusions, are Jakobi (2000, 2006, 2013) and Alamin (2014).

On account of the widespread distribution of the modern Nubian languages, and archaeological evidence showing that the large desert area between them was still populated in the first millennium BC, the former territory of the family is assumed to have been more compact. Accordingly, the homeland would probably have been located in a more central area, *pace* Thelwall (1982a). The same observation also leads Rilly (2010: 186–201) to entertain Nubian lexical influence on various other languages of this wider zone, concerning in particular languages belonging to Nyimang and Taman, distinguishing these isoglosses from the affinities that stem from their assumed genealogical relationship (cf. also Rottland and Jakobi 1991).

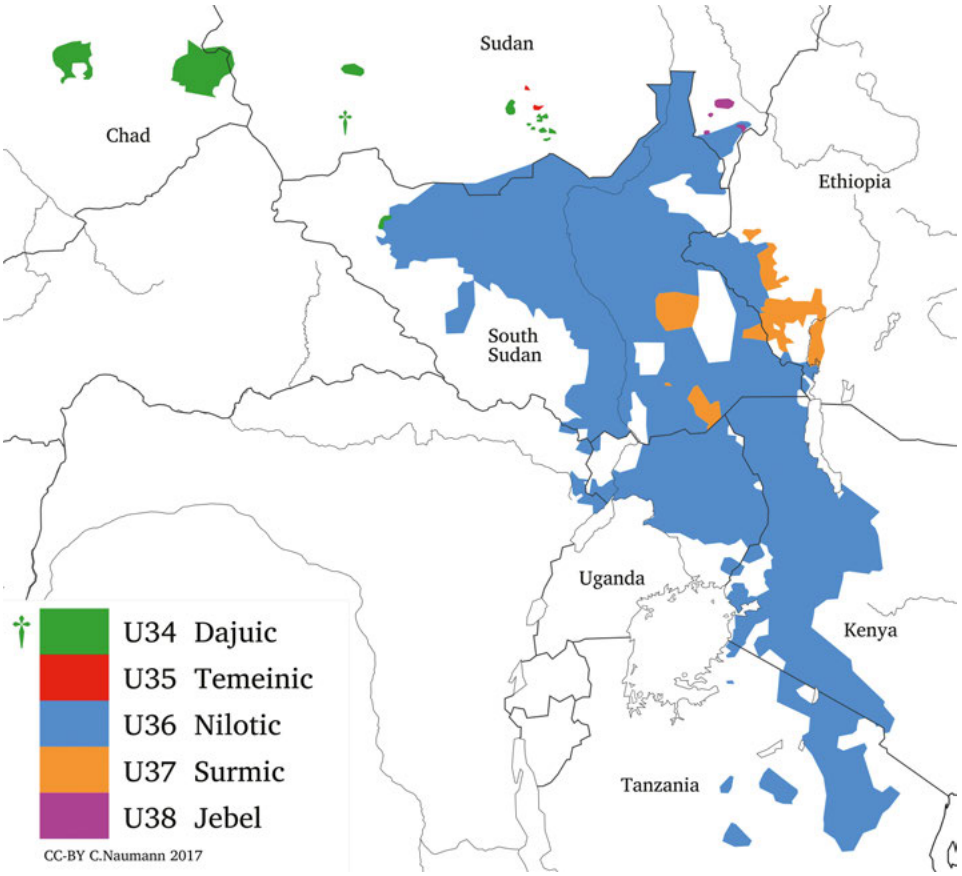
As for external genealogical relations, Nubian is one of the key families within the East Sudanic hypothesis, which will be discussed in section 2.6.4.2. However, similar to Meroitic, links have also been proposed to Afroasiatic (cf., e. g., Mukarovsky 1996).

U34 Dajuic

Dajuic comprises fewer than ten languages spoken in Sudan, South Sudan and southeastern Chad (see Map 17). Similarly to Nubian, these languages are dispersed over a large geographical area. This appears to be the partial result of migration after the breakdown of their polity, which was presumably centered in the first half of the 2nd millennium in the area south of Jebel Marra in southern Darfur.

Although widely separated today, the languages are still so close that the recognition of their unity was relatively unproblematic (cf. Santandrea [1948: 99–105] for one early comparative collation of data). The full extent of the family was outlined by Tucker and Bryan (1956: 59–61, 1966: 231–242), who also determined the internal classification into a western and a smaller eastern branch formed by Logorik and Shatt in the Nuba Mountains. However, the first more comprehensive description of a Dajuic language only appeared recently with Palayer's (2011) treatment of the Eref variety of the Dar Daju language. This also means that serious comparative work, especially on non-lexical features, is hampered by the limited amount of documentation.

More extensive lexical comparisons appeared in the late 1970s by Jungraithmayr (1978a) and Thelwall (1978). Thelwall (1981a, 1981b) subsequently carried out a more systematic historical-comparative study with close to 300 comparative lexical series for which concrete reconstructions are proposed. A morphological domain, viz. the nominal system concerning number and attributive modification,



Map 17: Geographical location of Dajuic (U34), Temeinic (U35), Nilotic (U36), Surmic (U37), and Jebel (U38)

has also been invesitgated from a comparative perspective. It differs between the eastern and western branches, whereby the former remains in a more conservative stage according to Tucker and Bryan (1966: 235–236, 238–239) and Thelwall (1981b: 61–89). Eastern Daju possesses a complex tripartite system for nominal number as well as a set of attributive markers (initially called "determinatives") whose singular forms justify the identification of a gender system. Western Daju has simplified nominal plural marking to a suffix *-ke* in opposition to multiple inherited singular suffixes, and has incorporated the variable attributive elements into basic noun forms. Boyeldieu (2011) elucidates the historical dynamics of this domain in detail, and among other things argues convincingly for several layers of number marking in the modern languages. His conclusions throw an important perspective on the complexity of this domain in Daju and its assumed genealogical

relatives within Nilo-Saharan in particular and in the geographical area in general, warning against the common practice of directly taking modern surface forms as the basis for historical comparison.

Lexicostatistic investigation has been employed by Thelwall (1978) in order to compare Dajuic with other language groups, which is discussed in more detail in section 2.6.4.2. in connection with the East Sudanic hypothesis. In this respect, Dajuic is the first of five lineages treated here consecutively (U34–U38) that prominently display head-initial syntactic traits and are classified under its southern branch.

U35 Temeinic

Parallel to the terms for other similar language families, Temeinic is used here for a small language group in the Nuba Mountains (see Map 17), instead of just Temein – the name of its major member. Blench (2013a) is a recent survey of this virtually unknown family for which it is even still unclear whether it comprises three languages, Temein, Keiga Jirru, and Tese (as per Blench), or just two (as per Glottolog and Ethnologue). Blench's recent survey and the older one by Tucker and Bryan (1966: 253–261) rely exclusively on Stevenson's data (notably 1956/7, vol. 41: 183–190 and 1976–86, the unpublished lexical lists being digitized in Blench n.d.). There is only one additional short phonological study on Tese by Yip (2004).

While the internal coherence of Temeinic is obvious, its external classification is controversial. The assignment to Nilo-Saharan and East Sudanic aside, its concrete position differs in that Ehret (e. g., 1989) sees a close connection to Nyimang while most other scholars (e. g., Bender 1989b) align it with Dajuic, Nilotic, and Surmic. The second hypothesis is more compatible with its greater typological affinity to these three groups.

U36 Nilotic

Nilotic comprises approximately 50 languages centered on South Sudan, Uganda, western Kenya, and northern Tanzania with some crossing-over into Sudan, Ethiopia, and the Democratic Republic of Congo (see Map 17). After Central Sudanic, it is thus the second-largest family in the Nilo-Saharan domain and also a geographically widely distributed one, even on a continental scale.

Nilotic is one of the African language families that were particularly controversial in the early research period in connection with the Hamitic theory. While structural and lexical affinities across Nilotic in the present concept were recognized early on (see, e. g., Müller 1877: 181), scholarly dogma resulting from classifying languages according to typological and nonlinguistic criteria had entrenched the conventional separation between narrow "Nilotic" (= modern West Nilotic)

and "Nilo-Hamitic" (= modern East and South Nilotic). It was only in the middle of the last century that the family received its modern layout. Thus, its unity was posited against the Hamitic canon by Conti Rossini (1926) and Wölfel (1944: 199) and finally advanced in detail by Köhler (1948, 1950, see also 1955), including its modern classification into three branches. Embedded in his East Sudanic hypothesis, Greenberg (1950b: 143–153) finally provided the decisive argumentation for the family as a whole. Calling it then "Southern" and recognizing only the two branches "Nilotic" and "Great Lakes" (= earlier Nilo-Hamitic), Greenberg (1956) later took over Köhler's proposal.

In the meantime, Nilotic languages have been subject to an immense amount of historically oriented work. First, there are a number of studies that deal with comparative phonology, lexicon, and selected morphology within the three subbranches and reconstruct proto-forms, notably Reh (1985b), Heusing (2004), and Storch (2005) on West Nilotic; Ehret (1971) and Rottland (1981, 1982, 1989) on South Nilotic; and Voßen (1981, 1982, 1983) and Heine and Voßen (1983) on East Nilotic. A scope over the entire family is taken by Köhler (1948), Hall et al. (1975), Hieda (1983, 2009), Dimmendaal (1983, 1988), Reh (1985b), Denning (1989), Hall and Hall (1996), and Rottland (1997). Thus, there is a body of lexical comparative series and reconstructions, for example, approximately 70 by Köhler (1948), 200 by Dimmendaal (1988), 80 by Denning (1989), and 100 by Hieda (2009) with a scope over Nilotic as a whole, and many more on the level of subgroups. Nevertheless, it is difficult for various reasons to utilize these results, especially for comparisons beyond Nilotic. Thus, the only available synopsis of lexical research by Rottland (1997) is no longer up-to-date and lists competing proposals without any discussion. More problematic is that the last point also applies to most of the reconstruction studies themselves in that they have little if any critical engagement with alternative proto-forms, as is noted briefly in section 2.6.4.2 with respect to the oft-cited word for 'cow/cattle'. The difficulties involved in Nilotic lexical reconstruction are demonstrated by Hall and Hall (1996), who discuss the intricacy of multiple and complex morphology, often becoming lexicalized and layered over time, and of complicated phonological processes concerning vowel quality, phonation type, articulation place, nasal-oral distinction, etc. A final problem is that there has been no attempt yet to trace larger parts of the rich paradigmatic morphology to the Proto-Nilotic stage, as its diagnostic value is crucial for higher genealogical levels.

Another fruitful but still restricted strain of research is the study of comparative Nilotic syntax as soon as it goes beyond particular linguistic theories (e. g., Creider 1989) but is oriented toward historical dynamics (e. g., Hieda 1991; Dimmendaal 2005, 2008c; Schröder 2006). The research approach spearheaded by Dimmendaal is especially promising because it combines diachronic typology with language contact.

That most Nilotic language groups have in fact been in multiple, partly intensive contact situations with each other as well as with languages of such diverse

groups as Surmic, Cushitic, Kuliak, Central Sudanic, Ubangi, and Bantu has been acknowledged for a long time. It is treated, for example, by Heine (1976b: 69–72), Heine, Rottland, and Voßen (1979), Dimmendaal (1982, 2001b, 2005, 2008c), Rottland (1983), Adhiambo (1991), Mutahi (1991), Reh (2000), Kuteva (2000), Rottland and Mous (2001), and Storch (2003, 2007). In the course of various historical expansions (see Köhler 1950), this contact also included shift-induced substrate interference. For example, Heine, Rottland, and Voßen (1979) invoke a Cushitic Proto-Baz substrate layer in South Nilotic as an alternative hypothesis to the "mixed-language" origin of the earlier "Nilo-Hamitic".

Since Nilotic is such an important family in geographic, demographic, and historical terms, it has attracted comparisons with a range of other languages early on and thus became crucial for the development of language classification in the wider area. Two major themes will be taken up in more detail in section 2.6.4.2, namely its proposed closest relationship to the Surmic family (U37) and its central role in the emergence of the concept of East Sudanic and eventually even Nilo-Saharan.

U37 Surmic

The Surmic family subsumes about ten languages in the border region of South Sudan and Ethiopia (see Map 17). While linguistic knowledge on them remained quite restricted for a long time, there has been a good understanding of the structural profile and diversity of the group since the late 1990s, facilitated in particular by the appearance of Dimmendaal and Last (1998).

The full extent of the family and its internal classification took shape with Bender (1976, 1977), Fleming (1983c), and Unseth (1988b). A considerable advance in the comparative study of Surmic is due to Unseth (1986, 1987, 1988a, 1989a, 1991a, 1991b, 1998), who dealt with the comparison and partial reconstruction of morphosyntax, notably regarding word order, negation, case, number marking, and other morphological elements. Based on this progress and including yet more extensive data, Dimmendaal (1998a, 1998b) gives a state-of-the-art report about the historical and typological profile of the family. In particular, this author discusses first hypotheses about the diachronic dynamics of basic grammatical structures in Surmic within its specific geographical context between related Nilotic and unrelated Omotic languages. The strong typological distinction between the latter two groups and Surmic's intermediate position can explain a number of typological features, particularly in Southeast Surmic, which sometimes contradict cross-linguistic expectations about "harmonic" systems. Another major step forward was Moges's (2001) phonetic-phonologically oriented comparative study of the lexicon. It provides more than 300 comparative series across the entire family and proposes reconstructed forms for the two subgroups of the major southern branch, namely more than 250 for Southwest Surmic and 160 for

Southeast Surmic. Unfortunately, the study does not deal with the elaborate morphology of Surmic nor does it advance lexical proto-forms for deeper levels like the southern branch or Surmic as a whole. In fact, due to the extreme divergence of Majang – a single language forming the northern branch – from the rest, Moges explicitly excludes it entirely from the reconstruction.

This fact alone reveals the problematic status of this language with respect to the Surmic core. Greenberg (1963a: 113, 117, 168) had set the classificatory standard by silently joining it under the term Masongo with other Surmic languages. This was based on Cerulli (1948), who made a number of noncommittal comparisons of his data with Didinga and other Surmic languages as well as with Nilotic and beyond. Subsequent studies follow Greenberg but also fail to make a convincing case that Majang is related specifically to the Surmic core (e. g., Bender 1976: 467–472). While Majang's status as Surmic is taken for granted, the lack of more concrete and extensive evidence makes one wonder whether it may not be a more isolated unit that is as close (or distant) to Surmic as it is to, say, Nilotic.

Similar to the case of Nilotic, a fruitful historical research domain for Surmic has been language contact. On the one hand, there is family-internal contact, some of it so intensive that it may blur genealogical relationships, for example, in the form of a distorted lexicostatistic picture. This is the case with Baale (aka Kacipo-Balesi), which belongs genealogically to Southwest Surmic but has undergone heavy convergence to neighboring languages of Southeast Surmic (see Moges and Dimmendaal 1998; Moges 2005a). On the other hand, Surmic languages are influenced by contact with Nilotic in the (south)west and Omotic in the east, which also involves cases of language shift to these often dominant non-Surmic languages (Dimmendaal 1982, 1998b).

Beyond Greenberg's assignment of Surmic to East Sudanic, there are a couple of more concrete hypotheses on its external genealogical relation. While a specific connection with Taman (U29) remains an isolated proposal, made by Bryan (1955), there is wide agreement about the close link between Surmic and Nilotic. Both proposals are embedded in the East Sudanic hypothesis and are dealt with in section 2.6.4.2.

U38 Jebel

Gaam, referred to in the past as Tabi or Ingassana (including in Greenberg 1963a), was viewed for a long time as a single language. It was only Bender (1983c) who advanced the idea that three other languages in the southeastern corner of Sudan were related to it, forming what came to be known as the (Eastern) Jebel family (see Map 17). These other languages are Aka (aka Sillok), Molo (aka Tornasi), and Kelo (aka Malkan), reported for the first time by Evans-Pritchard (1932) as languages akin to Berta (U39). They were only investigated again in the late 1970s by Bender (1983c, 1989c, 1997a, 1998), who also added Beni Sheko, another variety

close to Kelo. Bender's new data, consisting primarily of a comparative 300-word list of the Non-Gaam languages (1997a: 204–215), are unfortunately not presented and analyzed for the sake of primary documentation and description but exclusively for immediate historically oriented comparison. This bias, together with the limited amount of data, is responsible for the fact that the entire group was all but unknown until recently. This situation changed partly with Stirtz's (2006, 2011, 2014a, 2014b) detailed documentation of Gaam or "Gaahmg" – the largest but isolated member of the group. Since all other languages were already reported at Bender's time to have speaker totals of just a few hundred, these are of high research priority.

The proper assessment of the internal coherence of the family is a very difficult task that is not only due to the restrcited data. The major problem is that Bender, although preoccupied primarily with classification, merely presents the data in tabular form without much discussion on what concrete material is viewed to be shared. Moreover, as soon as there is some discussion, it is confined to telegraphic sentences and intertwined with external comparisons concerning Berta as well as abstract features assumed to be inherited from the higher-order lineage East Sudanic, which the reader is not only expected to be familiar with but also to accept. Moreover, Bender does not make the lexical comparisons and assumed sound correspondences transparent by means of concrete examples but merely lists them according to phoneme classes, whereby he presents the Non-Gaam data in Appendix A of the 1997a article separately from his list of 100 proposed Proto-Jebel forms in Appendix B of the 1998 study. The latter are in fact not meant as reconstructions in the first place but, on his own account (Bender 1998: 51), as a "demonstration of the East Sudanic affinity of Eastern Jebel lexicon by comparisons to East Sudanic and units at higher levels of Nilo-Saharan, including Berta".

It is clear that a thorough (re)analysis of all available data is necessary, also because the recent fuller description of Gaam shows that at least this language has complex morphology, which is a strong argument against taking all recorded word forms directly as a basis of etymological comparison. Pending such necessary detailed research, the following can be said based on a superficial inspection of the published material: the Non-Gaam languages appear to be a relatively coherent group with respect to the available lexicon, while their relation to Gaam is far from obvious, although some good matches do exist. Some of the limited grammatical data, too, suggest the existence of this family, but they also require a systematic treatment.

Given the uncertainty about the family and its reconstruction, the external relation is equally problematic. Following Evans-Pritchard's (1932) idea, Greenberg (1963a) subsumed all languages but Gaam under Berta. Bender (1971: 203–205) joined this "wider" Berta and Gaam on lexicostatistic grounds. Ehret also advances such an extended family; since he calls this "Jebel" the narrow concept

dealt with here confusingly receives yet other and even variable geographical labels like "Northern Jebel" (1989: 36) and "West Jebel" (2001: 70). Arguing that the lexical affinities between Jebel and Berta are contact-mediated, Bender's later work eventually separates the two units and includes narrow Jebel in his East Sudanic – a view that is shared by the majority of Nilo-Saharan comparativists. However, Bremer (2015) has reopened the discussion by resurrecting the Jebel-Berta connection, to be discussed in section 2.6.4.1.

Map 18: Geographical location of *Berta* (U39), Koman (U40), and Baga (U41)

U39 Berta

Berta is located on both sides of the southern stretch of the Ethiopia-Sudan border mostly southwest of the middle course of the Blue Nile and its Dabus tributary (see Map 18). It is viewed as a cluster of speech varieties that are closely related to each other, although referred to by a number of different names. They are, however, more diverse than commonly assumed, as was already suspected by Greenberg (1971: 435) and has been confirmed recently by Bremer's (2015) dedicated study, which also surveys the research history and the currently available sources. Since comparative morphosyntactic data on these phonologically and lexically diverse varieties is almost completely lacking, it is even possible that Berta will have to be broken down into several languages.

The collection of the first Berta vocabularies in the 19th century was followed by works like Evans-Pritchard (1932), Cerulli (1947), Triulzi, Dafallah, and Bender

(1976), and Bender (1989a). These data have been further complemented by substantial and systematically collected lexical data (Siebert, Siebert, and Wedekind 2002; Neudorf and Neudorf 2007; Krell 2011; Bremer's so far unpublished field notes) and up-to-date articles on selected linguistic topics (e. g., Andersen 1993a, 1993b, 1995; Neudorf 2015). However, all this material still provides only a fragmentary documentation of Berta as a whole. Moreover, what there is in terms of comparative data has not yet been compiled in a transparent way, so that the establishment of reliable proto-forms is currently not in sight.

This insufficient state of knowledge about Berta also hampers the assessment of its genealogical status. Accordingly, its classification, largely based on lexical data, has been controversial apart from its generic assignment to Nilo-Saharan. As mentioned above, Evans-Pritchard (1932) proposed its relationship to the Non-Gaam languages of the Jebel family. The inclusion of Jebel into East Sudanic implies that Berta is also a part of it, which is the position in Ehret's (1989, 2001) framework. Bender (1971: 203–205) first followed this idea but finally rejected it and assigned Berta to a more peripheral position within Nilo-Saharan. He (1983c: 56) wrote:

> The above presentation of data should serve to end the riddle of the "second group of Berta languages" [aka Non-Gaam Jebel] … The languages are not Berta varieties after all. Thus Berta, with its relatively minor dialect variation (see Atieb and Bender [= Triulzi, Dafallah and Bender] 1976: 513 ff, 520), remains an isolate, but Gaam (the former Tabi or Ingessana) loses the status of isolate …

Bender's hope to have solved the "riddle" was not fulfilled, however, because the most recent treatment of the problem by Bremer (2015) returns to the hypothesis of Berta's relationship to Jebel (see section 2.6.4.1.). Since Berta is internally quite diverse, *pace* Bender, it is necessary to document it comprehensively and then reconstruct its proto-language, just as with the Jebel family, so that the problem can be settled conclusively.

U40 Koman

Koman in the narrow sense used here refers to a family of a handful of languages spoken around the border triangle of Ethiopia, Sudan, and South Sudan (see Map 18); they are Komo, Uduk (aka Twampa), Op(u)o (aka T'apo/Shita), Kwama, and possibly Gule (aka Anej). Apart from relatively inaccessible missionary studies on Komo (Burns 1947; Burns and Guth 1960), none of the languages were described even rudimentarily until recently. This situation has changed considerably through modern documentation projects. There are grammar sketches of Kwama (Zelealem 2005; Kievit and Robertson 2012) and Opuo (Lemi 2010) as well as a fuller description of Uduk (Killian 2015). Moreover, modern lexical data are contained in recent sociolinguistic surveys like Siebert, Siebert, and Wedekind (2002) on

Kwama, Wedekind and Wedekind (2002) on Kwama and Komo,[18] Krell (2011) on Komo, and Küspert (2015) on all Ethiopian varieties.

Till recently, most of the data available were furnished by Bender (1983a) based on his fieldwork during the late 1970s and early 1980s. His comparative study proposes around 100 proto-lexemes from 300-item word lists, although with hardly any justifying discussion. According to his internal classification, the more distant languages are Kwama, whose considerable difference to Komo in spite of apparent ethnic associations is also supported by lexicostatistic work by Jordan, Mohammed, and Davis (2011: 16, 19), and the even more divergent Gule. In view of the growing grammatical data on most languages, there are good prospects for reconstructing parts of the grammatical system, as evidenced by Otero's (2016) recent attempt of establishing the pronominal proto-system for the Koman core comprising Komo, Uduk, Opuo, and Kwama.

While there can be no doubt about the unity of this core, a note is in order on Gule, which was formerly spoken near a mountain of the same name in the southeast of Sudan. The language has become extinct through language shift to Sudanese Arabic and is only poorly attested in a few word lists in Lejean (1865), Marno (1874: 482–495), Zöppritz (1877: 47), Seligman (1911/12), and Evans-Pritchard (1932: 51–52) as well as some grammatical information in Seligman (1911/12). Greenberg (1950d: 390–391) and after him Bender (1983a), who calls the language Anej, have proposed that it is related to the Koman core referring to both lexical and grammatical traits. Thus, there is a promising recurrent sound correspondence between /ʃ/ in Koman and /f/ in Gule (cf. the series for 'meat', 'nose', 'stone', 'salt' in Bender 1983a) as well as a gender opposition in third-person singular pronouns conveyed by the thematic consonants feminine *b* vs. masculine *r~d*. Although the little data on Gule makes it almost impossible to classify, the hypothesis that it is a divergent member of Koman is promising.

The term Koman as a genealogical concept has been used ambiguously, which is due to a complex ethnohistory involving both Koman speakers and their eastern neighbors and, as a result, a confusing terminology in the area (see section U46.D for more details and sources), compounded by loose linguistic classification criteria. This concerns in particular Greenberg (1963a: 130), who subsumed under his "Coman" also languages from two other classificatory units, namely Baga aka Gumuz, dealt with subsequently in section U41, and Mao, treated in section U46.D under the Omotic pool within the Afroasiatic domain. While the lumping-in of Mao was soon abandoned with the availability of more extensive data, the other genealogical link persists until today. It is part of several classificatory versions of Nilo-Saharan by Bender and Ehret, and it is associated with some rather idio-

[18] Jordan, Mohammed, and Davis (2011: 19) show that the "Begi Mao" list in this study is in fact also Kwama rather than a variety of the Omotic language group Mao (U46.D).

syncratic and confusing terminology. Ehret (2001) continued Greenberg in calling the higher-order group Koman, referring to the narrow concept with "Western Koman". Bender (e. g., 1990c, 1994b) used the artificial term "Komuz", coined from the narrow family term and "Gumuz", which stood for Baga until recently. He proposed lexical evidence and also argued for reconstructable morphemes in his "comparative grammar", also roping in Shabo (U25). Bender (1996c: 53, 2007) eventually discarded the idea of such a family, thereby falling back on his first hunch expressed in early studies (1976: 475–479, 1979: 40). However, the family resurfaced recently in Ahland (2010, 2013).

Even when disregarding the controversial link to Baga, the views on the position of narrow Koman in Nilo-Saharan are very diverse. For Bender (e. g., 2000b) it is a core unit besides, for example, East Sudanic; Ehret's (2001) family tree has it as a first-order outlier; and Dimmendaal (2014b) even excludes it from Nilo-Saharan altogether.

U41 Baga

The last classificatory unit to be presented within the Nilo-Saharan domain is a small family spoken on both sides of the Ethiopia-Sudan border predominantly along and north of the middle course of the Blue Nile and its local tributaries (see Map 18). Localized groups and their speech varieties are referred to by a myriad of different names (cf. James 1981). The linguistic unit has been known under the term Gumuz and has been viewed for a long time as a single if complex dialect cluster. This perception has now changed radically, even without more detailed knowledge about the situation in Sudan. That is, Ethiopia alone hosts a) two dialect clusters within narrow Gumuz that are not mutually intelligible, b) the Kadallu variety (not to be confused with the Kordofan Nubian language Kadaru) that needs to be distinguished from the Gumuz core, and c) the previously hidden language Daats'ĭin (C. Ahland 2012: 4–8, 2016a, 2016b; see also Unseth 1985). The emerging small language family is called here Baga, based on a shared word *ɓaga* 'person, people' that some speakers even use themselves in glossonyms. This new linguistic label follows a proposal by C. Ahland and earlier ideas that other scholars had already voiced for narrow Gumuz (cf. Wallmark 1981, James 1981: 18).

Until recently, linguistic information was very restricted, consisting of Gumuz material collected largely for comparative purposes by Bender (1979, 1994b) and some descriptively oriented data by Unseth (1989b) and Uzar (1989). A recent full decription by C. Ahland (2012) has changed this situation considerably. While the genealogical coherence of all Baga varieties is obvious, narrow Gumuz alone is so diverse, including intricate sound correspondences, that internal comparison is already complicated. Accordingly, external genealogical comparisons require first a careful reconstruction of Proto-Baga.

Very similar to (and intertwined with) the case of Koman, the external classification of Baga has been highly variable. Its ambiguous link to Koman has been dealt with in the previous section and is briefly discussed again in section 2.6.4.1. Equally uncertain is its status vis-à-vis Nilo-Saharan. Bender (e. g., 2000b) has once presented it as a core unit, once as a deviant or even questionable member of Nilo-Saharan (1976: 477–479; 1979: 40; 2005a). This ambivalence also holds across all other relevant scholars. Ehret (2001) assigns to Gumuz (and Koman) a peripheral position in Nilo-Saharan, while Dimmendaal (2014b) excludes it altogether. Ahland (2010, 2013), in turn, summarizes her optimistic genealogical evaluation of Baga~Gumuz regarding both the Koman link and the Nilo-Saharan affiliation as follows: "Gumuz is not an isolate. Despite apparent low cognate counts with other N[ilo]-S[aharan] languages (which should likely be re-evaluated), Gumuz exhibits regular sound correspondences with at least one Koman language (Gwama) and has a classifier/class term that shows a regular sound correspondence with that of Fur."

2.6.4. Higher-order hypotheses and summary

2.6.4.1. Low-level links

I have referred above to various proposals for joining certain Nilo-Saharan units more closely with each other, the evidence for which differs, however, considerably. Most of them involve pairs of lineages that are geographical neighbors, so that it is necessary to exclude the possibility that lexical and/or structural isoglosses are contact-mediated, which unfortunately is hardly ever done by the relevant scholars.

The strongest and so far uncontroversial proposal is the relationship between Nilotic and Surmic entertained at least since Ehret (1983). The author only provided scanty lexical data alongside the certainly possible but ultimately nonlinguistic hypothesis that both units were supposedly part of the same prehistorical expansion of peoples with a strong focus on pastoralism (cf. also Dimmendaal 1998b: 17–20). In the meantime, however, the linguistic hypothesis has been supported by more substantial and varied evidence.

Thus, both families share synchronically the same basic typological profile, as pointed out by Dimmendaal (1998a), including a similar word order variation within a generally head-initial syntactic organization. In particular, transitive sentence structure oscillates across languages of both families between a) VSO, b) general verb-second order subsuming SVO, OVS, etc., and c) consistent SVO. The last two types can be viewed as variants of or derivations from a single structure TOP–V–FOC, which in turn has its likely origin in the first verb-initial structure by means of leftward topicalization (see, e. g., Dik [1980: 152–177] for a general typological perspective and Hieda [1991] for the specific case of West Nilotic).

Such a similar family-internal diversity appears to be better explained as emerging from a single proto-structure rather than just through language contact, which is also relevant for the relation between languages of the two families, as mentioned in section U36 and section U37.

Specific lexical affinities between the two units have also been adduced; their presentation, however, manifests a lack of rigid methodology for outsiders. For example, Dimmendaal (1988) entertains cognacy with some Surmic forms in 16 of his 204 Proto-Nilotic forms (cf. the series 9, 16, 21, 37, 38, 58, 63, 71, 110, 120, 157, 176, 185, 193, 197, 202). The latter are, however, not reconstructions but almost exclusively words from a single language, Murle, for which borrowing needs to be excluded, because it is known to (have) be(en) in intensive contact with languages of both West and East Nilotic (Arensen n.d., Dimmendaal 1982). This problem also applies to Denning's (1989: 104–111, fn. 17, Tables 5.17 and 5.18) lexical comparisons, even though they are quite detailed by partly involving more specific vowel features. In general, the obviously promising case still needs to be made with reference to Surmic reconstructions (e. g., those now available in Moges 2001).

The most convincing evidence for the family is the shared morphology reconstructed for both proto-languages. This involves in particular nominal case, including a marked nominative suffix for postverbal subjects (Unseth 1986; Dimmendaal 1998a: 41–43, 2005: 76–77), as well as verbal derivation with a suffixal dative~applicative (Dimmendaal 1998a: 50) and at least a prefixal, if not also a suffixal, causative (Dimmendaal 1983; Unseth 1998). Nevertheless, even here, the problem remains that the phonological material involved is normally so short that isolated similarities may also arise with families that are quite unlikely to be related (cf. Ernszt [2006: 54–56] on a front-vowel causative prefix in Central Sudanic similar to that in Nilotic-Surmic). The focus should thus shift from isolated elements to structured morphological paradigms, for which Nilotic and Surmic in fact provide good candidates, for example, complex and historically dynamic systems of verbal cross-reference (see, e. g., Bryan 1955; Dimmendaal 1987a, 1991; Jong 2006) or number marking involving nominal classification (see, e. g., Unseth 1988a; Arensen 1998; Storch 2005).

In sum, a Nilotic-Surmic family looks close to be proven according to canonical standards but still lacks a full and transparent exposition of the evidence. This will not only serve to convince non-specialists but is bound to advance the historical evaluation itself, for example, regarding the possible refinement of the available reconstructions, the status of the peripheral Surmic language Majang, and the plausibility of extending the family through the addition of other lineages like Temeinic and Dajuic.

The possible confidence in all other explicit proposals of pairwise genealogical relationships in Nilo-Saharan is quite different. A first such study by Bryan (1955) is noteworthy, because it deals with morphological evidence and concerns the typo-

logical divide between the southern head-initial and the northern head-final languages within East Sudanic. The author compares the verb structure of three languages each from Surmic (Murle, Didinga, Me'en) and Taman (Tama, Sungor aka Assangori, Merarit) and concludes that both families share a characteristic morphological template involving similar markers. While Bryan was generally reluctant to entertain non-obvious genealogical relationships, in this case she (Bryan 1955: 313) did favor an interpretation of the data in terms of common inheritance. Her characterization of the purported shared pattern (Bryan 1955: 330–332) is a complex set of features involving overall three prefix and four suffix positions, as schematized in (9).

(9) a. Taman: *First person-Vowel-Aspect-"Stem"-Plural-Vowel -Non.person
b. Surmic: *First person-Vowel-Aspect-"Stem"-Plural-Ø -Person -Non.person

Nevertheless, there are major problems in evaluating the purported similarities as reflexes of a shared proto-structure. First, only the first, third, and fifth affix positions – that is, just three of seven – are semantically specific. Second, Bryan's data do not in fact allow one to infer the above template to be a likely reconstruction in either of the two families, let alone a common ancestor. The verb paradigms she gives are so diverse that an outsider cannot appreciate what is really shared across a family and what is incidental, depending on such numerous and diverse factors as the verb lexeme itself, its type of being V- or C-initial, and different morphological categories like aspect, number, person, etc. For Taman, there is just a single verb that is given for all three languages in the same "indefinite" aspect paradigm, namely 'kill, die', having to assume in addition that it is adequate to disregard the diverse valency. For Surmic, Bryan gives two verbs, 'sleep' and 'weep', for both Murle and Didinga in comparable aspects; these actually do not corroborate the generalized pattern in (9). Finally, the comparability between the templates has numerous exceptions and/or restrictions in virtually all affix positions. While this is already clear in (b) from the fact that two positions are not shared at all, the diversity is actually far more extensive on account of Bryan's own information.

Bryan (1955: 332) draws special attention to the examples given in Table 58; the similarities are in the imperative a (singular) suffix *-k* and in finite forms the restriction of prefix marking to first person, the plural suffix *-k*, and a suffix *-i* in the singular. However, while these facts may look suspicious, one has to bear in mind that this extent of shared features is far from recurrent but restricted to these three specific paradigms. Across the entire data set, the affinities between the two families boil down to partly similar verb morphotactics and markers that occasionally share both form and function. However, the similar morphemes either consist of unmarked segments whose similarity could also be due to chance or they hardly ever give the impression of reconstructibility. The morphological templates are equally unspecific and can be explained at least partly by universal (and possibly areal) tendencies. For example, the fact that aspect is encoded close to the verb

Table 58: Similar verb paradigms of Tama, Sungor aka Assangori and Murle after Bryan (1955: 314 example 5, 318 example 5, 328 example 11)

	Tama 'wash'				**Sungor 'do, make'**				**Murle 'beat'**					
IMP.S		*aisɛ*	*-k*			*ene*	*-k*				*ru*	*-k*		
IMP.P		–			*k*	*-ene*	*-k*	*-a*		*u*	*-ru*	*-it*		
	FIRST PERSON	ROOT	PLURAL	NON-PERSON	FIRST PERSON	ROOT	PLURAL	NON-PERSON	FIRST PERSON	VOWEL PREFIX	ROOT	PLURAL	PERSON	NON-PERSON
1S	*n*	*-aise*		*-i*	*n*	*-ane*		*-i*	*k*	*-a*	*-ru*			*-i*
2S		*aise*		*-i*		*ane*		*-i*		*a*	*-ru*			*-i*
3S		*aise*		*-i*		*ane*		*-i*		*a*	*-ru*			*-i*
1P.I									*k*	*-a*	*-ru*	*-k*		
1P.(E)	*n*	*-aisɛ*	*-k*	*-ɛ*	*n*	*-ane*	*-k*	*-e*	*k*	*-a*	*-ru*	*-k*	*-a*	
2P		*aisɛ*	*-k*	*-ɛ*		*ane*	*-k*	*-e*		*a*	*-ru*	*-k*	*-u*	
3P		*aisɛ*	*-k*	*-ɛ*		*ane*	*-k*	*-e*		*a*	*-ru*	*-k*		

lexeme and that person markers do not occur in a single affix slot is motivated readily by cross-linguistic tendencies in the grammaticalization of bound morphology, as discussed, for example, by Bybee (1985) and Mithun (1991).

Bryan's genealogical interpretation is also questionable in other respects. For one thing, not a single obvious verb cognate between the two families emerges in the data. Also, Taman and Surmic cannot be assumed to be close East Sudanic relatives. If the inherited template is real, it must hence be old and one would expect that at least remnants of it exist in other purportedly related lineages, for example in Surmic's closest relative Nilotic. To my knowledge, this has not been reported so far. In general, Bryan's proposal, although looking promising at first glance, is not good evidence for the specific link, let alone for East Sudanic. Her idea can only be investigated through arduous reconstruction work in both families involved. This is more realistic today, because detailed morphological analyses of the verb structure of some languages have become available in the meantime (see, e. g., Dimmendaal [2009b: 315–317] on Tama, and Odden [1983] and Jong [2006] on Didinga).

The evidence for other pairwise family links in Nilo-Saharan is yet more prob-

lematic. A set of such hypotheses is embedded in Ehret's (2001) highly structured family tree and concerns, in addition to Nilotic-Surmic, the following: Koman-Baga aka "Koman", Songhay-Maban aka "Western Sahelian", Jebel-Berta aka "Jebel", Taman-Nubian aka "Western Astaboran", and Nyimang-Temeinic aka "Nuba Mountains", the last of which would also bridge the typological separation of northern and southern East Sudanic lineages. Since the type of argument is similar for all these proposals, they can be discussed in a summary fashion. That is, a search in Ehret (2001) for explicit evidence in terms of group-specific innovations turns out to be fruitless; the reader is expected to be satisfied with a few laconic statements, if any, and occasional references to earlier "demonstrations" of these groups (Ehret 2001: 68–72). The first source is his own study that claims the existence of "unique lexical sharings and innovations" said to define various families (Ehret 1983: 378–380). Since Table 1 of this work merely lists 36 comparative lexical series without transparent reference to such diagnostic items, and a reader is unlikely to spot more than a handful, the evidence must be sought elsewhere. The second source for some of his pairwise proposals are said to be lexicostatistic studies by Bender (1971) and Thelwall (1981a: 168–172, 1982b: 51–52), whose empirical basis is not even given in the works themselves but whose figures Ehret interprets intuitively, however low and hence non-diagnostic a particular value may be. For example, in addition to purported lexical "innovations" (Ehret 2001: 69), the Jebel-Berta unit is justified as follows: "The tables of cognation there [i. e. Bender 1971] give Wetawit (Berta) and Ingassana (Gaam) a score of 12% whereas the highest score of either language with any other Nilo-Saharan language is only 6% (except for an isolated 9% between Gaam and a single Surma [aka Surmic] language)." In general, Ehret's evidence for low-level groupings in Nilo-Saharan is weak at best and never outlined transparently, even if one or the other hypothesis may in fact turn out to be correct, as is the case with Nilotic-Surmic.

Two of Ehret's above proposals are not restricted to his classificatory framework but have other supporters, and have in fact been revived recently with reference to new data. One recent study, Ahland (2010, 2013), deals with the controversial Koman-Baga link. While she primarily discusses the status of Baga (still restricted to narrow Gumuz) as a member of Nilo-Saharan, which is not discussed here, she also touches on its specific relationship to Koman. Here, her diagnostic evidence so far boils down to a single and inconclusive sound correspondence between Gumuz and the single Koman language Gwama, as shown in Table 59 (relevant corresponding segments in boldface).

While the comparative lexical sets in Table 59 as well as more data in Ahland (2013, 2015) look promising and may at least partly reflect some historical connection, this finding can not yet justify the acceptance of a Koman-Baga family. Full-scale reconstruction of both proto-languages are necessary in order to see whether this picture is an isolated lexical phenomenon or is replicated by more data that also include grammatical aspects of the two families.

Table 59: Assumed sound correspondence between Gumuz (Baga) and Gwama (Koman) (Ahland 2010: Table 6)

Meaning	Gumuz (Baga)			Gwama (Koman)
	Southern	Northern	Yaso	
'clothes'	***aŋwa***	***aχwa***	***oa***	*ɔ́ɔ́yɔ̀*
'sweep'	***kan****t-íl*	***kaχa****t-íl*	***kaa****t-íl*	***kɛ́yà****-kɛ́*
'shell'	***páŋ****k'a*	***páχá****k'a*	***páá****k'á*	***páyà****k'*
3S pronoun	***áŋa***	***áχ****ó*	***á*** *(ámé)*	*ùh**ày**~ùyáà*
'spider'	*jántá* ***tóŋwá***	*jan**tóχwa***	*jan**toa***	*t'út**ɔ́ɔ́yɔ́*** 'flea'
'to fly'	***pwəŋ***	***póχ***	***po***	*pàyní-**pày***
Correspondence	ŋ	χ	Ø	y

Finally, Bremer (2015) has discussed most recently the Jebel-Berta link, which would add another family to the conventional East Sudanic grouping. The author makes a good case for Berta being a highly diverse language complex if not a small family, which also opens new perspectives for external comparison. This situation is matched by a similar heterogeneity within the Jebel family (U38). Before the background of our persisting lack of knowledge on all relevant languages other than Gaam, Bremer has unfortunately roped in this parallel family-internal diversity for immediately resuscitating the old genealogical hypothesis rather than advancing first the historical study of either family separately. While Bremer (2015: 341–349) provides comparative data on both units together with assumed internal sound correspondences, he does not assemble the linguistic material that would enable him to reconstruct at least some secure Proto-Berta and/or Proto-Jebel forms to be compared with each other. He also fails to engage with previous work, for example, by testing Ehret's (2001: 69) claim about a set of purported lexical Jebel-Berta innovations. He instead uses the recurrent multiplicity of lexical and grammatical forms that can be mustered from the diverse varieties in each group to invoke new etymological associations that are overall random, often doubtful regarding form and/or meaning, and susceptible to alternative explanations, for example, in terms of language contact. Thus, in spite of enlarging the database on the Berta side, his contribution leaves the historical problem as inconclusive as before.

2.6.4.2. East(ern) Sudanic

After reporting on the status of several proposals about low-level families in Nilo-Saharan I discuss the more far-reaching but widely accepted East Sudanic hypothesis. This group is located in the eastern realm of Nilo-Saharan, hosting the great majority of its many lineages. Here the hypotheses about intermediate

genealogical relations have been revolving in particular around one major family, namely Nilotic. Since this is a geographically and demographically prominent language group, even on the continental level, the question about its possible genealogical relation to other African languages is an old one. It is no exaggeration to state that it has been a center of gravity for wider genealogical associations and still today assumes the role of a starting point for Nilo-Saharan comparisons, as evident, for example, in Bender (2000d) and Blažek (2009a). Even before the acceptance of the unity of Nilotic, assumed links of some of its members involved languages that are viewed today as East Sudanic or at least as Nilo-Saharan. For example, Westermann (1912: 36–44), starting out from West Nilotic languages, entertained a specific historical relation to Nile Nubian on the basis of lexical isoglosses. The assumed connection between Nilotic and Nubian was reiterated and also extended to other languages like Kunama and Nara, invoking both shared lexical and grammatical features (cf., e. g., Murray 1920; Conti Rossini 1926; Verri 1950). All these links cross the typological divide between head-initial families in the south, including Nilotic, and head-final ones in the north, including Nubian.

Nubian is another family that has been attracting comparison and, potentially, genealogical extension, which is due to its important historical role along the Nile and the philological attention it received in the past. Hence, the early "marriage" between Nubian and Nilotic was arguably a crucial background for Greenberg (1950b), who formulated his first East(ern) Sudanic hypothesis, thereby "hijacking" Tucker's (1940) term that had been coined for a geographically and historically entirely different concept (cf. Tucker and Bryan 1956: 143–144). Besides arguing convincingly for the unity of his "Southern" aka Nilotic family, Greenberg postulated its genealogical relationship to Surmic, Jebel, Dajuic, Nubian, Nara, and Taman within a single group that would soon become the core of his yet larger family proposal.

Table 60 lists Greenberg's complete grammatical material supporting his East Sudanic family according to the present classificatory units as opposed to his, mostly single, sample languages (given in italics). As mentioned in section 2.6.2.1. in connection with his argument for Nilo-Saharan as a whole, neither this nor the lexical evidence is convincing – a view voiced early on (see, e. g., Köhler 1955; Heine 1970); the reader is invited to judge for him- or herself. Here, I illustrate the problems with only one prominent example, namely the status of feature 15, number-sensitive stem suppletion on nouns, which in principle could be a good genealogical marker. The case of the lexeme 'cow/cattle' has been accorded a particularly decisive role, for which the irregular singular-plural alternation is defined by Greenberg (1950b: 145, 153, 156–157; 1963a: 88) as "involving final consonant replacements combined with internal change". The feature appears to be so attractive that some scholars, for example, Ehret (e. g., 1983: 400) and Dimmendaal (e. g., 2007: 52–53, 2011: 97–98, 2014a: 8), keep using it as a major

Table 60: Greenberg's (1950b: 154–157) grammatical evidence for East Sudanic

Lineage		Nilotic	Surmic	Jebel	Dajuic	Nubian	Nara	Taman
Greenberg's no.		1	3	5	7	2	4	6
Feature		>1 language	*Didinga*	*Tabi*	*Dagu*	>1 language	*Barea*	*Merarit*
1	1S.SBJ	*a	*a*	–	*a*	*ai*	–	*wa*
2	2S.SBJ	*i	*i*	–	*i*	*i-	–	*i*
3	2S/P.POSS	*(–)u(–)	*(c)u(ni)*	*u(n)*	–	–	–	*onu*
4	3 DEM	–	*či*	–	–	*te-r*	*ti*	*te*
5	S/P on DEM	*-n/-k, n-/č-*	*-n/-gi*	–	–	–	–	–
6	REL~ADJ	*ma-*	–	–	*ma-*	–	*-mo*	–
7	PR.DEM~REL	*T	–	–	–	–	*-te-*	
8	REL~ADJ	*ko-*	–	–	–	*-go*	*-go*	*-k*
9	F	*n	–	*ñe*	–	*-en*	–	–
10	S on noun	*-Vt	*-it*	–	–	*-(i)d*	–	*-t*
11	P on noun	*K	*k*	*-k*	–	*-gu*	*-ka/-gu*	*ŋ < k*
12	P on noun	*T	*-ta*	–	–	*-du*	*-ta*	–
13	P on noun	*-N	*-ɛn/-nV*	–	–	*-in*	–	–
14	P on noun	*-V^{front}	*–i*	–	–	*–i*	–	–
15	Suppletion	see the discussion below						
16	NOM.S	–	*-i*	–	–	*-i*	–	–
17	GEN.S	*-a*	*-o*	–	–	*-u*	–	–
18	LOC.S	*-T-	*-to/-ti*	*-te*	*-ti*	*-do*	*-t(V)*	*ta*
19	LOC.S	–	–	*-ul*	–	*-la*	*-li*	–
20	ACC.S	–	–	–	–	*-kV	–	*ŋ < k*
21	LOC.P	*-nV*	*-ni*	–	–	–	–	–
22	COP~tense	*a	–	–	–	*a*	–	–
23	P on verb	–	*-k*	–	*(-ka)*	–	*-K(e)*	*-key*
24	FUT	*-P-	–	–	–	*PV*	–	–
25	NEG on verb	*B-	*(ma)*	–	*ba*	*m-*	*(ma)*	*m-*
26	INCH	*N	*-aN*	–	–	–	*-en*	–
27	DAT on verb	*-K(in)	*-eki*	–	–	–	–	–

Notes: *X* = language-specific element, *X = pseudo-reconstruction from several languages

classificatory marker, albeit only for the southern subgroup rather than for East Sudanic as a whole. The first author writes: "So powerful is this piece of evidence that it is almost enough by itself to show that the languages with the innovation form a separate subgroup of Nilo-Saharan excluding Nubian-Tama [belonging to northern East Sudanic], Central Sudanic, and Maban, all of which maintain the simple unmodified root."

Table 61: Forms for 'cow/cattle' across East Sudanic

Family	**(Proto)-language**	**Singular**	**Plural**	**(Additional) source**
Nyimang	Proto-Nyimang	*(m)bV̀r	*(m)bV̀r	Bender (2000c: 107, 118)
Nara	Nara	*ar*	*aré*	Reinisch (1874: 105)
Meroitic	Meroitic	? *dime*	?	Rilly (2010: 120)
Taman	Tama*	*tɛɛ*	*tɛɛŋ*	–
	Proto-Taman	*tEE	*tE(-)	Edgar (1991d: 218)
Nubian	Proto-Nubian	*tEE	*tE(-)	Rilly (2010: 521–522)
Dajuic	Daju of Lagowa*	***teɲe***	***tukke***	–
	Proto-Dajuic	***teɲe**	***təke**	Thelwall (1981b: 139)
Temeinic	Temein*	***n-ʈ̪èŋ***	***kɪ-tók***	Stevenson (1976–86)
	Keiga Jirru	***a-ɖ̪éŋ***	***kʊ-ɖ̪ʊk***	Blench (nd.)
	Tese	***ɛ-ɖ̪èŋ***	***kwú-ɖ̪ùk***	
	Proto-Temeinic	***-ʈ̪ɛŋ**	***kV-ʈ̪Uk**	–
Nilotic	Proto-Nilotic*	***ɖ̪ɛŋ**	***ɖ̪ʊk**	Dimmendaal (1988: 36)
Surmic	Majang*	***taŋ***	***tɔgi***	Joswig (2011: 12)
	Proto-Southwest	*taŋ(a)	₊tiin	Moges (2001: 318, 327, 364)
	Proto-Southeast	*bi	₊bio	Dimmendaal and Last (1998)
	Proto-Surmic	? ₊taŋ	?	–
Jebel	Gaam*	***tɔɔ***	***tɔgg***	Stirtz (2011: 101)
	Aka	*mɔɔ-gɔ*	*mɔɔ*	Bender (1997a: 208)
	Molo	*mɔ*	–	
	Kelo	*mɔ*	*mɔ*	
	Beni Sheko	*mu*	–	
	Proto-Jebel	*mɔ	*mɔ	–

Notes: * = Language presented by Dimmendaal (2007: 52–53, 2011: 97), possible cognates right-aligned, **boldface** = apparently valid reflex of suppletion pattern

Table 61 starts out from the information provided by Dimmendaal (2007: 52–53, 2011: 97–98) but assembles more comprehensive data according to the material available today, including more diagnostic earlier stages of the relevant lineages.

To begin with, Table 61 confirms that Greenberg's original claim that the suppletion holds for East Sudanic as a whole is not supported by the data, because the pattern is not found in the lineages of the northern group. For the families of the southern branch the picture looks superficially more promising. Nevertheless, whether it unambiguously indicates a genealogical link between all five lineages remains unclear, at least for a non-specialist.

The major problem is that specialists fail to provide credible proto-forms for all families concerned, as the feature must have been present in all proto-languages if it is to count as evidence for their assumed common ancestor. A clear case can be made for Proto-Temeinic, and the comparative data for Dajuic in Thelwall (1981b: 139) and Boyeldieu (2011: 43) are also compatible with a reconstructed pattern as defined by Greenberg. However, it is not yet possible to take Dimmendaal's Proto-Nilotic reconstruction for granted, because there are alternative explanations for the stem suppletion in terms of a purely family-internal scenario, which the author does not mention let alone discuss critically. Thus, Hall et al. (1975: 5–8) reconstruct a generic base *dhɔk, whose suffixed singulative form *dhɔk-ɪn changed to *dhɛŋ via vowel fronting and subsequent syncopation. Hieda (2009: 31–33) makes yet another proposal: he gives the singular proto-form as *kʷɪ-tɛg, from which the plural stem emerged via suffixation and phonological erosion. Whatever the correct solution, any Nilotic-internal explanation must be disproved conclusively for the suppletion pattern to qualify as a likely candidate feature for a state older than Proto-Nilotic.

Another scenario, namely that the culturally sensitive term 'cow/cattle' is prone to borrowing, also needs to be excluded before entertaining an interpretation in terms of inheritance. A contact explanation may in fact be relevant for the two remaining lineages Jebel and Surmic.[19] Thus, the irregular number pair in Gaam cannot be traced back easily to Proto-Jebel, as Dimmendaal admits himself. Since all other languages have a root *mɔ*, the case of Gaam is isolated. Its suppletion pair, which is morphologically *ṯɔ́ɔ́*/*ṯɔ́-gg* according to Stirtz (2011: 101), could have originated in the borrowing of the plural/collective form from a Nilotic language and the subsequent back formation of the singular in analogy to other similar nouns like *sáá*/*sá-gg* 'wine'. Language contact must even be reckoned with

[19] It goes without saying that potential borrowing is equally relevant for the distribution of the basic unchanged root for 'cow', which is commonly assumed to be an inherited item for a yet larger range of Nilo-Saharan language groups beyond East Sudanic, for example, Moru-Madi, for which one can indeed reconstruct a form *ti (Boone and Watson 1996: A68).

within Surmic. All languages of the family merely display the required singular form, except for Majang, which has the relevant suppletion pattern. However, the Majang do not have a tradition of keeping livestock (Stauder 1971: 13–14), so that there is the possibility that stem suppletion arose also here partly via borrowing from Nilotic neighbors like the Anywa (aka Anuak).

In conclusion, what has been presented previously as a purportedly diagnostic trait of East Sudanic, or at least of its southern branch, is so far only robust for a smaller group of two or three families, and even here the historical picture is not yet conclusive for an outside observer. One must assume that Greenberg's (1950b) other grammatical traits in Table 60 are of the same or even lesser quality, particularly in view of the point made in connection with Bryan's (1955) study, namely the recurrent morphological complexity of the languages and the resulting difficulties in making meaningful comparisons.

Another strain of early research tackling the genealogical status of (parts of) East Sudanic is lexicostatistics. For example, Thelwall (1978) undertook such a comparison between six Nubian, five Dajuic, and the two West Nilotic languages Dinka and Shilluk. His results confirm the coherence of the obviously related languages. However, all proximity values crossing a family boundary, although some may arguably warrant a historical link, are not high enough in order to distinguish inheritance from language contact. The latter is, however, a relevant explanation in view of the partial geographical closeness of all three groups involved in the comparison and the extremely scattered distribution of both Dajuic and Nubian today, which indicates that their location in the past is likely to have been different from the modern picture. Thelwall (1981a), which includes additional East Sudanic languages from Taman, Nyimang, Temeinic, and Jebel, yields parallel lexicostatistic results, and thus equally fails to justify the East Sudanic hypothesis.

Later research on East Sudanic was shaped predominantly by Bender's and Ehret's efforts to substantiate and amend Greenberg's Nilo-Saharan as a whole. As opposed to the original East Sudanic proposal, these (and other) scholars assume a substructure entailing mostly two larger branches. The distinction is referred to as Ek vs. En by Bender (e. g., 1989b, 1996a, 2005b), Astaboran vs. Kir-Abbaian by Ehret (e. g., 1989, 2001), and Northern East Sudanic vs. Southern East Sudanic by Rilly (e. g., 2004) and Dimmendaal (e. g., 2007). Except for Ehret's hypothesis, in which the larger group is called "Eastern Sahelian", this assumed split happens to correlate neatly with the typological separation between head-final and head-initial languages. The similarities and differences between the various classification proposals are given in Table 62 (group labels are unified except for Greenberg's way of reference).

Table 62: The history of subclassification of East Sudanic

Greenberg (1963a)	**Bender (e. g., 1989b)**	**Ehret (e. g., 1989)**	**Rilly (2004, 2005, 2010)**	**Dimmendaal (2007, 2014b)**
–	–	–	Meroitic	Meroitic
1. Nubian	Nubian	Nubian	Nubian	Nubian
3. Barea	Nara	Nara	Nara	Nara
7. Merarit, …	Taman	Taman	Taman	Taman
5. Nyima, …	Nyimang	Nyimang	Nyimang	Nyimang
4. Ingassana, …	Jebel	Jebel	Jebel	Jebel
8. Dagu of Darfur, …	Dajuic	Dajuic	Dajuic	Dajuic
2. Murle, …	Surmic	Surmic	Surmic	Surmic
9. Nilotic	Nilotic	Nilotic	Nilotic	Nilotic
6. Temein, …	Temeinic	Temeinic	Temeinic	Temeinic
10. Nyangiya	–	Kuliak	–	–
–	–	Berta	–	–

Table 62 shows that, poorly known Meroitic aside, Bender, Rilly, and Dimmendaal agree about the extent of East Sudanic, only differing on the sub-branching in its southern domain, while Greenberg and Ehret include one or two additional units, namely Kuliak and Berta. Bender's and Ehret's evidence for East Sudanic is hard to separate from their overall argumentation regarding Nilo-Saharan, which accordingly is dealt with elsewhere. Hence, the following discussion will focus on Rilly's and Dimmendaal's work.

Foreshadowed by Thelwall's (1982b: 51–52) lexicostatistic argument for a closer relationship between Nubian, Taman, and Nyimang, a genealogical core group comprising lineages that have a head-final structural profile and are geographically dispersed throughout modern Sudan crossing into Chad, Egypt, and possibly Eritrea has been accepted by all relevant scholars. However, the only dedicated and extensive empirical justification of such a group is Rilly's (2004, 2005, 2010, 2016) work in connection with his search for possible Meroitic relatives. A strength of his approach, although complicated by the small size of most of the relevant families and the pertaining gaps in the data, is that he aims to compare proto-forms rather than items of randomly recruited individual languages. He also tries to build up a holistic argument in providing evidence from typological features as well as morphology, lexicon, and phonology – this first without the poorly attested Meroitic itself.

Table 63: Morphological similarities across Northern East Sudanic (after Rilly 2005: 7–10)

Element	**Nara**	**Nubian**	**Taman**	**Nyimang**
1S pronoun	*a	*a-i	*wa	*a-i
1P pronoun	*ag	*a-	*wag	*agV
2S pronoun	*e-n	*e-/en-	*i	*i
2P pronoun	*eŋg/eg-n	*u-	*ig	*igV
3S pronoun	*t-u	*ta-	*an	*an
3P pronoun	*t-ug	*te-	*aŋg	*aŋgi
Object	*-go*	*-gV	*-iŋ* (Tama)	*-(u)ŋ* (Ama)
Singulative	*-t	*-ti	*-t* (Tama)	–
Plural	*-gu	*-gu	*-Koo* (Sungor)	*-go* (Dinik)
Adjectivizer	*-ku*	?*-ko	*-k	*-iŋ* (Ama)
Negative	*ma*	*m(a)-	*mɔ* (Merarit)	? *fa* (Ama)

His morphological isoglosses are given in Table 63, based on his summary in an article dealing primarily with Nara (Rilly 2005). The pronoun paradigms in particular display various recurrent features, such as a person distinction between *a* for first person and a front vowel for second person in all groups, a plural suffix with a velar consonant in three groups, and an arguable demonstrative prefix in third person forms in two groups, which, taken together, look promising. However, since the argumentation directly targets the highest genealogical level, the intermediate steps of reconstructing all morphological traits within each lineage remain underexposed, so that it is unclear to what extent the data presented are compatible with all relevant empirical details in single languages and low-level lineages.

Rilly (2010: 184–351, 413–529) is an extensive presentation and discussion of lexical reconstructions of the assumed family based on 200 lemmata and still excluding Meroitic; Rilly and Voogt (2012: 189–230) present the latest summary of this proposed proto-lexicon, which serves as the basis of the following brief assessment. Proto-forms are given for 156 of the 200 meanings, which are, however, not of the same diagnostic value, because many of them are not sufficiently distributed across the four groups. The best series would be those labelled "A" by the author(s), where assumed reflexes of a proto-form are said to be present in all three lineages considered to be relevant, namely Taman, Nyimang and an assumed Nara-Nubian branch. Since Nara and Nubian are claimed to form a subgroup and are thus not required to both provide evidence for a comparison, the A-status in fact signifies only that assumed reflexes are found in Taman, Nyimang, and Nara or in Taman, Nyimang, and Nubian. Excluding the six pronouns of Table 63, 60 series are assigned the A-status, but 20 of them are in fact misassigned

according to the criterion just explained. This leaves 40 comparative series that are relatively robust in terms of cross-family distribution. Nevertheless, it is difficult for the reader to ascertain whether these cases conform systematically to the assumed sound correspondences. The latter are discussed separately from the comparative lexical tables, which themselves present a large amount of data that either entail assumed changes that are far from obvious or must be irrelevant for a particular reconstruction. Overall, the reader sees comparisons that are convincing or at least promising placed side by side with others that appear questionable or even far-fetched. An additional problem is that for 26 meanings more than one proto-form exists, whereby it is often impossible to decide which form is actually the one assumed to represent the highest genealogical level.

In summary, a good portion of Rilly's morphological and lexical evidence for a family comprising Nubian, Nara, Taman, and Nyimang, and even the separately presented associations with the restricted linguistic data on Meroitic, certainly look promising. His work is a great step forward in the substantiation of a strong hypothesis. However, assessing his argument properly is unfortunately too complex a task in the present context, not the least because the material is not laid out in a sufficiently transparent way.

A strong case similar to that for Rilly's northern group has not yet been made for a genealogical unit in the southern realm of East Sudanic, which comprises Nilotic, Surmic, Temeinic, Dajuic, and Jebel. While most authors entertain these five groups, they disagree on the subgrouping, as shown in Table 62, and Rilly (2009: 2, 2010: 202–208) even disfavors such a branch entirely, viewing his northern family as a parallel group to these remaining East Sudanic units. Also, the empirical evidence that is discussed specifically for some form of a southern branch, rather than being enmeshed in Bender's and Ehret's larger Nilo-Saharan frameworks, turns out to be restricted and even equivocal. For example, the relevant discussion in Ehret (1983) invokes not more than 17 lexical comparisons, which not only include Jebel but also Nyimang and Berta, and merely another 9, which still include Nyimang but exclude the other two units. The above discussion of the oft-cited case of number-sensitive stem suppletion with 'cow/cattle', which is part of Ehret's first list but so far does not hold for the entire southern grouping, shows that these few hypothetical isoglosses are not even conclusive. What remains in terms of concrete favorable arguments for a genealogical connection are the typological unity, the observation from Table 48 above that all lineages but Jebel are most consistently implied in the three morphological "syndromes" entertained by Bryan (1959, 1968, 1975), which may be a genealogical signal, and finally the robust case for a Nilotic-Surmic family. Overall, some form of a larger family in the southern domain of East Sudanic is a promising hypothesis but this is still far from having been demonstrated. The current state of documentation would in fact cast doubt on any strong historical claim. Only two lineages, Nilotic and Surmic, are well documented from a morphosyntactic perspective, while the other

three are only known from two sufficient descriptions of Dar Daju (Dajuic) and Gaam (Jebel); the entire Temeinic family as well as the Non-Gaam branch of Jebel are essentially gaps in our knowledge on African languages. It goes without saying that the still indeterminate status of the northern and even more so the southern group of lineages must cast doubt on the validity of East Sudanic as a whole.

The recent research of Rilly (e. g., 2004, 2009, 2016) and Dimmendaal (2007) has intricately combined the genealogical classification of East Sudanic with an extralinguistic historical hypothesis revolving around the population history of a large area in northwestern Sudan that is only sparsely inhabited today. It is home to an old river system, called Wadi Howar, that supported denser human settlement in the past but later gradually desertified, so that its population had to disperse (cf. Pachur and Kröpelin 1987). Both linguists have tied in this archeologically attested process with their historical-comparative hypothesis about East Sudanic, according to which some ancestral speech community is assumed to have been centered originally along the still hospitable Wadi Howar. Their scenarios differ in accordance with their distinct views on language classification. Rilly's proposal revolving around Meroitic and its assumed closest relatives restricts the assumed correlation with the Wadi Howar dispersal to his northern branch of East Sudanic, while Dimmendaal extends it to the hypothetical family as a whole. The latter scenario is associated with Dimmendaal's (2007: 56–65) specific hypothesis about the typological history of East Sudanic. He assumes that early East Sudanic was of the same type as the modern languages of the northern branch while all other languages changed profile during their southward migration, which involved language contact with local groups. Dimmendaal's argument in particular hinges on the very existence of East Sudanic and is thus partly circular. The complex scenario in terms of diachronic typology, whereby lineages like Nilotic, Surmic, etc. must have changed radically, ceases to be necessary as soon as one drops the so far insufficiently proven claim that the two blocks of northern and southern language groups are to be subsumed under one genealogical umbrella. In any case, the Wadi Howar hypothesis certainly has some merits for explaining the modern linguistic ecology in the wider area, and whatever the final outcome of this fascinating linguistic and nonlinguistic investigation, any genealogical language group that can be firmly associated with such a population dispersal may well deserve the label that refers to this ancient riverine settlement area.

2.6.4.3. Summary

Regarding Nilo-Saharan as a whole, I have argued in section 2.6.2. that there is no all-comprising diagnostic evidence for such a family, even a reduced version such as proposed by Dimmendaal, and this after more than 50 years of research following the initial proposal of the hypothesis. Clearly, Nilo-Saharan membership is hard to test. The alternative approach followed by Greenberg himself as well as by

Ehret and Bender, who later undertook the most dedicated and extensive attempts to prove the original hypothesis, has been to eastablish a web of multiple linguistic affinities of different kinds between modern languages and lineages. If applying standard principles of historical-comparative methodology, the evidence for Nilo-Saharan in this framework does not become more compelling, whatever the final verdict on the hypothesis as such. As has been argued by means of selected examples, the problems observed regarding an evaluation of these works start at the lowest level of linguistic detail; the wider the net is cast, the more one sees contradictions, inconsistencies and sheer carelessness in handling the data, so that the general argument as it is currently presented, collapses like a house of cards. This does not, of course, imply that all associations these authors have made between individual pieces of empirical data or all genealogical language relations they have posited are invalid; the point is rather that regardless of whichever proposal is correct, or will turn out to be correct, the current state of research is not sufficient to prove the Nilo-Saharan hypothesis. Thus, Greenberg's (1971: 438) own more modest summary is as relevant as ever:

> While comparative work in the strict sense involving formal reconstruction is thus severely limited, a considerable foundation for future investigations does exist in the form of proposed etymologies involving both lexical and grammatical items incidental to the various attempts to show relationships among some or all of the Nilo-Saharan languages. These will obviously require initial sifting as well as further extension but they constitute at least a working basis for historical research.

2.7 The Afroasiatic domain

2.7.1. Classification history and lineage inventory

Afroasiatic is the second-largest language grouping in Greenberg's African scheme in terms of member languages and geographical spread. It is also similar to the yet larger Niger-Kordofanian in that its establishment can be traced back to the early scholarship on African languages, where it had been recognized for a long time as "Hamito-Semitic" or "Semito-Hamitic" (alternative but equally outdated labels are Erythraic [e. g., Tucker 1967a, 1967b; Köhler 1975; Heine 1979] and Lisramic [Hodge 1972, 1975]). One of the greatest merits of Greenberg's (1949b, 1950a, 1950b, 1950c, 1963a) approach, appearing along with a modern, more appropriate name, is a more precise definition of this family, which had been riddled with various problems regarding its adequate historical-linguistic assessment. His achievement laid to rest the so-called "Hamitic theory," which had been propagated in the linguistic domain especially by Meinhof (1912) (cf. Köhler 1960; Voßen 1991a; Sanders 1993; Rohrbacher 2002).

Greenberg added languages to the group but exempted others. Later, less rig-

orous proposals tried to extend the family, watering down the criteria for a secure lineage. This mostly concerned groups that are weak candidates for the Nilo-Saharan hypothesis like Kuliak, Songhay, Saharan, Kunama, Nara, Meroitic, and Nubian. Greenberg's core argument relied on morphology and established a good framework by means of which most such advances could be dealt with effectively (cf. Sasse's [1981c] rebuttal regarding the inclusion of Hadza and Kuliak).

The inventory of basic classificatory units treated here under Afroasiatic is given in Table 64, containing the original groups and three additional ones, Ongota, Laal-Laabe, and Kujarge, not yet known at Greenberg's time and still little documented today.

Table 64: Basic classificatory units in the Afroasiatic domain

No.	Lineage	1	2	3	4	Geographic location
U42	Semitic	98				North Africa and Arabian peninsula
U43	Egyptian	1				upper and middle Nile Valley
U44	Berber	27				western North Africa
U45	Cushitic (2)	46				from Horn of Africa to Tanzania
U46	OMOTIC (4)	31				southwestern Ethiopia
U47	Ongota	1	X	X	X	southwestern Ethiopia
U48	Chadic	199				central Sahel (Niger to Chad)
U49	Laal-Laabe	2	X	X	X	southern Chad
U50	Kujarge	1	X	X	X	southern Chad
	Total	~400				

Note: (n) = Number of potentially separate subgroups; AREAL POOL; 1 = Number of languages; 2 = No grammar sketch before 1965; No comprehensive modern published description: 3 = before 2000, 4 = today

While such morphological evidence as typical stem formation, verb conjugation, nominal number declension, etc. are good diagnostics for membership in the family, they have so far not been very useful for subgrouping, *pace* Bender's (1997b: 20–22) view. This is because Chadic and Omotic, which are assumed to have undergone major structural changes, are precisely the subgroups that lack many of these inherited traits, so that it cannot be excluded that they were also present in the earlier stages of these languages. Conversely, the presence of such features in Berber, Egyptian, Semitic, and Cushitic cannot be taken simply as subgroup-defining innovations. The stark contrast between some modern languages of, say, Semitic, which have retained the morphological complexity for more than

4,000 years, and Chadic, where only some traces thereof are found, tends to invite the hypothesis about an enormous time depth of Afroasiatic (e. g., Hayward 2000a: 74–75), but this underestimates the possibility of accelerated restructuring under heavy contact interference, which is in fact attested for Chadic and can also be assumed for Omotic.

The earlier name Hamito-Semitic indicates another problem in Afroasiatic research, which again is parallel to Niger-Kordofanian, namely an analytical bias toward a particular subgroup, which then affects historical-comparative approaches. Here it is Semitic, as the lineage with the longest scholarly tradition, from where the early research radiated out and around which the much larger Afroasiatic has been forming. Semitic thus tended, and partly still tends, to be viewed as the yardstick for the other subfamilies. A token of this general approach are extreme positions like Rössler's (1952, 1964, 1971), who considered Egyptian and Berber to *be* in fact Semitic. However, it remains unclear whether, and if at all, which, typical Semitic features should be projected back to Proto-Afroasiatic. From a cross-linguistic perspective, Semitic is certainly quirky regarding its morphological structure, notably its root-and-pattern system, and it is possible that some relevant modern traits derive from less advanced stages in Pre-Semitic, closer to a different Proto-Afroasiatic, and were only later generalized after the separation of Semitic. Thus, there has been an extensive discussion revolving around the original profile of nominal number marking (cf. Ratcliffe 1998) or the generality of triradical verb roots in both Semitic and Afroasiatic in general, and several authors (e. g., Sasse 1981a; Bender 1997b; Zaborski 2013) have criticized the Semitic-centered approach. Nevertheless, it has repercussions still today, also due partly to the sheer predominance of scholars working on this family, for example, in that other Afroasiatic lineages and/or the family as a whole are assessed within a historical-comparative context in relation to Semitic languages and/or with a view to a Semiticist audience (e. g., Kienast 2001; Izre'el 2002; Weninger et al. 2011; Edzard 2012).

Given the spread of Afroasiatic over two continents, another problematic issue concerns the homeland and culture of the implied proto-speech community. One proposal is based predominantly on striking lexical isoglosses with Indo-European languages in West Asia, including the domain of food production, so that the modern Afroasiatic distribution is conceived of as the result of a neolithic expansion starting in the Middle East (e. g., Militarev 2002). The other majority view focuses on linguistic data internal to Afroasiatic as well as the fact that it is simpler to assume movement by the single lineage Semitic into Asia rather than by all others into Africa (see, e. g., Ehret, Keita, and Newman 2004). Under such a scenario, Proto-Afroasiatic is expected to have been spoken by African foragers.

In view of the above controversies it is not too surprising that concrete properties of the family's proto-language are all but clear. Thus, while a number of older and recent edited volumes present surveys of Afroasiatic or at least deal with

its internal comparison and reconstruction, for example, Hodge (1971), Weninger et al. (2011), Edzard (2012), and Frajzyngier and Shay (2012), none of them has a chapter presenting a larger set of detailed reconstructions (but see below on studies addressing this issue). Another consequence of the above problems is the conspicuous disagreement about the internal Afroasiatic classification. Instead of Greenberg's original and simple rake model of five parallel groups, numerous other, more structured family trees have been proposed – according to Peust (2012) at least 27! The following presentation of three such subgrouping proposals is not meant to suggest that any of them presents a realistic model of phylogenetic history but rather to demonstrate the enormous diversity if not arbitrariness of previous approaches. The differences between the selected models are particularly striking in view of the fact that all three authors share two things: an Africanist rather than Semitic-"Orientalist" perspective and a specific expertise in languages and lineages of (north)east Africa. Comparing the trees in Figure 23, there is hardly any overlap except for the peripheral position of Omotic; this, however, need not reflect a robust genealogical generalization but rather the notorious problems in proving its Afroasiatic membership in the first place (see section 2.7.2.1. and section U46).

2.7.2. Diagnostic evidence

2.7.2.1. Morphology

Shared morphology across most of Greenberg's (1963a) Afroasiatic lineages has been recognized for a considerable time and is without doubt the best individual-identifying evidence for the genealogical relatedness of all those groups where relevant elements can be identified, particularly in the form of a paradigm. The central domain where this is the case is the pronominal marking of person, number, and gender. Although there may be later surveys that have a more extensive historical discussion and incorporate more up-to-date reconstructions (see, e. g., Zaborski 1998; Simeone-Senelle 2004), I cite here the synopsis of Sasse (1981a) because it gives a good overview concerning various paradigms and the extent to which the lineages possess them. Not every set is attested in every lineage, but the principle of "transitivity" of relatedness establishes that pronominal series in Cushitic, Semitic, Egyptian, Berber, and, less clearly, Chadic can be traced back to a Proto-Afroasiatic language.

Fleming (1983a: 22)
Pre-Afroasiatic
Omotic
Afroasiatic
Old East African Cushitic[1]
Semitic
Erythraic
Cushitic[2]
Beja
Egyptian
Berber-Chadic
Chadic
Berber

Ehret (1995b: 490, see also 1979: 60–61)
Afroasiatic
Omotic
Erythraean
Cushitic
North Erythraean
Chadic
Boreafrasian
Egyptian
Berber
Semitic

Bender (1997b: 22)
Afroasiatic
Omotic
Chadic
Central
Egyptian
Macro-Cushitic
Cushitic
Semitic
Berber

Note: bold = basic classificatory unit, [1] = South Cushitic and *Yaaku*, [2] = except South Cushitic, *Yaaku*, and *Beja*

Figure 23: Three Afroasiatic classifications

Table 65: "Absolutive" pronouns across Afroasiatic (after Sasse 1981a: 144)

P	N.G	Chadic	Berber	*Egyptian*	Semitic	East Cushitic	*Beja*	Afroasiatic
1	S P	*ni *mu	-i -na, -nəy	*-j* *-n*	*ī/*ya *nV	*yi/*yu *nV	*Ø* *-n*	*I *N
2	S.F S.M P.F P.M	*ki *ka *ku	kəm -k, kai kunəmti kunnə	*-t̲* < **ki* *-k̲* < **kV* *-t̲n* < **kin*	*kī *kV *kin(n)a *kumu	*ki *ku *kunu	*-ki* *-ka* *-kna*	*K
3	S.F S.M P.F P.M	*ta *si *su	-s/t -s/tənt -s/tən	*-ś* *-f* *-śn*	*šā *šū *šin(n)a *šumu	*(i)ši *(u)su *sunu(?)	*-s* *-sna*	*S

Note: G = gender; N = number; P = person

Table 66: "Subject" pronouns across Afroasiatic (after Sasse 1981a: 144)

P	N.G	Berber	*Egyptian*	Semitic	East Cushitic	*Beja*	Afroasiatic
1	S	nəkki	*i̯nk* (C. *anok*)	*'anā(ku)	*'ani	*ani*	*N
	P	nəkunnə	*i̯nn* (C. *anon*)	*naḥna/u	*nV	*hanan*	
2	S.F			*'antī	*'ati		*T
	S.M			*'anta			
	P.F			*'antin(n)a	*'atin		
	P.M			*'antumu			
3	S.F			*šī	*'išii		*S
	S.M			*šū	*'usuu		
	P.F			*šin(n)a	*'išoo		
	P.M			*šumu			

Note: C. = Coptic; G = gender; N = number; P = person

Tables 65 and 66 present comparative paradigms of two series of pronouns that are thought to differ according to their grammatical relation. Besides other details, the most important isogloss revealed by the two tables is a regularity in the consonant canon that operates across the three person categories largely independent of gender and number values. Table 66 displays a full "block pattern" in terms of Tucker and Bryan (1956: 140), which the same authors in fact partly prefigured for Afroasiatic (1966: 15–16). The common denominators across the two tables that

are of major importance in this context are first-person forms in *N and third-person forms with a sibilant, represented here as abstract *S.

Table 67: Person prefixes on verbs across Afroasiatic (after Sasse 1981a: 138–139)

P	N.G	Berber	Semitic		Cushitic		Afroasiatic
		Tamazight	*Akkadian*	*Arabic*	*Beja*	*Somali*	
1	S	*Ø*	*a-*	*ʔa-*	*ʔa-*	*ị-*	?
	P	*n-*	*ni-*	*na-*	*ni-*	*nị-*	*n-
2	S.F	*t-*	*ta-*	*ta-*	*ti-*	*tị-*	*t-
	S.M						
	P.F						
	P.M						
3	S.F						
	S.M	*i-*	*i-*	*ya-*	*ʔi-*	*yị-*	*i-
	P.F	*Ø*					
	P.M						

Note: G = gender; N = number; P = person

The above picture is consolidated if paradigms of bound verbal cross-reference are taken into account. I only show here the so-called prefix conjugation in Table 67, because the historical assessment of the suffix or stative conjugation also mentioned by Sasse (1981a: 140) is more complicated (see, e. g., Kammerzell 1999: 257–258). The absence of relevant evidence in Chadic and Omotic has been addressed in terms of reduction and restructuring of the verb system in general (e. g., Sasse 1981c; Hayward 1984; Jungraithmayr 1995, 2006b). Table 67 shows in particular that a thematic element already surfacing in Table 66 for independent subject pronouns is yet another salient feature, namely the consonant *t* marking second person irrespective of number and gender, in this paradigm even including third-person feminine singular. The recurrence of a full or partial "block pattern," that is, the early existence of thematic segments marking specifically person, is not compatible with Hodge's (1969: 373) conclusion that "the concept of person is not necessarily basic to the system [of Proto-Afroasiatic]".

Campbell and Poser (2008: 137) are right in stating that "the Afroasiatic union has relied mainly on morphological agreements in the pronominal paradigms …" but they do not explain in what sense this "evidence is attractive, but not completely compelling". Its value as a genealogical diagnostic can only be questioned if coincidence and borrowing are deemed possible alternative explanations. It is

true that both may account for elaborate paradigmatic isoglosses between two languages or families (see Campbell [2003: 276] on a surprising case of sheer coincidence and Appleyard's [2007: 491] report about the likely transfer of a full set of object suffixes from Ethiosemitic Tigre into Cushitic Bilen). The question is then how likely it is that the relevant amount of shared pronominal traits across Afroasiatic can indeed be explained by such non-genealogical phenomena. Given the specific configuration of this group in terms of its circumscribed spatial and temporal scale, I think it is unlikely, and in line with the conceived Afroasiatic scholarship I consider the above data to be highly diagnostic. I argue below that it can in fact serve as a good first yardstick for the genealogical evaluation of Omotic lineages, whose membership in the family remains uncertain.

While the pronominal data have been given primary importance for the Afroasiatic hypothesis, a number of other morphological features have been adduced in support of this family. A compact (albeit no longer up-to-date) survey can already be found in the pioneering research by Diakonoff (1965, 1988); a more recent overview is given by Hayward (2000a: 86–94). Overall, relevant comparative studies still involve considerable controversies and questions but at the same time attest to a mature historical-comparative discussion (see, e. g., Hodge 1971 and Hetzron 1990). In the following, I only mention some further individual-identifying morphological traits that are shared across Afroasiatic but, as an important caveat, are regrettably often lacking, or at least could not (yet) be identified, in Omotic languages as well as in the other three units, Ongota, Laal-Laabe, and Kujarge (see below for a more detailed discussion).

A paradigm of gender-number agreement on a related set of third-person nominal hosts, characterized by a consonant canon *n:t:n* for masculine singular, feminine singular, and plural, respectively, and possibly derived from determiners, can be reconstructed for Semitic, Beja, Egyptian, Berber, and Chadic (cf., e. g., Greenberg 1960; Schuh 1983). This partly relates to the sex-based gender system that is universal in Afroasiatic and displays recurring thematic elements. Only some of these could also be argued to exist in parts of Omotic (see Hayward (1989: 24–25) on the opposition of feminine *t* vs. masculine *k* in copulae of the Ta-Ne family). Another prominent feature that can be tied to concrete linguistic material is the complex system of nominal number inflection that partly interacts with derivational affixation. According to such works as Greenberg (1955a), Zaborski (1986b), Newman (1990), Sasse (1991), and Ratcliffe (1992, 1996), it is attested in Semitic, Berber, Cushitic, and Chadic but is absent in Omotic according to Hayward (2004: 246). Case marking and other types of nominal flagging like adpositions have been subject to historical-comparative research, too. However, merely listing similar surface forms, as in Blažek (2006: 99), is unlikely to lead to a tangible reconstruction of the proto-system. Authors like Sasse (1981c: 151; 1984; 2003), Appleyard (1988a), and Gensler (2000) have followed standard methodology coupled with an argumentation in terms of diachronic typology, proposing

concrete links particularly between Berber, Egyptian, Semitic, Cushitic and even the Ta-Ne group of Omotic (see also Hayward's [2000a: 88–90, 93] summary). The most intriguing result of this research is the hypothesis that Proto-Afroasiatic may have had a so-called marked-nominative system (see, however, Hayward and Tsuge [1998] and Hayward [2004: 245] on nominative-accusative systems in Omotic). Other diagnostic Afroasiatic isoglosses concern the verbal system. In addition to the shared cross-reference marking treated above a fruitful comparison across various member lineages is possible regarding the TAM-related verb stem formation (cf., e. g., Sasse 1980; Cohen 2005) and verbal derivation (cf., e. g. Stauder [2014: 208–222] for a recent discussion of valency-decreasing affixation from an Egyptologist's perspective). With respect to the second trait, the state of reconstruction is similar to the situation in Niger-Kordofanian. The existence of a proto-system of verb affixes marking causative, passive, reflexive, etc. is a robust hypothesis, but comparative research is still dominated by reference to sound–meaning correspondences across individual languages and lineages, here including Omotic (see Sasse 1981c; Hayward 2004), rather than by rigid reconstruction going from subgroups to higher genealogical levels.

2.7.2.2. Lexicon

Cohen (1947) is the first major step in comparative lexical research with a wider Afroasiatic scope. Subsequently Diakonoff's (1965, 1988) work represents another major achievement in the discipline. Numerous studies followed, often with a narrower scope in targeting individual etymologies, lexical subdomains (e. g., Wenger [2002] on numerals), or links between selected lineages, including comparisons excluding the Semitic family (e. g., Rössler [1979a] and Bynon [1984] on Berber-Chadic affinities). Nevertheless, coming up with a substantial body of reliable Afroasiatic proto-lexemes has proven difficult – a fact that is often attributed to the great time depth involved but which also has other causes.

The most comprehensive cross-family studies to date are Ehret (1995b) and Orel and Stolbova (1995), which arose from Diakonoff et al. (1993–97) but considerably diverges from it. While both works contain an impressive quantity of reconstructions, their quality is unfortunately questionable for a number of reasons. One striking observation arising even from a superficial inspection is a suspiciously large amount of non-overlapping results between the two – a point made by various other authors (cf. Hayward 2000a: 95). This is surprising because by definition there was only one proto-language, and good scientific practice should have yielded a comparable data basis by which to arrive at the proto-forms. This more theoretical caveat is fully corroborated by the extensive and diverse criticisms both works have received from other specialists. Without being able to go into details, I only refer here to such relevant reviews as Diakonoff and Kogan (1996), Kammerzell (1996), Peust (1997), Kossmann (1999a), and Satzinger (2007) regarding

the first study; Kaye (1996) and Wolff (2000) regarding the second; and Ratcliffe (2012) regarding both.

It is instructive to read what Hodge (1983: 147) remarked quite a while ago regarding the state of Afroasiatic lexical reconstruction:

> At present one has two choices: do only basic work on the internal family level [like Semitic, Cushitic etc.], or endeavor to see what results can be obtained with controlled use of the limited data available. To do the latter is to risk writing material which in a few years will be worse than useless. On the other hand, it is just possible that the data are sufficient to enable one to draw some valid conclusions. Naturally one will not be sure that they are valid until the more basic work is done and proper procedure followed. A number of scholars have opted for the second course of action, including the present writer.
>
> The result of these efforts has been a considerable literature which it is very difficult to assess. Contradictory etymologies abound. As anyone knows who has tried it, one can easily collect sets of words with form-meaning similarities from two or more different language vocabularies. For such etymologies to be accepted by the linguistic community as evidence of genetic relationship is another matter.

This assessment could be read as a kind of forecast for the fate of much later research, in the sense that the methodological approach is arguably the reason behind a rather lukewarm reception of the work, as it can no longer be attributed to "limited data available". That is, the two major endeavors in the field and other similar research (cf. the extensive Afroasiatic oeuvre by Takács, e. g., 2011b) suffer from the same crucial shortcoming, namely the practice of arriving at Proto-Afroasiatic forms by relying on a direct comparison of words of individual modern languages across the different branches. A better alternative, or in Hodge's terms a "proper procedure," however, should be the initial careful inspection or, if necessary, establishment of branch-level proto-forms and only subsequently the consolidation of these toward likely reconstructions at the highest level. This central point has in fact been reiterated in Ratcliffe's (2012: 270–271) review, focusing particularly on methodology. Insofar as such a procedure has till today hardly played a role, the overall situation has not changed considerably since the 1980s.

An innovative idea regarding the comparative assessment of lexicon embedded in the lineage-specific grammatical structure was proposed by Newman (1980: 17–20) within his discussion of the Afroasiatic membership of Chadic. He claimed that nouns within this family as well as in Afroasiatic as a whole display stable gender assignment, even if they are not related etymologically, illustrating the point by a set of 15 meanings. While the idea looks plausible and was received positively, it was not developed further by the author or any other scholar. Nichols (1996: 61–62) looked at the hypothesis and the concrete data from a general methodological perspective and gave a cautious evaluation to the effect that the evidence needs more extensive and principled substantiation before it can count as

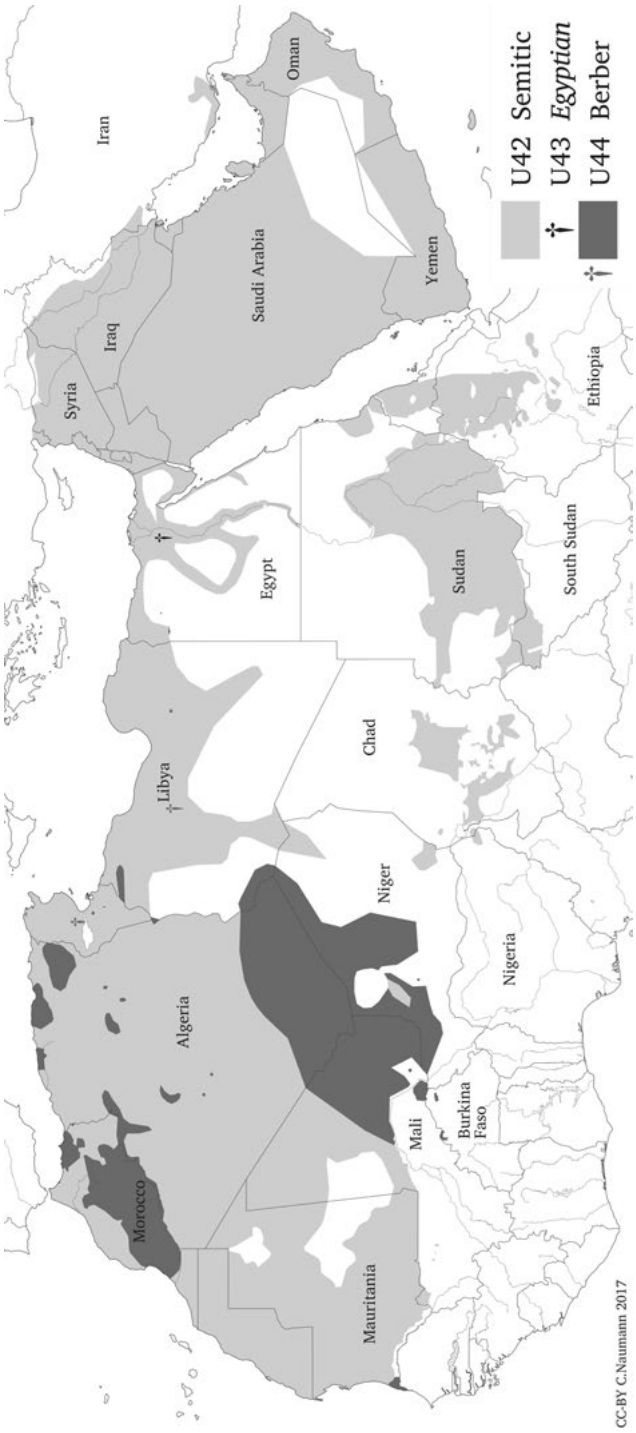
individual-identifying (see also Campbell and Poser [2008: 138–139] for a more negative evaluation).

2.7.2.3. Typology

From a typological point of view, there is considerable diversity across the traditionally assumed members of Afroasiatic (see Frajzyngier [2012] for a recent survey). Given the old age of the family, this does not necessarily pose a problem for the genealogical hypothesis. Historical inferences and macro-areal considerations inform the search for plausible scenarios that can reconcile the differences across the modern languages with a unitary profile to be reconstructed for the proto-language.

With respect to features that have been regularly surveyed in typological studies, there are two major domains of diversity in Afroasiatic, namely constituent order and the presence vs. absence of traits that are associated with the morphology discussed above. Regarding the latter, there exists wide agreement that early stages of Afroasiatic were characterized among other things by core case inflection (possibly of the marked-nominative type), a sex-based gender system, and derivation affixes on verbs. This implies that modern languages and lineages lacking these partly or completely lost them and are thus innovative, which holds in particular for Omotic and Chadic. The major divide in Afroasiatic in terms of word order is between a head-initial profile (possibly with an original transitive VSO order that could also give rise later to SVO) and a predominantly head-final one. The former holds for Chadic, Berber, Egyptian, and the core of Semitic while the latter characterizes Omotic, most of Cushitic, and some Semitic subgroups, notably Ethiosemitic and Akkadian. The last two cases throw some light on the historical dynamics, because their word order profile has been plausibly ascribed to a contact-induced shift away from an inherited head-initial syntax within a new linguistic environment (see section U42). Taking this into account, a more coherent typological split in Afroasiatic emerges, namely between Chadic, Berber, Egyptian, and Semitic on the one hand, and Cushitic and Omotic on the other.

This raises the question of which overall profile is a better model for early Afroasiatic. Two considerations suggest to me that the combination of the relevant morphosyntactic features with head-initial syntax is the more likely candidate. The inherited morphology has a rough modern distribution pattern according to which particularly Chadic and Omotic in the south must have been subject to losing it. Regarding the two word order profiles, head-initial lineages are widely dispersed while the head-final ones are, Akkadian aside, restricted to a single area, namely the Horn of Africa. This zone has witnessed at least one event of contact-induced word order change, namely Ethio-Semitic, and moreover is a subpart of Chad-Ethiopia, the only linguistic macro-area in Africa that is characterized pre-



Map 19: Geographical location of Semitic (U42), *Egyptian* (U43), and Berber (U44)

cisely by the feature of syntactic head-finality and accompanying features (Heine 1976a; Güldemann 2010). Thus, it is not far-fetched to hypothesize that Cushitic and Omotic are earlier cases of Afroasiatic lineages that entered this areal context and then changed their typological profile (cf. Bender [1997b: 24–25] for a similar idea). Insofar as Omotic languages are Afroasiatic (see section U46), this word order shift would have been accompanied by a tremendous loss of the inherited morphology.

To the extent that something is known about the typological profile of the three small lineages that are not part of the original Afroasiatic concept, they seem to align with their areal environment, including geographically close Afroasiatic lineages, namely Ongota with Omotic, and Laal-Laabe with Chadic (Kujarge remains undescribed).

2.7.3. Basic classificatory units

U42 Semitic

Semitic is a close-knit language family distributed over most of the Arabian Peninsula and large parts of northern Africa, making it a family spoken in Africa and Asia (see Map 19), and motivating the name for the higher-order lineage. It comprises close to 100 languages, which are spoken in the majority in the Asian part and half of which emerged due to the spectacular expansion of Arabic and Islam.

Semitic is by far the best-researched language family of wider Africa. In the last 20 years alone it has been treated by a number of survey articles (e. g., Edzard 2012; Gragg and Hoberman 2012), monographs (e. g., Lipiński 1997; Stempel 1999; Kienast 2001; Haelewyck 2006), and edited volumes (e. g., Hetzron 1997; Izre'el 2002; and most recently Weninger et al. 2011). The last publication, the most extensive handbook thus far, also contains several historically oriented contributions by Gensler, Huehnergard and Rubin, Kogan, Waltisberg, and Weninger. Still indebted to the groundwork laid in the first half of the 20th century by such authors as Brockelmann and Bergsträsser, these later authors give an impressively detailed picture of the phonology, lexicon, and morphosyntax of Proto-Semitic and its later history of divergence.

Semitic has another unique characteristic, namely that a number of languages are attested in the form of very old written documents. The earliest data on a Semitic language are from Akkadian and date back to the first half of the 3rd millennium BC – a time by which the family must already have had its characteristic profile. Despite the considerable age of the family, it is still relatively easy to identify a modern language as belonging to it.

Major structural adjustments have occurred in some new varieties of Arabic and in far earlier periods in the geographically peripheral units Akkadian and Ethiosemitic. Their partly different syntactic structure, notably a parallel independent

innovation of head-final features, is plausibly explained by local language contact and convergence in a new linguistic environment, namely with Sumerian in Mesopotamia in the former case (see Zólyomi 2011) and with Cushitic and Omotic in Ethiopia in the latter (see Greenberg 1995; Crass and Meyer 2011). In this connection, reference should be made to a hypothesis that Semitic originated in Ethiopia; the major argument for this is the considerable diversity of the languages there (see, e. g., Hudson 1977, 2002). However, this proposal is an isolated position that hardly plays a role in the current discourse on Semitic linguistic history (see Gensler (2017) for a recent discussion).

U43 Egyptian

Egyptian is a single language once spoken along the Lower Nile Valley (see Map 19), attested from before 5,000 years ago until the 14th century, when the gradual language shift from Coptic, its last stage, to Arabic was completed. Spoken over a period of more than 4,000 years, which is conventionally divided into five stages with a major break between the first two, subsumed under Earlier Egyptian, and the last three, subsumed under Later Egyptian, it is the longest attested language and thus has an enormous potential for historical linguistic study. However, the fact that its earliest records (and those of other ancient Afroasiatic languages) already attest to a fully articulated differentiation between it and other lineages implies that Old Egyptian, whose first stage was attested between roughly 3,000 BC and 2,000 BC, is of prime importance for the historical-comparative assessment of the larger family. Conversely, linguistic data from later chronolects can only be used for this purpose if they furnish information that cannot be recovered from Old Egyptian records but can be safely assumed to go back in some relevant form to this early stage.

Given that Egyptology is an old and separate discipline, the state of documenation and description of the language is quite favorable, also for comparative research, as evidenced by such modern sources as Loprieno (1995), Loprieno and Müller (2012), Kramer (2012), and Allen (2013). However, the nature of the linguistic material poses considerable problems of interpretation, particularly for non-specialists, including historical linguists with a scope over Afroasiatic as a whole. Hence, a major task is to transfer Egyptian data from their highly conventionalized philological representation and discussion to the conventions holding in general linguistics. Considerable progress has been made in this respect in the recent past. For example, Egyptian phonology has been rendered more transparent to outsiders by such works as Kammerzell (1998) and Peust (1999b), emerging from a more general typology-oriented research project (see Kammerzell, Knigge, and Peust 1996). The contributions to Grossman, Haspelmath, and Richter (2014) also bear witness to the increasing awareness that Egyptology and general linguistics can and must cross-fertilize each other.

Over its long history, Egyptian has encountered a number of other languages, and major chronological breaks in its overall structure have been linked to such contact settings. A lot of research in this respect has been invested concerning languages spoken in West Asia in the (north)eastern neighborhood of Egyptian, notably from Semitic and Indo-European. However, Egyptian experienced equally intensive interaction in the south(west) with African peoples and their languages, for example, Meroitic and Nubian (Peust 1999a), Cushitic Beja (Dahl and Hjort-af-Ornas 2006), and presumably others. Peust (2004) thus argues that the language is squarely embedded areally in the African continent.

One pertinent hypothesis of particular historical-comparative significance with repercussions for Afroasiatic as a whole concerns, however, the very emergence of Egyptian. It has long been observed that the language is untypical for Afroasiatic in certain respects, suggesting to some scholars that this may be due to the creation of the language in a contact setting. This idea remains rather vague in earlier work (cf., e. g., Vycichl [1951] on a pre-Afroasiatic "typhonic" substratum in Egyptian arguably shared with Berber). However, Kammerzell (1999, 2005) has proposed a more concrete hypothesis, namely that the formation of Pre-Old Egyptian involved the presence of a population in the Nile Valley that was linguistically somehow related to Indo-European; this idea has not been rejected explicitly but at the same time has found little recognition in Egyptologist circles let alone in the ongoing discussion on the geographical origins of Indo-European.

This and similar ideas, however, cannot cast doubt on the membership of Egyptian in Afroasiatic. Accordingly, it has been playing, and still plays, a central role in the very establishment of this family. Some recent works concerning both morphology and lexicon are, for example, Kammerzell (1991), Satzinger (2002), Voigt (2002/03), and Takács (2011a). They show a mature historical-comparative dialogue based on the Afroasiatic hypothesis, although some may still take a Semito-centric perspective; Rössler's (1971) proposal of simply subsuming Egyptian under Semitic is, however, an isolated position.

U44 Berber

Berber is a language group found across a huge area in northern Africa, including large parts of the Sahara (see Map 19). Its modern distribution becomes more compact toward the west reflecting its advanced replacement by Arabic emanating from the east. Chaker (1995), Galand (2010), Elmedlaoui (2012), and Kossmann (2012) provide informative family surveys.

In the French linguistic tradition Berber has been presented merely as a large dialect cluster – a view that today is also inspired by sociolinguistic concerns within Berber language revival (Basset 1952; Chaker 1995). However, works such as Willms (1980), Naït-Zerrad (2001), and Kossmann (2011) show that not only do differences between non-adjacent dialects amount to a distinction typical of that

between languages but that the group also displays some pronounced linguistic breaks between individual members. Hence, Berber is a language family of more than half a dozen language-like units with a diversity comparable to Germanic or Romance.

With respect to historical reconstruction, some specialists entertain the idea that Tuareg is the overall most conservative member (cf. Aikhenvald 1986/87; Zaborski 1993), and it is perhaps no coincidence that Prasse's research on this language complex (e. g., 1972–74) contains extensive references to possible Proto-Berber forms. However, even though Berber is a close-knit unit, an extremely complex picture of isogloss distribution and other problems to be mentioned below have frustrated specialists' attempts to come up with a subclassification and to outline the proto-language (cf. Willms [1980] and Kossmann [2011] for some discussion of the difficulties confronting the historical comparativist). Phonological reconstruction based on lexical comparisons has advanced considerably with Kossmann (1999b) and other specific studies like Prasse (1975, 2003, 2011), Bynon (1978), and Kossmann (2001). Comparative morphosyntax and diachronic typology are dealt with by Prasse (1963, 1965), Aikhenvald (1986/87), Zaborski (1993), Kossmann (2003), Chaker (2004), and Brugnatelli (2014a). However, there is no substantial and easily accessible synopsis of lexical proto-forms and/or reconstructed morphological paradigms, although the available comparative material allows specialists to establish them (see Bynon's [1984] dedicated attempts in his comparison with Chadic). It is hoped that a greater interest in comparative research and access to data with more diagnostic potential (cf. Brugnatelli 2014b) will improve this situation.

Given the wide geographical distribution of Berber and its old age in the area, its languages experienced a diverse range of linguistic contacts. The northern coastal realm of Berber was encroached upon at different historical stages by languages from Romance (Latin, French) and Semitic (Punic, Arabic) (cf. Bynon [1970] for an early summary discussion, and Durand [1993], Souag [2007, 2010a, 2014], Tilmatine [2011], and Kossmann [2013] as just some example studies). The impact of heavy lexical borrowing from Arabic is especially profound and complicates reconstruction, because it is one factor for the leveling of differences within Berber, and old loans are not always identified easily due to the genealogical relationship between the two. The language shift of Berber communities has also left a strong substrate, at least in Maghrebian Arabic (see, e. g., Kossmann 2014). In the southern domain of the family in the Sahara, mutual influences between Berber and Northern Songhay are well studied (e. g., Wolff and Alidou 2001; Kossmann 2004; Christiansen-Bolli 2010; Souag 2015a, 2015b) as is loanword influence on some sub-Saharan languages like Hausa (Kossmann 2005a).

Another problem for reconstruction in the Berber family is succinctly described by Blench (2001: 176–177), including its two major possible interpretations:

> a) Berber shows surprisingly little internal differentiation, as if it represented a recent expansion
> b) Yet is very different from its neighbours in Afroasiatic as if it split away a long time ago.
>
> Sociolinguistically, two alternative explanations for this state of affairs can be put forward. Either;
>
> a) Berber was indeed once much more diverse and its apparent uniformity is because a powerful cultural force expanded and assimilated speakers of diverse but related languages […]
> b) Berber expanded some time ago, and sociolinguistic factors have acted to keep groups in contact with one another, reducing the pressure for language diversification […]

Blench himself opts for the last scenario, while later authors like Louali and Philippson (2004) and Múrcia Sànchez (2010) prefer the first hypothesis that the diversification within Berber arising during its early westward spread and separation from the rest of Afroasiatic was eradicated by later family-internal processes of expansion and koineization. The effect of both scenarios makes it difficult to trace the earliest stage of Berber – the second even more than the first, as observed by Kossmann (2011: 5–6).

There is yet another uncertain issue regarding Berber history, namely the hypothesis that two already extinct language units with an undeniable historical relation to Berber form a larger family with it. The first candidate is the language(s) attested in the early Numidian-Libyan inscriptions (see Pichler 2007; Kerr 2010). While Rössler (1958, 1979b) is confident in a genealogical Berber affiliation, even calling the larger family "Libyan" and Berber "Neo-Libyan" (cf. Rössler 1952), most other authors, for example, Bynon (1970: 67–68), Galand (2010: 15–19), Kerr (2010: 45–46), and Kossmann (2011: 6), remain cautious about the idea. A similar situation holds for Guanche, the language(s) of the Canary Islands that became extinct in the 17th century as the result of Spanish colonization. Wölfel (1953, 1954, 1965) and Vicychl (1987) consider the relation to Berber to be robustly established, while Berber specialists today have raised doubts and consider the data to be compatible with a Berber contact influence as well (Galand 2010: 2–4; Kossmann 2011: 6).

In general, even without the speculations by Mukarovsky (1959, 1963/64) and others about deep lexical relations to extinct languages in the Maghreb and even Europe, the historical picture for the Berber family is complicated – this despite its internal homogeneity. The situation recognized by Willms (1968) and Bynon (1970) is still relevant today, namely that no Proto-Berber can be referred to when trying to analyze its exact genealogical profile and to have it contribute to the assessment of Afroasiatic. What is certainly valid, however, even without the availability of a proto-language, is its Afroasiatic membership. Without having to

Map 20: Geographical location of Cushitic (U45)

go as far as Rössler (1952, 1964), who considers Berber, like Egyptian, to be a part of Semitic, there are clear and detailed correspondences in grammar and lexicon with all safe lineages of the family (cf., e. g., Prasse 1963; Chaker 1990, 2004; Appleyard 2003; and Brugnatelli 2011).

U45 Cushitic

Cushitic is a language group of up to 50 languages that are concentrated in Ethiopia but also have a wider distribution across eastern Africa, from southern Egypt to northern Tanzania (see Map 20). Some useful surveys of the group are Sasse (1981b), Tosco (2000), Mous (2012), and Appleyard (2012). Greenberg (1963a) proposed the following subclassification into five subgroups: a) North aka Beja as its only language, b) Central aka Agaw or Awngi, c) East, which is by far the largest group, d) West, to be reconceptualized later as Omotic, and d) South, which is dispersed over northern Tanzania and possibly Kenya. This structure prevails as the mainstream opinion, except for the current exclusion of Omotic.

The concept and name Cushitic had been established already by the end of the 19th century, then comprising languages of the first three subgroups listed above. Since the internal diversity of Cushitic is considerably higher than in Semitic, Egyptian, and Berber, there are still problems of its delimitation and subclassification, to the extent that doubts about its very unity have been raised. The classification problems revolved, and partly still revolve, around three issues: a) the relationship between Cushitic and Omotic – a question deferred to section U46; b) the membership of Beja; and c) the status of South Cushitic as a separate branch, including the position of the click language Dahalo. The last two issues arose in particular in the early 1980s with Hetzron (1980) and, to a lesser extent, Fleming (1983a). Tosco (2000) and Bechhaus-Gerst (2008) review and discuss the ensuing controversies, whereby the latter surprisingly ignores the former.

Hetzron's (1980) influential study of defining the "limits of Cushitic" rejected the proposal of enlarging it (and Afroasiatic) through the addition of the Kuliak family – an idea not raised again apart from Lamberti's (1988) ambiguous contribution (see section U21). Hetzron used historical-comparative arguments concerning concrete morphological features for also arguing that Beja is an Afroasiatic lineage outside Cushitic, taking up earlier ideas (e. g., Wölfel 1944: 199). The language complex Beja, as the single member of North Cushitic, is spoken between the Nile and the Red Sea coast from southern Egypt to Eritrea with a long history in this area, involving among other things its common association with the Blemmyes of antiquity (see, e. g., Dahl and Hjort-af-Ornas [2006] for a detailed discussion). Such a profile does not make it an unlikely candidate to be a more independent lineage within Afroasiatic. However, this hypothesis has met with almost unanimous rejection from other scholars like Zaborski (1984,

1987b, 1989b, 1991, 1997), Vycichl (1988), Voigt (1998), Tosco (2000: 91–93), Appleyard (2004), and Blažek (2007a). The central idea of most of these authors is epitomized in Zaborski's (1984: 128) remark that "the existence of the old suffix conjugation in Beja [based on an old prefix-conjugated auxiliary] would alone be enough for Beja to be considered a Cushitic language", because it is a shared innovation against other Afroasiatic families (Zaborksi 1975, 1991; Hetzron 1980). It should be understood, though, that this argument only holds on the condition that the paradigms of the auxiliary itself and the new person suffixes developing from it are cognate. The collocation of content words with a generic verb, often with an additional quotative function, to form complex predicates, and this structure's possible grammaticalization toward a new conjugation type can as such not serve as a genealogical diagnostic, because this is a recurrent feature of the Chad-Ethiopia macro-area affecting families in and outside Afroasaitic (cf., e. g., Güldemann 2005a).

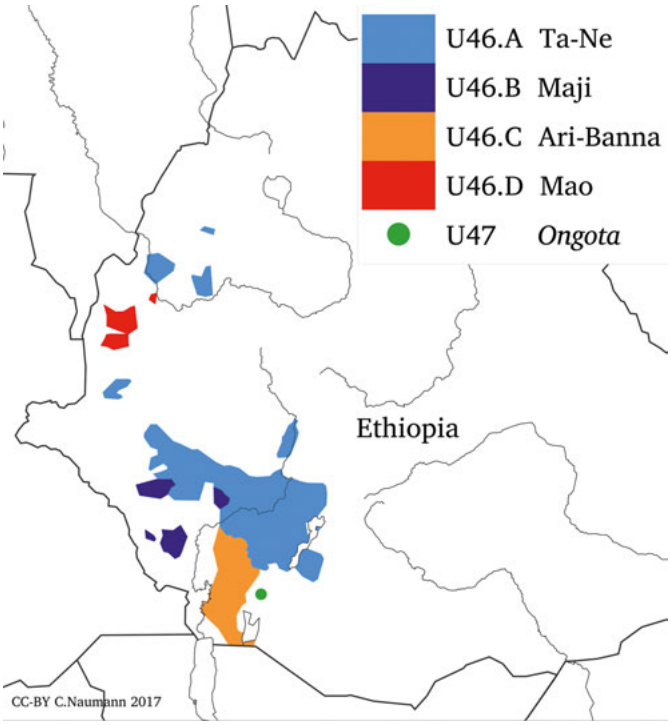
The other classification problem concerns South Cushitic languages, which are predominantly isolated today in Tanzania but appear to have had a much wider northward distribution in the past (Nurse 1988) and are also spoken by various forager peoples such as Aasax, Dahalo, etc. (cf. Fleming 1969a; Tosco 1992). Added since Greenberg (1950a) to the larger group, these languages subsequently received quite a diverse genealogical evaluation. Ehret's (1980) attempt to reconstruct a Proto-South Cushitic language followed Greenberg in maintaining them as an independent Cushitic branch; Hetzron (1980) proposed subsuming them under East Cushitic; and Fleming (1983a: 22), as another extreme, saw them as representing a peripheral branch of Afroasiatic. The present discussion has to start out from Ehret's (1980) reconstruction, which is widely cited but was in fact heavily criticized by other specialists, casting doubt on the very unity of his South Cushitic (cf. in particular Hetzron and Tálos [1982] but also Rowe [2000] and Tosco [2000]). The later discussions tend toward separating Dahalo in Kenya from the Rift languages in Tanzania but placing them all within East Cushitic (Rowe 2000; Tosco 2000; Kießling 2001).

A central problem behind these controversies, and the comparative evaluation of Cushitic in general, is the scarcity of cross-family studies that present, if only for a subdomain, concrete Proto-Cushitic reconstructions in a compact and transparent form. This is somewhat surprising in view of the extensive amount of reconstructions on the level of more secure subgroups. Thus, see Hetzron (1976) and Appleyard (1984, 1988b, 1996, 2006) on Agaw aka Central Cushitic; Hudson (1976, 1981, 1989) on Highland East Cushitic; Black (1974), Sasse (1974: 624–628), Heine (1979), and Dawit (2013) on Lowland East Cushitic; Sasse (1979), Arvanites (1991), and Tosco (1994) on East Cushitic as a whole; and Ehret (1980), Kießling (2002), and Kießling and Mous (2003) on the Rift group of South Cushitic. There exist, of course, also a number of cross-family studies. Zaborski in particular has provided important contributions (e. g., 1975, 1984 on

verbal conjugation, 1986b on nominal number marking, 1987a on numerals, and 1989a on independent pronouns). Unfortunately, these are difficult to use, not only for non-specialists, because they often do not provide (a transparent synopsis of) assumed proto-forms and/or are no longer up-to-date in terms of empirical data. Another cross-Cushitic contribution is Ehret's (1987) lexical reconstruction. Here, the circumstance of an incomplete and partly outdated database is compounded by the problems associated with the general approach of the author. To mention just one major issue referred to also in other contexts: the above list of studies on subgroup research contains seven works by other authors he could have consulted but only three are given in his reference list, and only Appleyard (1984) and Sasse (1979) are occasionally cited, albeit without any detailed engagement with their results. Given that at the time Ehret's (1980) Proto-South Cushitic had to be taken already with caution, his Proto-Cushitic lexicon is unlikely to be a reliable basis for modern historical research.

A substantial problem hampering the historical-comparative analysis of Cushitic languages is their multiple contact-induced links. These concern a) unrelated languages (cf. Greenberg [1963b] on a case of extreme convergence of the Cushitic Yaaku with Nilotic Maa); b) other members of Afroasiatic, especially in Ethiopia from Semitic (and potentially Omotic); and c) relatives within the family (cf. Sasse [1986] on the Sagan language area in southwestern Ethiopia). Convergence with other Afroasiatic languages may have covered up genuine genealogical signals.

Despite all such caveats, there is certainty about the membership of Cushitic in Afroasiatic. The strongest evidence here is of a morphological paradigmatic nature and has been documented in many different survey works (see a recent summary by Appleyard [2011]). Especially the diagnostic pronoun and conjugation paradigms of Cushitic suggest a strong retention of traits also found in such canonical Afroasiatic groups as Semitic, Berber, and Egyptian (cf. Zaborski 1975, 1989a, 2010; Appleyard 1986; Banti 1987; and section 2.7.2.1. above).



Map 21: Geographical location of Omotic (U46) and *Ongota* (U47)

U46 OMOTIC

The Omotic group as it is typically perceived comprises about 30 languages that are almost exclusively spoken in the southwest and west of Ethiopia (see Map 21) and are classified into four secure families. Recent Omotic surveys are Hayward (1995), Azeb (2012), and Theil (2012). Table 68 presents the four units and their variable terminology and subclassification.

Table 68: The history of subclassification of Omotic

Greenberg (1963a: 49)	**Bender (1987: 29)**	**Hayward (2004: 242)**	**Present name**
Ganza, Mao > section U40	O8 Mao	Mao	Mao
Western Cushitic	O1–6 no label	Ta-Ne	Ta-Ne
	O7 Dizoid	Dizoid	Maji
	O9 Aroid ~ South Omotic	South Omotic	Ari-Banna

As commonly acknowledged (see, e. g., Azeb 2012), the genealogical status of Omotic is problematic in a number of respects, and according to Bechhaus-Gerst's (2008) summary the controversial discourse is characterized by a considerable amount of "arbitrariness" irrespective of the particular position. This is the major reason for treating the group as an areal pool rather than a proven family. Its most reliable common denominator is still of an areal-typological nature in that the languages are robustly head-final, which aligns them with their Cushitic neighbors in the east in opposition to head-initial languages in the west, which are conventionally subsumed under Nilo-Saharan.

The first problem with Omotic relates to its status as a genuine genealogical unit. The current concept is relatively new, only taking full shape after the western subgroup of Cushitic was enlarged by Ari-Banna (Fleming and Lewis 1961, 1963; Greenberg 1963a) and Mao (Bender 1975b). Since then a number of studies have attempted to prove such a family, albeit with quite limited success. The more widely recognized deviant nature of Ari-Banna, which led Fleming to contrast it as "South Omotic" against all the "North Omotic" groups, tends to obscure the fact that, according to the currently available data, Mao also differs considerably from the core.

Especially Bender (1987, 1988, 1990a, 1990b, 1990c, 2000a, 2003) purports to provide extensive evidence in favor of such a family. However, his enterprise has not met basic requirements in terms of data presentation and methodological standards. The language material is mostly just presented, often in abstract tabular form, leaving it up to the reader to judge to what extent the elements are related to one another. If reconstructed forms are given, they are predominantly proposed with little or no supporting arguments and are apparently motivated just as much by a presupposed classification as by the compared data themselves. The absence of a detailed qualitative discussion of data and particularly of a rigorous subgroup-oriented reconstruction also applies to other Pan-Omotic studies (see, e. g., Fleming 1969b, 1974, 1976b; Zaborski 1988; Blažek 2008).

Nevertheless, not only the abovementioned word order profile but a number of other typological features *are* shared in some form across Omotic languages, as surveyed by Hayward (2004). For example, Wedekind (1985), Hayward (1988), Breeze (1988), and Aklilu (1994) describe extensive phonological similarities; and Hayward (1989) and Bender (1990b) compare the sex-based gender systems. However, the general picture is that isoglosses fall into one of two categories: either they are areal-typological in that they lack concrete and shared linguistic matter, or, when such material is present, then it is only found in incomplete and diverse language sets across the various features. The most prolific author trying to substantiate diagnostic morphological links across Omotic has been Hayward (e. g., 1984, 1989, 1998, 1998 [with Tsuge], 2009), dealing with such diverse domains as auxiliary verbs, verb inflection, gender, case, and person marking.

Table 69: Pronominal vowel canons in Gamo (Ta-Ne) and Aari (Ari-Banna) (after Hayward (1998: 107) in comparison with Proto-Ari-Banna pronouns

PN.G	**Gamo "perfect" endings**	**Aari "imperfect" endings**	**Aari pronouns**	**Proto-Ari-Banna pronouns**	
				Moges (2005b: 125)	**Fleming (1976b: 314–316)**
1S	*-d-**i**-s*	*-d-**i**-t*	*ʔ**i***	*ʔ**i***	*inta
1P	*-d-**o**-s*	*-d-**o̲**-t*	*w**o̲** (o̲)*	*w**o***	*wʌt
2S	*-d-**a**-s-(a)*	*-d-**a**-y*	***a̲a̲***	*h**a***	*ya
2P	*-d-**e**ta*	*-d-**e**-t*	***ye***	*y**ʌ***	*yɛs
3S.M	*-d-e-s*	*-d-e*	*ki (k-i)*	*ki	*no
3S.F	*-d-u-s*		*ko (k-o)*	*ko	*na
3P	*-d-a*	*-d-e-k*	*ke*	*kɛ	*kɛt

Note: G = gender; N = number; P = person

One example of such possible evidence is given in Table 69. It represents Hayward's (1998, 2009: 96–101) proposal of the existence of a shared vowel canon in the pronominal paradigms for speech-act participants in one pronoun set of Ari-Banna and in the "outer verb agreement" for subject cross-reference found in some languages, like Gamo, that belong to the North Ometo group of Ta-Ne. As promising as it looks, there are considerable problems with this hypothesis. For one thing, since the pronominal series in Ari-Banna is primarily relevant in *independent* paradigms, any similar canon elsewhere, such as in the Ometo verb suffixes, should ultimately have the same origin. However, an old Proto-Omotic independent set with such a vocalic pattern is hard to reconcile with data on other independent pronouns in Ta-Ne (and Maji), discussed below, that involve an entirely different canon based on thematic consonants. Its reconstruction is robust and, what is more, establishes the link to Afroasiatic. In other words, accepting one pronoun reconstruction seems to exclude the other, and thus one of two common hypotheses: "Pan-Omotic" and Afroasiatic membership. This general observation is compounded by more concrete problems, for example, that the relevant vowel canon in Gamo's "outer agreement" is not the only existing one, and that its assumed historical significance remains to be established convincingly for Proto-Ta-Ne.

That the evidence provided for a certain pattern is inconclusive as to whether it qualifies as a plausible reconstruction for an entire Omotic subgroup is not only a problem in this case but in fact for virtually all such features invoked for Proto-Omotic. Hayward (1995: 14) admits himself that despite the serious efforts to find convincing scenarios that can reconcile the morphologies of Omotic lan-

guages with each other (and/or to the rest of Afroasiatic), "the natural common sense of the [non-Omoticist] layman may well leave him skeptical". Today, given the enormously expanded database, an alternative procedure is possible: instead of lining up forms from individual languages guided by prefigured classificatory concepts, one could start out from robust intermediate proto-forms that are grounded in subgroup-internal data only and then compare these systematically. The lack of such a procedure and thus of more convincing results is the major reason that some authors deny the existence of the family (see Theil [2012] for the most recent critique and other references mentioned below).

A second issue, namely the status of Omotic within Afroasiatic, turns out to be just as controversial. Greenberg (1963a) had followed the Italian school in considering the Ta-Ne and Maji languages as West Cushitic, partly on account of morphological arguments. This picture changed radically with the proposal by Fleming (1969b, 1974, 1992, 1993 etc.) and Bender (1975a, etc.) according to which Omotic is a separate family and comprises also Ari-Banna and Mao. The fact that their opinion has become the current mainstream, however, does not imply agreement on the genealogical position of Omotic. For one thing, the earlier West Cushitic hypothesis has been defended vigorously by other specialists like Zaborski (1986a, 2004) and Lamberti (1991, 1993a, 1999); unfortunately, the discussion not always sharpened the focus but involved a good amount of polemic. But even the Omotic idea itself gave rise to yet other views besides the group simply being a sister to the other Afroasiatic branches. Bender's (1975a) proposal that Omotic and Cushitic form "Cushomotic" as a primary Afroasiatic branch looks like a compromise between the two principal positions. Finally, Ehret (1979) considers Omotic to be so distinct as to merit a phylogenetic status opposed to the entire rest of Afroasiatic.

Ehret's proposal leads to the third uncertainty about Omotic, namely its very membership in Afroasiatic, which was entertained since the earliest work on some of the languages and finally canonized in Greenberg's (1963a) framework. Skepticism regarding this view, or even outright rejection, is evident in several works, for example, Sasse (1974), Newman (1980), albeit without any justification, and most recently Theil (n.d., 2012). After his initial skepticism, Sasse (1981a: 145–146, 1981c: 148–152) did entertain morphological traits and a few lexical items (with potential sound correspondences) as a possible inheritance from Proto-Afroasiatic and accepted Omotic as a promising candidate for membership – a conclusion also reached by Hetzron (1988). However, the best evidence both authors report comes from Ta-Ne and Maji languages, in line with many later research results by Hayward. This picture directly relates to another variant of a partly Afroasiatic-critical position, namely Zaborski's (2004) view, echoing Moreno (1938, 1940) and Greenberg (1950a), that only these two families are members of Cushitic while Ari-Banna and Mao should be aligned with Nilo-Saharan – the latter being an obviously very vague proposal, given the current status of this concept.

Whatever the hypotheses about Omotic, they apparently suffer from one recurrent dogma, namely that there is some kind of virtue in not considering the possibility that (parts of) Omotic may currently not find a plausible genealogical affiliation. Thus, Hayward (1995: 11) sees even in the weak evidence for an Afroasiatic link a "relief not to have Omotic as an isolate". The ingrained aversion against "a whole family of 'Basques' on [one's] hands" even leads him (1995: 15–16) to ponder a creole origin of Omotic, quite reminiscent of the disourse revolving around similarly controversial cases like, for example, Songhay (U23): "Some early Afroasiatic variety … comes to be used in a radically simplified way as a pidgin. Subsequently creolization [toward early Omotic] occurs together with the disuse of the original language." Notice that this last-resort hypothesis needs two "original" language profiles – the Afroasiatic Pre-Omotic and another one that was its contact partner. The second is simply unknown under Hayward's assumptions, presumably extinct since long ago. One wonders, however, why (some) Omotic languages could not themselves be (part of) this Ethiopian substrate that caused so much change in the languages of such colonizing lineages as Cushitic, Semitic, Surmic, and Nilotic. This idea arises especially in view of the observation by Hayward (1995: 5–10) himself and many other scholars that Omotic peoples have a clear indigenous profile vis-à-vis most other groups. As long as the Afroasiatic affiliation is not proven for all four Omotic subgroups, either individually or as a convincing unitary family, it is still open season to reckon with genealogical independence, accompanied by the hypothesis that specific similarities with Cushitic and other languages are the result of substrate interference in an old contact area. Such a historical relationship could even hold *between* Omotic groups, somewhat in line with Zaborski's approach that some parts of Omotic go with Afroasiatic and some do not. At this stage each of the four Omotic units is best assessed first on its own merit. The following review of the group-specific information partly takes up the above controversies.

U46.A Ta-Ne

The Ta-Ne unit of Omotic is the largest in terms of member languages and geographical spread, comprising about 20 languages distributed across southwestern Ethiopia (see Map 21). It is also the Omotic subgroup with the overall best state of documentation.

Due to its size, the family displays considerable genealogical substructure with four branches, called here Ometo-C'ara, Gimira, Gonga, and Yemsa (a single language), but its unity is nevertheless obvious. It is recognizable in such lexical surveys as Bender (2003: 8–201) and Blažek (2008). Although the first study proposes lexical reconstruction for Ta-Ne and its constituent groups, the second is actually more transparent for a comparative inspection. Most of the canonical historical research only deals with the subgroups, including some sophisticated treat-

ments of diachronic typological change that explains the considerable morphosyntactic diversity of the modern languages. Historically relevant works with such a subgroup focus are, for example, Azeb (1994), Hayward (1984, 1998, 1999), and Girard (2002) on Ometo; Fleming (1976a, 1987), Lamberti (1992/93), and Tesfay and Wedekind (1994) on Gonga; and Rapold (2007) on Gimira.

Table 70: Thematic consonants in pronouns of Ta-Ne and Proto-Afroasiatic

P	N.G	Yemsa	Gonga	Gimira	Ometo-C'ara	Proto-Ta-Ne		Afroasiatic
1	S	*ta*	*ta(-)	*ta(na)	*ta(nV)	*ta(nV)	*T	*N
	P	*inno*	*no(-)	*nu(na)	*nu(nV)	*nu(nV)	*N	
2	S	*ne*	*ne(-)	*ne(na)	*ne(nV)	*ne(nV)	*N	*T
	P	*nitto*	*i(n)t(-)	*int(-)	*inte(nV)	*i(n)t(-)	*T	
3	S.M	*bár*	*bí	*(y)isi	*izV	*bV/*iS	*S	
	S.F	*bàr*	*bì	?	*izV	*bV/*iS	*S	*S
	P	*bassó*	*-bo-	*ic*	*usu/*V(C)tV	*bV/*VS	*S	

Note: G = gender; N = number; P = person

The best evidence for the Ta-Ne family as a whole is arguably still the feature that led to its original establishment Moreno (cf. 1940), namely diagnostic pronoun isoglosses. In Table 70 I present my approximate reconstructions of independent forms for the four constituent groups and their assumed common ancestor, derived from the available data in Blažek (2008: 77–78, 87–93) for speech-act participants and Bender (2000a: 77, 102) for third persons. Since Moreno, the forms for the first- and second-person singular have been of particular significance and inspired the family name, because they display a counterposed pair of thematic consonants *t:n* that is opposed to the *n:t* pattern in what then was, and partly still is, assumed to be their closest relative, namely Cushitic in the above sense.

The fact aside that pronouns, especially those for speech-act participants, indeed define it as a unit, the data in Table 70 allow one to make a major observation leading to the issue of the external genealogical link of Ta-Ne. The difference to one of the consonant canons of Proto-Afroasiatic, *n:t:S*, repeated in the rightmost column (cf. Table 66 above), is relatively small and can be captured in just two points. First, the reconstruction of an alveopalatal obstruent in the third person forms is possible but can only be backed up in the synchronic data by two of the four Ta-Ne subgroups. However, Hayward (2009: 92–96) outlines a plausible scenario according to which the sibilant forms are old and those in *b* innovative (see also Hirut 2007, Azeb 2012: 471–472). Second and more conspicuously, the Ta-Ne system becomes virtually identical to the Afroasiatic one as soon as the first- and second-person singular are interchanged. Most such observations have

been made previously, for example, by Sasse (1981c: 150), Diakonoff (1988: 91), Hetzron (1988: 109–113), Zaborski (1998: 71–73), Lamberti (1999), and Bender (2000a: 196–198). The data there also show that the required *n:t* singular pattern can actually be found in bound pronominals of some Ta-Ne languages, notably in Yemsa aka Janjero, and thus may be argued to have indeed existed in earlier stages of the family. Before the background of all these empirical details, the pronominal evidence does support the Afroasiatic hypothesis. The case made here is arguably stronger, because it is based on intermediate reconstructions within the family, independent of any presupposed higher-order lineage like Omotic, Cushitic, etc. It goes without saying, however, that the exact scenario of the major changes in Ta-Ne remain to be worked out, and the general hypothesis is far from being fully established and thus requires conclusive proof on a broader empirical basis.

U46.B Maji

A second, far smaller family subsumed under Omotic is Maji, also called Majoid or Dizoid. It consists of the three languages Dizi(n), Nayi (also Nao), and Sheko, which are all spoken around Maji town in southwestern Ethiopia between the Omo River and the national border with South Sudan (see Map 21). Sufficient linguistic sources now exist on all three languages, notably Allan (1976), Aklilu (2000), and Beachy (2005) on Dizin; Aklilu (1997) and Takele (2001) on Nayi; and Hellenthal's (2010) comprehensive grammar of Sheko.

Maji languages are very closely related, and Aklilu (2003) provides a reconstruction of the phonology and some lexical items of the proto-language, and derives regular sound correspondences. However, this canonical type of historical-comparative data is limited and has not yet informed the assessment of the position of Maji within Omotic and beyond.

One problem in this respect was the initial difficulty of separating Maji from the Gimira subgroup of Ta-Ne, which is immediately adjacent and shares with it a considerable amount of linguistic traits (cf., e. g., Wedekind [1985], Breeze [1988], and Aklilu [1994] on phonological affinities). Since such a close genealogical association has been rejected since Straube (1963), Maji's specific linguistic proximity to Gimira is more likely contact-induced. This does not affect the possibility of a relationship between Maji and Ta-Ne on a higher genealogical level. This idea emerges especially from the discussion on Omotic as a whole, because, as mentioned above, most of the diagnostic evidence for the larger group is in fact restricted to these two families.

Table 71: Thematic consonants in pronouns of Proto-Maji and Proto-Afroasiatic

P	N.G	Nayi	Sheko	S. Guraferda	Dizin	Proto-Maji		Afro-Asiatic
		Aklilu (2001: 8–10)	Hellenthal (2010: 187, 190)		Beachy (2005: 53)			
1	S	*na*	*na(ta)-*	*yin-*	*(yi)n-*	*-n-	*N	*N
	P	*ná*	*ńa(ta)-*	*yín-*	*(i)n´-*	*-n´-		
2	S	*jet-*	*ye(ta)-*	*yet-*	*(j)Et-*	*yet-	*T	*T
	P	*it-*	*ítí(-)*	*ítí(-)*	*it-*	*it(i)		
3	S.M	*is-*	*aS-*, *há-*	*ás-*, *á-*	*iz-*, *a-*	*is-	*S	*S
	S.F	*iʃ-*	*iʃ-*, *yí-*	*íʃ-*, *í-*	*iʒ-*, *i-*	*iʃ-		
	P	*ʔuʃ-*	*íʃì(-)*	*ínì(-)*	*iʃ-*	*iʃ-		

Note: G = gender; N = number; P = person

This observation is linked intimately to the assumed Afroasiatic membership and the issue can again be demonstrated by means of pronouns. Table 71 gives my approximate reconstruction of the Proto-Maji system, showing that its pattern of thematic consonants establishes a yet stronger link to the relevant Afroasiatic *n:t:S* canon in Table 66 than is the case for Ta-Ne. This result is in line with previous studies, already referred to above, which had pointed out some of these and other features, and strengthens Zaborski's (2004) position that Maji, together with Ta-Ne, is the most promising Omotic candidate to be a member of Afroasiatic.

U46.C Ari-Banna

The Ari-Banna family, also referred to in the literature by such terms as Bako, Aroid, and South Omotic, is located in southwestern Ethiopia right east of the lower course of the Omo River (see Map 21) and comprises the following members: Aari-Gayil, Hamar-Banna-Kara, and Dime. The current state of documentation does not yet cover the full dialectal diversity within the group but provides basic information on all three major units, among other things with various grammar sketches (Lydall 1976; Fleming 1990; Hayward 1990) and one fuller grammar of Dime (Mulugeta 2008). The internal coherence of the family is obvious and has been documented in such studies as Fleming (1988b), Bender (1991a, 1994a), Tsuge (1996, 1997) and Moges (2005b, 2015). Some of the studies provide substantial comparative data, for example, Tsuge (1996) with 240 lexical series across the family, but reconstructions are restricted so far to pronouns (cf. Table 69 above).

The external genealogical relation of Ari-Banna has been and still is disputed. One proposal has it that the family should be linked with Nilo-Saharan languages.

This was entertained as early as Cerulli (1942: 272), who then still referred to a rather vague concept of "Nilotic". Later authors like Haberland (1962), Zaborski (2004), and Moges (2015) reiterate this idea, whereby the last study focuses on a more concrete comparison with neighboring Surmic languages.

The other hypothesis is that Ari-Banna is related in some form to the geographically close Afroasiatic languages. Based primarily on lexical data (cf. Fleming and Lewis 1961, 1963), Greenberg (1963a) subsumed the group under West Cushitic, which Fleming (1969b) and many later authors reclassified as Omotic. Lamberti (1993b), who rejects this analysis, treats Ari-Banna as a sister branch to all other Cushitic subgroups including West Cushitic. The evidence for the various Afroasiatic links was never compelling in terms of lexicon (determined mostly by superficial lexicostatistics) nor grammar (cf., e. g., Lydall's [1988] discussion of the gender system in Hamar which is sex-based but nevertheless distinct from the Afroasiatic pattern). Hence, Ari-Banna assumed some sort of peripheral position right from the beginning, also motivating one of its alternative terms, "South Omotic" as opposed to the "North Omotic" remainder. Promising evidence proposed by Hayward (1998) and Hayward and Tsuge (1998) has been mentioned above but the persisting problem is nicely put in a nutshell by Hetzron's (1988: 115) assessment that "… it seems that South-Omotic [aka Ari-Banna] may gain [Afroasiatic] membership only by being shown to be related to North-Omotic".

The major problem is that all authors concede the possibility of strong contact interference in Ari-Banna from neighboring languages belonging to Surmic and Nilotic, from Nilo-Saharan, as well as from Ta-Ne, Maji, and Cushitic from Afroasiatic. However, they mostly fail to justify why an isogloss is interpreted in their hypotheses as a genealogical rather than an areal signal, and vice versa, to say nothing of justifying the plausibility of any borrowing hypothesis (cf., e. g., Bender's [e. g., 2000a: 199] claim that many pronominal proto-forms were borrowed from some Nilotic donor). Unless an alternative more canoncial approach is pursued, there can be no conclusive evaluation of the classificatory position of this areally deeply entrenched but possibly isolated family. In view of the above discussion on Ta-Ne and Maji, it seems to be significant that the only Ari-Banna reconstructions available, namely for pronouns (cf. Table 69), make the proto-language more dissimilar from both its purported Omotic relatives as well as Afroasiatic.

U46.D Mao

Less than a handful of endangered languages spoken on both sides of the southernmost border region of Ethiopia and Sudan (see Map 21) are subsumed today under the Mao family: Hozo, Seze (sometimes referred to together as Begi Mao), Màwés Aas'è (also earlier called Northern Mao or Bambassi-Diddesa), and Ganza (also

spoken in Sudan). Mao as a term has been highly problematic, not least because it is an autonym meaning 'person' in the Mao languages themselves. Especially the locally dominant Oromo use it for a network of historically related but linguistically heterogeneous indigenous peoples comprising not only the Mao proper but also peoples encountered further south and west, namely nearby Koman-speaking groups and the "Southern Mao," who used to speak the extinct Ta-Ne language Anfillo. James (1981: 28–29), Bender (1975b), Smidt (2007), and most recently Küspert (2015) give insightful information on the complex problem, the historical and linguistic underpinnings of which are still incompletely understood. Early ethnographic and linguistic works like Grottanelli (1940) and Reidhead (1947) on some of these groups and their languages did not clarify this problem sufficiently. Hence, it was only in the 1970s after more detailed linguistic survey work by Bender (cf. 1975b, 1975c, 1983b) that the separate status of narrow Mao was recognized and the family started to take its modern shape.

Especially in the recent past the general state of description has improved. There are grammatical studies like Baye (2006), M. Ahland (2012), and Getachew (2014), the second work, on Màwés Aas'è, being a first comprehensive description. Recent research, often in the context of sociolinguistic surveys, also provides some modern lexical data, notably Siebert, Siebert, and Wedekind (2002) on Màwés Aas'è; Siebert, Wedekind, and Wedekind (2002) on Hozo and Seze; Krell (2011) and Smolders (2015) on Ganza; and Küspert (2015) on all varieties but Màwés Aas'è.

Fleming (1988a) attempts to reconstruct the phonological proto-system but unfortunately fails to establish lexical proto-forms and, on this basis, the regular sound correspondences. The internal coherence of the family has thus not yet been shown systematically. It is in fact not obvious, as demonstrated by such lexicostatistic comparisons as Bender (1975b) and Jordan, Mohammed, and Davis (2011) as well as by Bender's (1975b: 130–132) and M. Ahland's (2012: 237–257) discussion of the unexpected diversity of pronouns across the member languages.

With respect to the external classification, Mao's status partly parallels that of Ari-Banna, not least because the comparison of the family with other lineages has never been based on real Proto-Mao forms. Greenberg (1963a: 131) subsumed what was then known of the family still under his Coman (= Koman + Baga~Gumuz) within Nilo-Saharan, partly due to the ambiguous ethnic term. Bender (1971: 205–208) acknowledged strong lexical links to other Omotic languages but still claimed without any further explanation that it "takes only a glance at the phonology and grammar to see that Northern Mao is a Nilosaharan language". Only later did Fleming (1976b: 311–313, 1984) and more decisively Bender (1975b, 1983b, 1985, 1990c) revert to the interpretation of the ambiguous lexical picture in viewing Mao as an Omotic group with a strong contact influence from Koman, although there is hardly any qualitative discussion of concrete data. Due to the lack of material in the past, Mao is hardly ever represented in the cross-Omotic gram-

matical comparisons mentioned above. The genealogical position of the family thus still awaits a systematic and hence more conclusive treatment.

U47 Ongota

The Ongota, also known by the exonym Birale, are a small group on the Woito River in southernmost Ethiopia (see Map 21). Since the language itself was recognized only in the second half of the 20th century (cf. Bender 1983b: 338–341; Fleming et al. 1992), Greenberg (1963a) did not consider it. The people are reported to have engaged in foraging and definitely have an ethnically marginalized status, surrounded by groups speaking languages belonging to Cushitic, Ari-Banna, and Ta-Ne. Ongota is moribund due to a language shift toward Ts'amakko of the Cushitic Dullay cluster (Savà 2003).

After the first survey research, the language has been subject to more systematic documentation, the main results of which are published in a grammar sketch by Savà and Tosco (2000) and a lexicon by Fleming (2002a). However, the fascination with the fact that Ongota has no obvious relative has led to the situation whereby the literature on its linguistic description is less extensive than that dealing with its history and classification. Thus, various studies have treated real and/or assumed contact influences in Ongota, for example, Savà (2002) on borrowed morphology from Ts'amakko and Cushitic in general, and Blažek (2005) on lexical loans from all three neighboring families. The result of Savà and Thubauville's (2010: 228) dedicated and linguistically stricter search for lexical affinities with neighboring languages is that in the corpus surveyed, 400 items are without a robust match, 200 are similar or identical to forms in the target of shift Ts'amakko, and 40 are akin to words in other local languages.

Table 72: Pronouns in Ongota (after Fleming et al. 1992: 195–196; Savà and Tosco 2000: 77) and Proto-Ari-Banna (after Moges 2005b: 125)

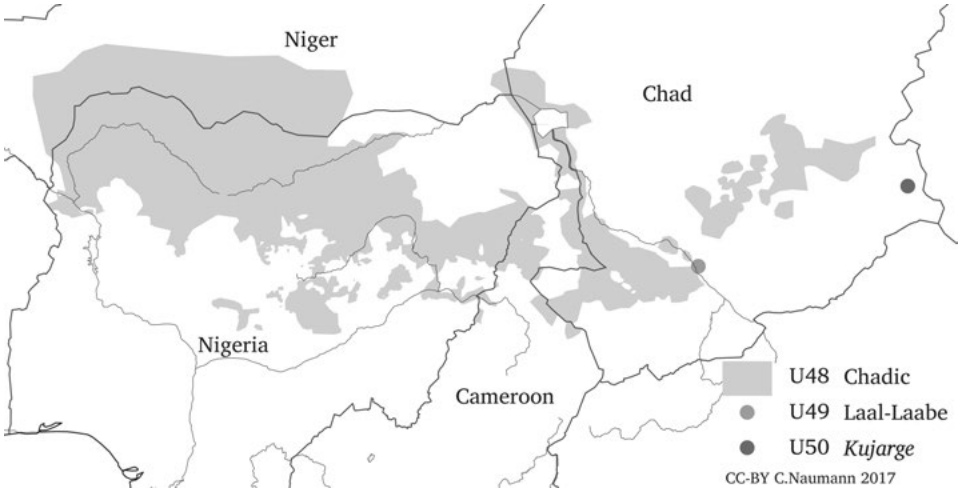
PN.G	Superessive	Possessor	Indirect object	"Default"	Proto-Ari-Banna
1S	*uku=ni*	*si-nni*	*naa*	*ka-*	*ʔ**i***
1P	*uku=šijja*	*si-jju*	***juu***	*ju-*	*w**o***
2S	*ugu=du*	*sii-du*	***jata***	*i-, jan-, jamV*	*h**a***
2P	*uku=gida*	*si-gida*	***gida***	*gida-*	*y**ʌ***
3S.F	*uku='u/wi*	*suu-'u*	*waata*	*ku-*	*ko
3S.M	*eke=na*	*see-na*	*waana*	*ki-*	*ki
3P	*uku=waya*	*su-waya*	***woya***	*ki'i-*	*kɛ

Note: **boldface** = only recorded in one of the two sources, PN.G = person number.gender

The complexity of the picture can be illustrated by one comparison between Ongota and Ari-Banna, which are geographically close but thought by all scholars except Ehret not to share a particularly intimate historical relationship. The two last columns of Table 72 show that all third-person pronouns in the default paradigm of Ongota, found as subject proclitics, in "emphatic" forms, and with most postpositions, are very close in both the consonant and the vowel canon to one pronominal series in Proto-Ari-Banna, as reconstructed by Moges (2005b). Thus, Blažek's (2007b: 3–4) comparison to disparate *k*-initial pronominals in far-off Nilo-Saharan languages turns out to be quite implausible. While the three items can be reconstructed as a coherent subparadigm in Ari-Banna, in Ongota they compete with other forms given in the first three columns of Table 72, which makes it plausible that the *k*-series is an innovation. Thus, unless one entertains simple coincidence, the most likely historical hypothesis is the borrowing of this set on the part of Ongota. The expected sociolinguistic situation would not contradict such a scenario, although we lack secure information on close contact between Ongota and an Ari-Banna language.

In addition to such evident contact signals, which, however, are not always easy to trace, there are other factors complicating the genealogical classification of Ongota, notably signs of language obsolescence and, compared to many other languages in the area, a lack of extensive morphology that could help in a robust historical comparison. According to Savà and Thubauville (2010: 227–228), what there is in terms of "Ongota morphology is fairly described, but does not show any evident relation with other languages in the area. Connections can be found after a deep comparative analysis. However, we do not have all the description of neighboring languages, while there is more availability of wordlists." The envisaged "deep comparative analysis" of morphology is still outstanding, though.

In view of the overall picture it comes as no surprise that there are quite divergent hypotheses on Ongota's genealogical status. Two opinions were only raised as personal communication, namely Ehret's view that Ongota is in fact a relative of Ari-Banna and Aklilu's hypothesis that it is a creole-like language. The conclusion of Bender's (1994c) "new" but unfortunately overly concise lexicostatistic test is that Ongota defies the establishment of any link. There are two more hypotheses that predominantly entertain lexical (and some pronominal) evidence. Blažek's (2005, 2007b, 2009b) evaluation ultimately leads to some poorly specified Nilo-Saharan affiliation, which is criticized by Savà and Tosco (2003, 2007a). Fleming's (2006) study sees in Ongota a separate branch of Afroasiatic, which is in turn rejected by Savà and Tosco (2007a, 2007b) and Blažek (2009b). Finally, the two scholars who most intensively studied the language tend toward the idea that Ongota is a simplified form of Dullay resulting from a history of heavy language contact (see Savà and Tosco [2000, 2003, 2007a, 2007b, 2015], Savà and Thubauville [2010], and Tosco [2010]), which is reminiscent of Aklilu's scenario (or Hayward's for Omotic). Tosco (2010: 22) writes: "If anything, on the basis of



Map 22: Geographical location of Chadic (U48), Laal-Laabe (U49), and *Kujarge* (U50)

a (admittedly simplistic) look at the available evidence, Ongota is certainly Afroasiatic, possibly an East Cushitic language. As to the ancestors of the present-day Ongota, they may well have spoken a (South?) Omotic [aka Ari-Banna] language."

In summary, half of the hypotheses align Ongota with Afroasiatic, albeit all in a different way; none of them, however, provide extensive and convincing empirical evidence. One wonders whether this association has partly to do with the fact that Ongota is surrounded by Cushitic and Omotic languages, as opposed, say, to Shabo (U25), another late discovery in Ethiopia, that happens to be an enclave in the territory of the Surmic language Majang and is usually dealt with under Nilo-Saharan.

All hypotheses on classifying Ongota fail to engage seriously with the fact that, according to the available information, it does possess a good amount of grammatical and lexical elements that are so far unique to it. In the same vain, its areally unusual typology can but need not (only) be the result of simplification in language contact but alternatively might be another sign of its uniqueness vis-à-vis other linguistic lineages in the vicinity. Thus, Ongota remains effectively unclassified, *pace* Sands (2009: 570), and even though this is entertained only grudgingly, there is the real possibility that it started out as an isolated language.

U48 Chadic

The Chadic family is a large and widespread group of close to 200 languages in central Africa directly south of the Sahara distributed over Niger, Nigeria, Cameroon, and Chad (see Map 22). Its language inventory is thus as big as that of

all other Afroasiatic groups together. However, with the exception of Hausa, the languages are typically only of local importance and are often not or only insufficiently described, with some even being endangered. Recent surveys of the family are Newman (2006), Frajzyngier and Shay (2012), and Jungraithmayr (2012).
Chadic as a family started to form around the demographically important and thus early-known Hausa language, particularly with Lukas's (1934, 1936a, 1936b: 344–346, 1937/38) linguistic work on the wider Lake Chad region. While this author still separated some neighboring languages from his "Chado-Hamitic", mostly on the typological argument of lacking a sex-based gender system, Greenberg (1950a: 50–55, 1963a) added them to the family and thus gave it its modern extension. P. Newman (1977a, 1978) established a subclassification into four subgroups, which is still the received wisdom (see in particular Shryock [1997] regarding the small Masa group, but Wolff [2001] for a different proposal). Newman's framework served as the background for extensive historical-comparative work on the level of subgroups and the family as a whole.

Older studies on lexical Proto-Chadic reconstruction like Newman and Ma (1966), Newman (1977a), and Jungraithmayr and Shimizu (1981) have been superseded in terms of the number of languages and lexical roots dealt with by Jungraithmayr and Ibriszimow's (1993, 1994, 1997) work. This has assembled multiple comparative series for almost 180 lemmata across the family. However, the data are still problematic when used in comparisons beyond Chadic: the reconstructions are often only abstract consonantal skeletons, they are not established transparently in a bottom-up procedure within a clear phylogenetic structure, and only a limited number of them involve the level of the proto-language. Moreover, the lexical research in general has been accompanied only partly by the study of phonological change in Chadic languages, although its synchronic and diachronic complexity is well known (cf., e. g., Newman 1977c; Wolff 1983; Jungraithmayr 1992/93).

There is also a considerable amount of literature regarding the comparison and reconstruction of Chadic morphology and syntax. Thus, Newman (1977b) deals with verbal extensions; Schuh (1983) and Wolff (1995) with the determiner system; Frajzyngier (1983, 1984, 1987b), Williams (1989), and Heusing (1995) with word order and grammatical relations; Frajzyngier (1987a) with relative clauses; and Newman (1990) and Wolff (1995, 2001) with plural marking on both nominal and verbal constituents. Unfortunately, hardly any domain has received such a depth of research as to produce a concrete set of morphological proto-forms that are based either on subgroup reconstructions or, given the size of the family, at least on a representative language sample. The few cross-family comparisons that involve comprehensive data unfortunately make do with generalizations on typological diversity and their dynamics instead of reconstructing a full proto-system (cf., e. g., Burquest [1986]; Dittemer, Ibriszimow, and Brunk [2004]; and Jungraithmayr [2006a] regarding pronouns). Last but not least, some domains that have

been subject to reconstruction remain controversial. A particularly notorious topic is the reconstruction of the verbal conjugation system (see, e. g., Jungraithmayr [1968, 1971b, 1977, 1983, 1987b, 2005, 2006b], Newman [1975, 1977d, 1984], Schuh [1976], Wolff [1977, 1979, 1982, 1984, 2001], and Voigt [1989]), where proposals differ in particular in the degree to which potentially inherited Afroasiatic patterns serve as a model for Proto-Chadic. Overall, the historical-comparative picture in Chadic is in a way the reverse of that in Cushitic, in that the traits assumed for the proto-language still need to be confirmed by tracing them through a plausible phylogenetic history to explain the actual distribution of their reflexes in the modern languages.

One major reason for the diversity within Chadic is that the languages have been subject to an enormous degree of contact both with unrelated languages and among themselves, including recurrent events of language shift (Newman 1969/70; Wolff 1975/76). External contact influences are diverse because of the large extension of Chadic and can be differentiated at least according to geography, time depth, and, related to this, its empirical foundation. Chadic in the northeast has been subject to the encroachment of such colonizing languages as Kanuri-Kanembu from Saharan and Arabic from Semitic (cf., e. g., Cyffer 2006a and Baldi 1999). In the (north)western sphere, contact primarily involves the expansive Hausa language on the part of Chadic and Tuareg (Berber) and eastern Songhay, although the last family is thought to also have had an earlier impact on Chadic (cf. Zima 1988, 1990, 1995; Kossmann 2005a). Within Mukarovsky's (1989, 1995) approach of far-flung lexical comparison, old historical connections of Chadic along the Sahel belt would even extend to Mande. The contact of Chadic along its entire southern flank has been treated most intensively. The relatively recent immigration of Fula aside, this sphere involves in particular contact with languages of the Niger-Congo pools Benue-Kwa (see, e. g., Hoffmann 1970; Wolff and Gerhardt 1977) and Adamawa (see, e. g., Jungraithmayr 1980; Kleinewillinghöfer 1990a; Jungraithmayr and Leger 1993) as well as of the Bongo-Bagirmi branch from Central Sudanic. It is the contact interference observed in this geographical zone that brought Jungraithmayr (e. g., 1978b, 1987a, 1989, 1995, 2012: 311–313) to develop a plausible historical model of heavy restructuring of Chadic languages toward the local profile of the Macro-Sudan belt, which can reconcile some of the most conspicuous differences to its assumed closest relatives of Afroasiatic.

This leads to the question of the external genealogical status of Chadic. Comparing "canonical" Afroasiatic languages with Hausa and some closer relatives has a long history starting already in the 19th century (cf. Lepsius 1880: XV–XVIII) and continuing later within the mould of the Hamitic theory (see, e. g., Meinhof 1912; Vycichl 1934; and Lukas 1936b). Greenberg (1950a) endorsed this hypothesis by replacing Hamitic with his innovative Afroasiatic framework, substantiating and extending it more systematically. A second decisive contribution in this direction is Newman (1980) who forcefully, if not even, according to Cohen

(1984), polemically, reiterates Greenberg's position. Newman basically extends the argument by two new pieces of evidence (1980: 18–22), namely that Chadic shares with other Afroasiatic lineages a specific profile of gender assignment (see section 2.7.2.2. above) and a similar root suppletion pattern between neutral and imperative forms of the verb 'to come'. Unfortunately, these data still remain only "extremely promising", because they have not been extended and conclusively shown to indeed qualify as individual-identifying (see Cohen [1984: 340–345] for a critical disucssion). Nevertheless, the Afroasiatic membership of the family as such is not in doubt today so that Chadicists have been more successful than scholars working on Omotic languages, in particular because they have managed to substantiate and enlarge the evidence put forward initially by Greenberg (see Wolff [2011] for the most recent survey) and to propose concrete diachronic scenarios that explain the disparities between modern Chadic and reconstructed Afroasiatic patterns.

U49 Laal-Laabe

Two remnant languages spoken in southern Chad on the Shari River (see Map 22) and without any obvious relatives were discovered only in the 1970s, so that they were not treated by Greenberg (1963a). They are Laal, described in several contributions by Boyeldieu (e. g., 1977, 1982a), and Laabe, which was then already moribund (cf. Boyeldieu 1977: 190). Laal is currently the focus of a full documentation project that also takes into account its wider linguistic environment.

Laal-Laabe could have been treated here with the same justification under the Niger-Kordofanian domain. This is because properties unique to Laal aside, the features it shares with other languages point to a similar extent to neighboring languages from both the Buaic family in the Adamawa pool of Niger-Kordofanian and the Chadic family of Afroasiatic, so that the language initially received the rare fame of a potentially mixed language (Boyeldieu 1982b). With the greater acceptance in African linguistics of the concept of isolate or at least unclassified languages, its unique assessment has changed toward this status, which has been proposed and justified in detail by Lionnet (2010).

U50 Kujarge

Kujarge is a language spoken by a predominantly foraging population of around 1,000 people who live in several villages near Jebel Mirra or are scattered among speakers of Fur and Sinyar in the Wadi Azum valley in Chad (see Map 22). The only data available were collected by Paul Doornbos (1981) after the appearance of Greenberg (1963a). They are partly published in Doornbos and Bender (1983: 76–78), merely comprising a 200-item word list and the sets of lower numerals and pronouns.

The authors of the published study recognize obvious resemblances of Kujarge to neighboring languages of the Mubi subgroup of East Chadic as well as a considerable amount of independent lexical stock, and conclude regarding its genealogical classification:

> All three ([Chadic languages] Mubi, Minjile, Kajakse) show only about one quarter in common with [the available] Kujarke [vocabulary] … Thus Kujarke remains an outsider. It may be a Chadic variety heavily influenced by other languages, or a non-Chadic language with influence from Chadic neighbors, or a hybrid. The latter possibility must be taken seriously, since such cases of despised local groups having unclassified languages are common in northern Africa … (Doornbos and Bender 1983: 76).

The most recent evaluation of Kujarge in term of a specific Chadic affiliation is Lovestrand (2013), who subjected the restricted lexical data to an automated similarity search with relevant languages using the WordSurv program. Again, Kujarge is the most deviant language in the overall comparison, and the words that were considered to be similar to Chadic items (Lovestrand 2013: 123–126) are not even all obviously related historically, let alone plausible cognates. Other authors (e. g., Blažek 2013; Blench 2013b) have entertained a more generic Afroasiatic affiliation on the basis of yet wider and thus more speculative lexical comparisons. However, it cannot be excluded that the concrete Chadic parallels are loans and the wider Afroasiatic look-alikes are chance resemblances (see also Hammarström 2010: 184). Currently, Kujarge is thus better viewed as unclassifiable. The documentation of non-lexical evidence, which is hopefully still possible, is the only promising strategy to clarify whether the language can be reliably related to any established family or whether it is an isolate.

2.7.4. Summary

The overall picture in the Afroasiatic domain is similar to that in Niger-Kordofanian and thus can be assessed in a parallel fashion. A set of diagnostic morphological traits has been established to define a concrete Afroasiatic proto-language that allows one to evaluate whether modern languages and lineages can be derived from it. On this basis one can identify the following robust member lineages: Semitic, Egyptian, Berber, Cushitic, and Chadic. With the caveat that a more extensive and systematic analysis is still outstanding, the two Omotic lineages Ta-Ne and Maji can be added to this list.

The considerable problems scholars have encountered with respect to a more refined subclassification of Afroasiatic have been addressed briefly in section 2.7.1. The limited discussion presented here does not provide any new information, except for possibly reiterating that it will remain difficult to identify diagnostic evidence without more in-depth group-level reconstructions.

Table 73: *n:t:S* pronoun paradigms across Afroasiatic

P	N.G	Ta-Ne	Maji	East Cushitic	Semitic	Afroasiatic
1	S	**ta(nV)*	*-n-	*'ani	*'anā(ku)	*N
	P	*nu(nV)	*-n´-	*nV	*naḫna/u	
2	S.F	**ne(nV)*	*yet-	*'ati	*'antī	*T
	S.M				*'anta	
	P.F	*i(n)t(-)	*it(i)	*'atin	*'antin(n)a	
	P.M				*'antumu	
3	S.F	*iS	*iʃ-	*'išii	*šī	*S
	P.F	*VS	*iʃ-	*'išoo	*šin(n)a	
	P.M				*šumu	
	S.M	*iS	*is-	*'usuu	*šū	

Note: G = gender; N = number; P = person

An illustration of the persisting historical ambiguity of data can be given with reference to the pronoun paradigm that displays the *n:t:S* consonant canon and supports the likely affiliation of two Omotic lineages to Afroasiatic. Table 73 summarizes the relevant data from the above Tables 66, 70, and 71. For Afroasiatic as a whole, the pattern seems to be restricted, according to the information available at present, to Semitic, Cushitic, Maji, and, assuming the change between first- and second-person singular (see the italic forms in the table), also Ta-Ne. There are two possible interpretatins of this synchronic picture. On the one hand, this family-in-

ternal distribution of the feature could reflect that it is an innovation on the part of the four lineages and thus serves as an argument for subgrouping, in this case arguably supported by their parallel geographical location in the eastern realm of Afroasiatic. On the other hand, the feature could have once existed in the family and then was later simply lost in the Chadic, Berber, and Egyptian branches. Both scenarios are equally possible, and thus this evidence does not allow any sound hypothesis but can only inform future paths of investigation.

For all the remaining lineages treated here under the Afroasiatic domain, namely Ari-Banna and Mao from the Omotic pool as well as the isolated languages Ongota, Kujarge, and Laal, the present genealogical evaluation looks different. That is, there is so far no convincing evidence, let alone proof, according to standard classification criteria that they are related genealogically to any other family, including Afroasiatic. In some cases, there is still insufficient relevant information on the lineage, notably Mao and Kujarge, so that any evaluation seems premature. In other cases, the adduced evidence can be interpreted in an alternative way and it appears that previous classification attempts seem to have been influenced by an apparent aversion in the discipline to allowing for genealogically isolated units – a dispreference so strong that even highly marked historical scenarios like mixed-language or creole origins have been preferred up to now. As with the three previous domains, Table 75 in section 2.9 gives a summary statement on the genealogical position of all nine basic classificatory units dealt with in this section.

2.8 Higher-order hypotheses beyond Greenberg

Greenberg (1963a) is, of course, not the only study with proposals on non-obvious genealogical relations among African languages. Some works arose out of dissatisfaction with some of Greenberg's hypotheses, while others even went beyond his four super-groups by advancing yet wider connections. What all these proposals have in common is that they have not gained any appreciable recogniton, let alone acceptance, among both the Africanist and general linguistic public. A few selected cases are dealt with here in order to give a more comprehensive picture of genealogical language classification in Africa.

Mukarovsky's research, in particular, envisaged quite a different situation in the Sahel region, entertaining the in principle plausible idea that some lineages ended up south of the Sahara through having been pushed there by desertification and population pressure from other groups. He even associates a former more northerly location of such families with the hypothesis that they might have genealogical links to Pre-Indo-European populations in Europe, notably Basque.

The entire framework started to unfold with Mukarovsky (1959, 1963, 1963/64, 1967), where an assumed web of lexical and structural affinities are explored that spans Fula (and some other "Senegalian" relatives in Atlantic), Berber, Cush-

itic, and Basque. The resulting proposal is that an extinct "Mauretanian" language, a supposed substrate of Fula, and Basque belong to an ancient lineage "Euro-Saharan", which in turn finds its closest relative in Berber. Mukarovsky (1965, 1966d) deals in particular with Mande and Songhay and joins them under "Western Sahelian" – a major subgroup of Euro-Saharan. On the basis of far-flung lexical similarity judgements and crude statistical techniques, Euro-Saharan is linked in Mukarovsky (1966b, 1966c) on a yet higher level to Afroasiatic aka "Hamito-Semitic" to form "Macro-Erythraic". In later works (1981, 1987b, 1987d, 1996) the author advances a considerable extension of Afroasiatic with lineages in the eastern half of northern Africa that are classified by Greenberg under Nilo-Saharan, namely, Saharan, Nara, Kunama, and Nubian. Mukarovsky (1983, 1987c, 1989, 1995) simultaneously renews his research on Senegalian, Mande, and Songhay in comparing them directly with Afroasiatic languages, which blurs his initial concept of a bipartite structure of Macro-Erythraic.

Many of Mukarovsky's ideas may be deemed unlikely if not "fantastic", his empirical data are largely ecclectic and unsystematic, and his entire framework lacks methodological rigor in that virtually everything is compared with everything, even allowing for an almost vacuous ultimate connection between his Macro-Erythraic and Niger-Congo (e. g., 1966c: 34). Nevertheless, it is worth looking at components of his argument in more detail, because this sheds some light on Greenberg's (1963a) widely accepted proposals. A first point relates to the groups specifically targeted by Mukarovsky's reclassification, because they involve various lineages, notably Mande, Songhay, and Saharan, that have a notoriously uncertain status in Greenberg's framework, partly to the extent that specialists rejected his relevant hypotheses. Thus, some of Mukarovsky's concerns are not unique to his idiosyncratic approach and hence require more engagement than, for example, Welmers's (1958: 9) laconic claim about the absence of substantial similarities between Mande and Songhay.

A second point regarding Mukarovsky's approach is that, irrespective of the validity of any of his genealogical hypotheses, the kind and quality of some data he provides for them are not obviously different from much of the evidence with which Greenberg supports his classification.

Table 74 displays parts of Mukarovsky's comparison between pronouns in Basque and various languages of the Mande family. Entirely independent of the adequacy of this exercise, the nature and degree of similarity across these data are not qualitatively distinct from, say, the pronominal isoglosses claimed by Greenberg (1950b) for East Sudanic (see Table 60). Mukarovsky's argument has never found wider recognition, and for good reasons, quite apart from the fact that access to his framework is more restricted by virtue of having been largely published in German. Greenberg's evidence for his long-range relationships has been accepted, however, and it is hard to answer why this is the case, unless one considers the different extralinguistic circumstances associated with the work of these two scholars.

Table 74: Pronoun comparison between Basque and selected Mande languages (after Mukarovsky 1965: 73–74)

	Basque	**Malinke**	**Susu**	**Kpelle**	**Maan**
1S	*ni*	*n(i)*	*ni*	*ŋo*	*n*
2S	*(h)i*	*i*	*i*	*i, e*	*(b)i*
3S	*(h)a-u*	*a*	*a*	*ɛ*	*a*
1P	*gu~ku*	*(a)n*	*muxu*	*ku~gu*	*ko*
2P	*zu~tzu*	*a-li*	*wo*	*ka*	*ka*
3P	*aie-, ei-*	*i*	*e*	–	*o*
3P	*-te*	–	–	*di*	–

Tucker (1967a, 1967b) also made proposals for genealogical relations that go beyond the obvious but differ from Greenberg's ideas. As opposed to Mukarovsky, Tucker's hypotheses concerned languages in eastern Africa, namely the Kuliak family and Hadza, but they similarly implied an extension of "Erythraic" aka Afroasiatic. This idea had even less impact than Mukarovsky's and was also not seriously upheld by Tucker himself. As mentioned above, Sasse (1981c) is a useful critical discussion of this attempt to enlarge Afroasiatic from both a concrete and general methodological perspective. His skepticism can be transferred to all other proposals to join such lineages as Songhay, Kunama, Saharan, Nara, Meroitic, and Nubian in one way or another to Afroasiatic, as mentioned just above and in the relevant lineage sections.

Gregersen (1972) initiated a different line of research, namely going even further than Greenberg's four-family framework by setting up a yet larger lineage "Kongo-Saharan", which comprises Niger-Kordofanian and Nilo-Saharan. The resulting tripartite classification of African languages looks even more similar to such early Pre-Greenbergian proposals like Adelung and Vater (1812), Müller (1877, 1888), and Westermann (1940). Since the evidence for its composite groups is already questionable or at least is not valid for all assumed subgroups, it comes as no surprise that Gregersen's argument, which consists in purported morpheme resemblances but predominantly lexical look-alikes, is empirically even weaker than Greenberg's. Gregersen (2000) even invokes an Afro-Dravidian lineage comprising Kongo-Saharan and the South Asian Dravidian family, which fully aligns his approach with "megalo-comparitivism" rather than mainstream historical linguistics.

The Kongo-Saharan hypothesis, however, did find support among some linguists with less hesitance about long-distance genealogical relations. Some concrete data assumed to support the idea are presented in Boyd (1978, 1996), Bender (1981b: 262–263; 1996c: 66, 119), Blench (1995, 2000a, 2007a), and Dimmendaal

(2001c). Williamson (1989b: 8–9) and Ehret (2000a: 236) at least commented favorably on the hypothesis. This list of scholars unites in fact all those who have been actively involved in the substantiation of the two already problematic composite groups.

The evidence for Kongo-Saharan consists of superficial lexical and grammatical comparisons and of typological similarities. Regarding the lexical data, Blench (2008) eventually had to acknowledge that some of the very abstract forms can be encountered so recurrently, even outside Africa, that they cannot be genealogically diagnostic unless one claims that "African language phyla really ARE all related" (2008: 190). Blasi et al.'s (2016) finding that some basic words have biased sound–meaning associations on a global scale adds yet another perspective on the old demand that superficial data trawling requires a far more sophisticated sifting of the material before it may serve as evidence for genealogical relationships. Blench (1995) simply integrates Niger-Kordofanian as a lower-order branch in a group that is called "Niger-Saharan" but in fact would merely be an enlarged version of Nilo-Saharan. This is because he argues for a special link between Niger-Kordofanian and Central Sudanic, referring especially to such quirky typological traits shared by the two units as ATR vowel harmony and labial-velar consonants. These similarities can be extended to a larger set of features but are interpreted alternatively as evidence for the Macro-Sudan belt – a non-genealogical convergence area (Güldemann 2003b, 2008d; Clements and Rialland 2008; cf. also Güldemann this volume, chapter 3.2). Dimmendaal (2001c) and Güldemann (2017) advance more concrete form–meaning similarities concerning the pronoun systems of the two units but even these are compatible with explanations other than shared inheritance. Overall, the Kongo-Saharan hypothesis has so far little evidence in its favor, and the wider Africanist public has not embraced it.

It can be noted that these realms of historical reconstruction fade inconceivably into the domain of mere speculations, and many more ideas on generally unexpected genealogical relationships of certain African languages could be cited. A complete list of such proposals is not provided here, though, because it is questionable that it still serves the purpose of historical linguistics, not least because the sparser the adduced data and the more vague the actual outline of such hypotheses become, the harder they are to falsify empirically. Just to mention one example, this holds for the idea about some genealogical relationship between "Khoisan" languages in the Kalahari Basin and the Bantu family, a notion that keeps turning up in the literature. Stopa (e. g., 1977) voiced this thought repeatedly in Greenberg's time, and Argyle (1997) entertained it again later. Most recently it has been invoked by Plessis (2009: 329), albeit vaguely and, strangely enough, without any reference to her predecessors:

> Although there is some evidence that might indeed be construed to suggest an actual link between the S[outhern] A[frican] K[hoisan] languages and the Bantu languages, this is plainly a controversial topic, and the point is not pressed here.

However strong her hedging, starting out from her unconvincing reconstruction of "Southern African Khoisan", the author keeps returning to this idea by trying to sketch a "model of click emergence" (2009: 331–342) and citing throughout her Table VI "Bantu-like affinities of some of the C(C)-initial forms" in Khoisan languages. She apparently would like to interpret both observations as part of a historical scenario whereby Bantu words without clicks were transformed by Khoisan speakers into words with clicks as the major innovation of these languages vis-à-vis Bantu. Given the genealogical position of the latter group, the logic of canonical historical linguistics would make "Southern African Khoisan" a low-level subgroup of Niger-Kordofanian, yet lower than Bantu itself.

2.9 Summary

In the sections 2.4–8 I have presented an exhaustive survey of the indigenous African languages in terms of their genealogical classification. This is summarized in Table 75, which presents a combined assessment of the entire continent encompassing the most widely known genealogical hypotheses evaluated in terms of the different types of linguistic evidence outlined in section 2.3.1 (see also the map at the end of this book for a geographical synthesis). The starting point is the basic classificatory units and, in the case of genealogical and areal pools, their subunits, as listed in the second table column.

A few remarks are in order on the Niger-Kordofanian domain, as treated in Table 75. First, the subgrouping reflects the approximate state of classification in Bendor-Samuel (1989) except for treating Benue-Kwa as a joined unit, Adamawa and Ubangi as separate ones, and adding a few other separate units like Dakoid, Pere, etc. Second, the assignment of type-D evidence (scattered resemblances in vocabulary and/or morphology) to genealogical pools does not mean that their membership in Niger-Congo is questioned but rather that they are not proven clades within this larger lineage. Finally, given the insufficient documentation and reconstruction of some subgroups of these pools and the lack of robust Niger-Congo proto-forms, it cannot yet be excluded that some pools still harbor individual units that are not even demonstrable members of the larger lineage.

I should reiterate that any genealogical classification for the entire continent depends on the personal benchmark individual readers have for going with a given hypothesis. This survey tries to enable linguists to comprehensively apply their own benchmark but, as mentioned in section 2.3.1, my evaluations of the types of evidence for individual genealogical hypotheses are likely to be looked upon critically – this by different scholars for different reasons. For those accustomed to rigid historical-comparative standards of, say, Indo-European studies, my assignment of As and Bs may well be judged as being too generous, while for those not insisting on these standards my questioning of genealogical proposals that have

Table 75: African language groups and evidence for genealogical relationships

No.	Classificatory unit	Internal	External		
01	Tuu	A, C	Tuu-Kx'a: D, F	South African Khoisan: D, F	Khoisan (domain): D, F
02	Kx'a	B			
03	Khoe-Kwadi	A, C	Khoe-Kwadi-Sandawe: D, F		
04	*Sandawe*	n.a.			
05	*Hadza*	n.a.			
06.A	BANTOID	D	BENUE-KWA: D	Niger-Congo: A, C	Niger-Kordofanian (domain): D
06.B	CROSS-RIVER	D			
06.C	KAINJI-PLATOID	D			
06.D	Igboid	C, E			
06.E	Idomoid	C, E			
06.F	Nupoid	C, E			
06.G	Edoid	A, B			
06.H	Akpes	C, E			
06.I	*Ukaan*	n.a.			
06.J	*Oko*	n.a.			
06.K	Owon-Arigidi	C, E			
06.L	Ayere-Ahan	C			
06.M	Yoruboid	B			
06.N	Gbe	B			
06.O	GHANA-TOGO M.	D			
06.P	Potou-Akanic	B			
06.Q	Ga-Dangme	B			
06.R	LAGOON	D			
06.S	*Ega*	n.a.			
07	DAKOID	D			

No.	Classificatory unit	Internal	External		
11.A	(CORE) ATLANTIC	D	ATLANTIC: D, F	Niger-Congo: A, C	Niger-Kordofanian (domain): D
11.B	Mel	A, B			
11.C	*Gola*	n.a.			
11.D	*Limba*	n.a.			
11.E	*Sua*	n.a.			
11.F	*Nalu*	n.a.			
11.G	Rio Nunez	C, E			
15.A	(Central) Gur	A, B	GUR: D, F		
15.B	Kulangoic	C			
15.C	*Miyobe*	n.a.			
15.D	Tiefo	C			
15.E	*Viemo*	n.a.			
15.F	Tusian	C			
15.G	Samuic	C			
15.H	Senufo	C, F			
16.A	Tula-Waja	C	ADAMAWA: D		
16.B	*Longuda*	n.a.			
16.C	Bena-Mboi	C			
16.D	Bikwin-Jen	C			
16.E	Samba-Duru	C			
16.F	Mumuyic	B			
16.G	Maya	C			
16.H	Kebi-Benue	C			
16.I	Kimic	C			
16.J	Buaic	A, C			
16.K	*Day*	n.a.			
16.L	*Baa~Kwa*	n.a.			
16.M	*Nyingwom~Kam*	n.a.			
16.N	*Fali*	n.a.			

No.	Classificatory unit	Internal	External		
17.A	Gbayaic	A, B	UBANGI: D	?	Niger-Kordofanian (domain): D
17.B	Zandic	C, E			
17.C	Mbaic	A, B			
17.D	Mundu-Baka	A, B			
17.E	Ngbandic	C, E			
17.F	Bandaic	C, E			
17.G	NDOGOIC	D			
09.A	(Narrow) Kru	A, C			
10	*Pere*	n.a.			
13	Dogon	C, E			
14	*Bangime*	n.a.			
18.A	Heibanic	A, B	KORDOFANIAN: D		
18.B	Talodic	A, B			
18.C	*Lafofa*	n.a.			
18.D	Rashadic	C			
19	Katlaic	C			
08	Ijoid	A, B			
09.B	*Siamou*	n.a.			
12	Mande	C, E			
20	Kadu	C, F			Nilo-Saharan (domain): D
21	Kuliak	B			
22	Central Sudanic	A, B			
23	Songhay	C			
24	*Kunama*	n.a.			
25	*Shabo*	n.a.			
26	Furan	C			
27	Saharan	A, C			
28	Maban	A, B			

No.	Classificatory unit	Internal	External		
29	Taman	A, B	Northern East Sudanic ~ "Wadi Howar": D, E, F	East Sudanic: D	Nilo-Saharan (domain): D
30	Nyimang	C			
31	*Nara*	n.a.			
32	*Meroitic*	n.a.			
33	Nubian	A, B			
34	Dajuic	A, B			
35	Temeinic	C			
36	Nilotic	A, B	Nilotic-Surmic: C, F		
37	Surmic	A, B			
38	Jebel	(C), F	Jebel-Berta: D, F		
39	*Berta*	C			
40	Koman	B	Koman-Baga: D, F		
41	Baga	C			
48	Chadic	A, B		Afroasiatic: A, C	Afroasiatic domain: D
42	Semitic	A, B			
43	*Egyptian*	n.a.			
44	Berber	A, B			
45	Cushitic	A, C			
46.A	Ta-Ne	B, C	OMOTIC: D, F		
46.B	Maji	B, C			
46.C	Ari-Banna	A, C			
46.D	Mao	C			
47	*Ongota*	n.a.			
49	Laal-Laabe	C			
50	*Kujarge*	n.a.			

Notes: GENEALOGICAL/AREAL POOL; *Single language (complex)*; n.a. = not applicable; A = Reconstructed morpheme paradigms; B = Regularly reconstructed lexicon; C = Strong resemblances of bona fide reconstructibility; D = Scattered resemblances; E = Lexicostatistic calculations; F = Structural similarities.

been accepted for decades as "proven," both within and outside African linguistics, may simply be met with incomprehension. For the second case, I have tried to lay out the reason in the previous sections, namely that for most of these non-obvious but commonly assumed genealogical relationships one looks in vain for any appreciable justification. So the present survey already achieves one of its aims if it convinces language specialists having a say on such issues to make their full evidence public and thus better assessable by interested historical linguists.

For my part, I strive to follow mainstream standards of the general discipline while drawing on a background of greater familiarity with the data compared to a non-Africanist. Bearing in mind my above caveat – that I may be too liberal in some cases – application of these principles puts the number of African lineages between 40 and 50, based on the evidence that is presently available. Concretely, when accepting Niger-Congo, Nilotic-Surmic and Afroasiatic, marked by gray shading in the table, the lineage number is 45 (when additionally accepting the promising family called here preliminarily Wadi Howar, the number would be 41). Although two large families, Niger-Congo and Afroasiatic, occupy more than two-thirds of the continent's territory and represent 80 % of its languages, Africa, according to the current state of knowledge, must be viewed as far more diverse than widely assumed – this not only in comparison to the four-family model of Greenberg (1963a) but also to such a later, more splitting-oriented proposal as Dimmendaal (2008b, 2011: 407–408), who most recently recognized 21 lineages, including seven isolates unknown to Greenberg. Both classificatory schemes display a degree of syntheticity that remains to be backed up by evidence according to traditional linguistic standards. They also repeatedly sidestep the explicitly adverse opinion of historically oriented lineage specialists. To take only Dimmendaal's far more moderate scheme, this concerns Saharan, Central Sudanic, Sandawe, and partly Omotic.

From a history-of-science perspective, the perpetuated reliance on premature synthetic genealogies goes back to a long-standing but misguided approach that sees some virtue in having a simple classificatory picture with few constituent groups. This entails an explicit or implicit aversion against small isolated units, which in Africa has even led repeatedly to entertaining a mixed or "creole" language origin for some classificatory units, notably for Songhay, Omotic, Ongota, and Laal as the most salient cases – a historical scenario invoked normally with reference to far more concrete linguistic and nonlinguistic information. In general, an approach striving by default for classificatory synthesis contradicts current generalizations about global linguistic distributions that in line with Nichols (1992) call for a principled model accomodating both homogeneity and diversity as facts of linguistic reality. This idea is certainly not a recent discovery. For the topic at issue, it was ironically expressed by Greenberg (1950d: 393–394) himself in connection with his first cross-African classification with 16 lineages, which he had to defend against the highly synthetic schemes current up to his work; the case could not be made better than in the following words:

> Some may consider the relatively large number of families, compared to previous analyses, an unwelcome result of the present investigation. The number is moderate when contrasted with the American Indian situation, or even that of Eurasia. That there should be sixteen language families in Africa is, I should think, not really surprising in view of the admitted antiquity of Africa as a place of human habitation. Previous investigations have shied away from admitting the existence of language families of small membership. No doubt large and equally balanced areas on a map and vast syntheses which include languages whose relationship cannot be demonstrated have a certain esthetic appeal, but I do not see that such considerations can play a part in scientific analysis. The results arrived at here for Africa are quite similar to those for North and South America and for Oceania in this respect, that vast areas are occupied by a small number of widely extended families while in other regions numbers of small isolated groups are found. The present results therefore tend to make Africa, in this respect, much more like other areas of the world than has previously appeared to be the case.

All the above is by no means to say that a picture with many independent families is in itself a virtue. The above survey should have made it clear that particularly in Africa, where canonical historical research has not yet been implemented across the board, it is still open season for further genealogical "consolidation". Some such candidate cases have been mentioned or even counted in above, notably additional members of Niger-Congo (among which Ubangi seems to be a rather likely one, *pace* Dimmendaal 2011), a geographically dispersed family à la Rilly (2005, 2009, 2010, 2016) in the wider Wadi Howar region, and the extension of Nilotic-Surmic by Temeinic and possibly even other small lineages.

In any case, the persistent uncritical use of Greenberg's (1963a) genealogical classification of African languages, many hypotheses of which were premature at the time and have until today not been substantiated by appropriate methodology, has been detrimental in several respects, which will be addressed in the following (see also Sands 2009 for a parallel discussion). In justifying his first, more conservative classificatory scheme, Greenberg (1949a: 83) himself said about the risks of such a practice:

> I feel that far greater harm is done by a premature acceptance of a possibility [of a genealogical link] than by a provisional rejection coupled with an allusion to its existence. This is particularly true in African languages where the primary evidence is not likely to be checked for long periods and where anyone who sets forth a general scheme assumes a greater burden of scientific responsibility than in areas where there is a more active scholarly interest.

These words predicted quite closely what in fact subsequently happened with his own highly fusional classification of 1963. And this development within African linguistics would indeed come to stand in stark contrast to all his lumping classifications in other areas of the globe. As he himself anticipated, these tend(ed) to recruit far more intensive scholarly engagement, so that his ideas there met with a scientifically sound and sustained opposition in the case of his Amerind and Eur-

asiatic hypotheses, and even widespread disregard in the case of his Indo-Pacific hypothesis.

One problem with accepting the classification concerns typological sampling. Obviously, the fewer the number of assumed lineages in an area, the greater the tendency to make do with a small sample, irrespective of the real diversity. Both cross-linguistic and continental sampling requires a genealogical (and areal) balance, but this is hard to come by in Africa with Greenberg's four-family model. The real problem of systematic language sampling in Africa is reflected, for example, by Creissels et al. (2008: 86):

> We do not proceed by systematically testing the features we consider on the basis of a language sample pre-established on the basis of statistical methods that would ensure its representativity. … the set of African languages documented in a sufficient way to be systematically used in such a study is so limited that it is simply impossible to extract from it a sample representative of the diversity of African languages.

The quote provides a neat transition to a second detrimental effect of the premature synthetic classification for Africa: a hindrance to developing a science-based strategy for prioritizing language documentation. That is, the multitude of still un- or underdocumented African languages and the restricted resources in this domain necessitate some amount of prioritization, among other things, according to genealogical considerations. An adequate picture of genealogical relations on the continent that informs an appropriate documentation strategy is crucial for developing "a sample representative of the diversity of African languages". One may even wonder in this connection whether the four-family model contributed to the currently low general state of description in Africa. For example, considering the enormous efforts of the last decades to document the world's dwindling linguistic heritage, Africa has received comparatively low levels of attention. Is it possible that this sparse coverage has been partly justified, if implicitly, by a misguided outsider perception that the amount of genealogical, and by possible implication, structural, diversity on the continent is so much lower than that in other areas of the globe, like the Americas and New Guinea?

If the assessment in Table 75 is even only partly correct, the picture about languages and language groups that are documentation priorities for typological and historical reasons changes dramatically. Hammarström (2010), who follows a similar approach to genealogical classification as the present survey, only lists one African case, Kujarge (U50), among his global list of "least documented language families" (or better lineages, which includes isolates), because he only counts cases with no more than a wordlist for any of its languages. He mentions a few more borderline cases like Bangime (U14), Lafofa (U18.C), Shabo (U25), Taman (U29), Dajuic (U34), Temeinic (U35), Jebel (U38), and Mao (U46.D) as well as Kresh (U22.C) and Birri (U22.E), both assumed here to be first-order members of Central Sudanic; only five of these ten units have in the meantime become better

known through at least one longer grammatical description. If adding a few more potential isolates and changing Hammarström's criteria for "least documented" toward requiring a *comprehensive* and *modern* description, the number of units known or at least assumed to have a language still spoken and are in need of documentation increases further, notably by Hadza (U5), Ijoid (U8), Siamou (U9.B), Pere (U10), Rashadic (U18.D), Kunama (U24), Nyimang (U30), Nara (U31), Berta (U39), and Ongota (U47). This picture brings Africa closer to such high-priority areas as South America, which quite justifiably has seen an above-average share of the past efforts toward worldwide language documentation.

A third undesirable result of Greenberg's and similar synthetic classification models observed by Güldemann (2008d, 2010; see also chapter 3.2 this volume) is a bias in the research on language contact in Africa, namely toward cases going *across* the four Greenberg domains. That is, at least in the early period, there was a lack of attention to language contact between languages within the four major groups, some of which may involve lineages that are in fact unrelated (cf. the areal Kalahari-Basin hypothesis proposed instead of Greenberg's South African Khoisan family).

Last but not least the reliance on Greenberg-like genealogical language classifications in Africa has had and still has important negative repercussions outside linguistics, especially in the disciplines concerned with human history like archaeology, genetics, etc. Flight (1981: 52) once wrote: "From a different point of view – for historians and prehistorians – the significance of Greenberg's classification is no less obvious. The historical implications are immediate. A genetic classification of African languages is an outline plan for African history." It comes as no surprise that broad strokes of early African population history, for example, by Heine (1979), MacDonald (1998), Ehret (1998, 2002), Blench (1999b, 2006a), etc. rely to a considerable extent on Greenberg's classification, arguably misguiding basic assumptions about the history of Africa and its peoples. An inspection of the literature makes clear that such a perception of Africa is even influential on the global level. To mention just an extreme example, Manning (2006: 139–141) speculates about the origin of most tropical language families in the Old World by practically deriving them from the equivocal Nilo-Saharan grouping in Africa.

The problem is not only that non-linguists are attracted by the family-tree model as such, as observed by Dixon (1997: 43): "Archaeologists, geneticists and anthropologists like to be given a clear-cut linguistic hypothesis, about where and when a proto-language was spoken and exactly how it split and spread. They happily accept any family tree that is produced, without stopping to ask whether it is soundly based, and whether it is accepted by the majority of linguists." In addition, non-linguistics appear to prefer simple phylogenetic models, which obviously makes them favor classificatory schemes like that of Greenberg. It cannot be overstated that they are well advised to strive for a better understanding of the linguistic debates in order to be able to judge which hypotheses are robust according

to widely accepted linguistic standards and which hypotheses do not yet meet such criteria and hence may well turn out to be wrong. A good understanding of such differences can often already be achieved by simply inspecting the publication outlet where a certain proposal was/is made.

Looking back at the history of the genealogical classification of African languages after Greenberg (1963a), it should be clear that the crucial problem in the discipline is not the existence of far-ranging hypotheses as such but rather the failure of the scientific community to bother replicating them within a methodologically accepted framework. That it was not the insufficient state of knowledge but rather the failure to put it into practice becomes clear from an early statement by Welmers (1973: 19), calling before the background of Greenberg's maximal scheme for a subsequent bottom-up approach: "It is time to expand our efforts to work out comparative studies of the most obviously closely-related groups of languages, then to compare group with group, and thus work from the bottom to the top of genetic phyla with more detailed evidence and more thorough investigation." Unfortunately, this has hardly happened, particularly on the level of higher-order genealogical relationships. Instead, African linguistics on the continental level has been stagnating in a long phase of methodologically crude and too much lexical surveying. This to such an extent that outside observers like Dixon (1997) and Campbell and Poser (2008) have come to even question the existence of the Niger-Congo family whose genealogical validity is more than graspable, provided one looks at the full range of relevant publications and not just at the evidence presented by Greenberg's (1963a) necessarily brief overview.

Both African and globally oriented linguistics need a genealogical classification for the continent that is ambitious but at the same time conforms to the relevant research standards, which are safeguarded first and foremost by regular peer assessment. To this end, hypotheses have to be coherent within the relevant historical model and should be scaled to the amount of evidence presented, and the empirical data need to be complete, transparent, and recoverable from the relevant sources in order to make proposals verifiable. Under these conditions the apparent contradition between African and general historical linguistics is bound to vanish.

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3. Language contact and areal linguistics in Africa

Tom Güldemann and n. n.

Introduction

Tom Güldemann

Language contact has become an ever more attractive research topic in African linguistics and it is addressed today from a multiplicity of methodological perspectives (see Childs [2010a] for a recent review). The research started out with and continues to highlight the "macro-perspective" of language contact, which is often roped in for explaining isoglosses between different languages, in oppositon to genealogical inheritance, and the possible geographical results of such linguistic interaction (cf., e. g., Greenberg 1959, 1983; Heine 1975; Heine and Kuteva 2001; Dimmendaal 2001a). However, the social turn in language contact studies is now also felt strongly in African linguistics so that "macro-level" research has been supplemented by the equally important study of "micro-level" phenomena (cf. as an example the social network approach applied in Schreiber [2009, 2014], Beyer [2010, 2014], and Beyer and Schreiber [2013] to an area of Mande-Gur contact in the Burkina Faso–Mali border region). Accordingly, scholars are now aware of the necessity to integrate the different perspectives and levels of contact research into a "holistic" research program (cf. Lüpke 2010) that will combine the newest methods of structurally, socially, and historically oriented linguistics.

Table 1: Scalar levels in the analysis of linguistic contact (Muysken 2007, 2008: 5)

Level	Space	Time	Sources	Disciplines	Scenarios
Person	Bilingual individual	0–50 years	Recordings, tests, and experiments	Psycho-linguistics	Brain connectivity
Micro	Bilingual community	20–200 years	Recordings and fieldwork observations	Socio- and anthropological linguistics	Specific contact scenarios
Meso	Geographical region	Generally 200–1000 years	Comparative data; historical sources	Historical linguistics	Global contact scenarios
Macro	Larger areas of the world	Deep time	Typological, genetic, archeological data	Areal typology	Vague or no contact scenarios

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Muysken (2007, 2008: 5) has proposed a general scheme in which language contact and its outcome should be studied on different levels of data aggregation and analysis, each level highlighting different aspects of this complex phenomenon, involving diverse types of data, and accordingly requiring its specific methodological tools, as shown in Table 1.

This useful framework has also been adopted for this chapter. That is, the following discussion is roughly organized according to the scale of analytical levels and abstraction given in Table 1. While chapter 3.1 deals with the two lower levels, aiming at a typology of representative African contact situations and of the contact languages as their linguistic outcomes, chapter 3.2 treats the meso- and macro-level with a focus on the geography of different types of linguistic distributions within and beyond Africa, which are often due to language contact but importantly must not be reduced to it, as indicated in the chapter's title and to be discussed below.

3.1. Contact and contact languages

The Article that was to appear in this section has been omitted.

3.2. Areal linguistics beyond contact, and linguistic areas in Afrabia[1]

Tom Güldemann

3.2.1. A different approach to areal linguistics

As a review of such works as Campbell (1985, 2006), Muysken (2000, 2008), Thomason (2001: 99), Dahl (2001), Stolz (2002, 2006), Bisang (2006a, 2006b), Tosco (2008), Bickel and Nichols (2012), and Muysken et al. (2015) shows, areal linguistics has been predominantly concerned with, if not even reduced to, the identification and analysis of linguistic areas of a particular type. This is because the concept of "linguistic area" formed in connection with research on language contact, which in turn developed in response to the predominance of the language-tree model in historical linguistics. This particular context caused a tendency for *areal* linguistics, *areal* typology and the like to be alienated from the science of geography, as noted, for example, by Dahl's (2001) insightful discussion (cf. Britain [2013] on a similar but overcome trend to dismiss the importance of geographical space in dialectology). An extreme position in this direction is Campbell's (2006: 14, 16, 21) partial answer to the general question of whether geography or areality is required in areal linguistics:

> … structural borrowing deserve[s] attention first and foremost, and … linguistic areas are after-the-fact constructs based on the residue and accumulation of borrowed traits, regardless of how and when they came to be shared among the languages involved … There is no geographical determinism; the linguistic borrowings are prime, and the geographical areas are only a reflection of these, with no significant causal force of their own.
>
> … areal linguistics is not distinct from borrowing/diffusion in general; and … the concept 'linguistic area' is not significant in itself …

This virtual abandonment of areal linguistics as such and the call to deal only with language contact is certainly embedded in a recently more widespread approach to the concept of linguistic area that is overall rather pessimistic and deconstructing, as evident in a number of works cited above. The position taken here (re)affirms that areal linguistics and language-contact research are not one and the same enterprise but are, if recurrently related, in principle orthogonal to each other and thus can and should be studied independently. The adverse approach suffers from a lack

[1] I would like to thank Christfried Naumann for drawing Map 1, Heather Weston for her careful proofreading, and Harald Hammarström for his comments on a first draft of this article.

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of a methodological distinction between on the one hand the considerable challenge of identifying non-trivial empirical facts in the real world and on the other hand their interpretation, for example, in terms of historical causes.

Rather than continuing the "critique of the notion of Sprachbund" (cf. Dahl 2001: 1457–1458), I propose here a general revision of the narrow, in fact reductionist, concept of "areal linguistics" that is biased toward language contact and its possible correlation with geographical entities. That is, areal linguistics in a more literal sense should be concerned more generally with the distribution of linguistic – or even more broadly, language-related –features across geographical space, and this interest should be independent of historical or any other explanations. The identification of non-trivial distribution patterns is a scientific challenge in its own right and testing them for statistical significance becomes more complex the larger the geographical scale. In this neutral approach, non-trivial patterning not only holds for traditional linguistic areas defined by geographically "compact", partly contact-induced likeness but for a wide range of recurring kinds of distributions, for example, universal linguistic features reflecting complete homogeneity of the human geographical space, the random but more even spread of a linguistic feature, and, in line with Nichols (1992), the patterned geographical change between diversity and homogeneity of different sorts.

The study and explanation of geographically biased homogeneity in the form of "compact" areal entities is thus only a subcase of areal linguistics, however important in the history of our discipline. Moreover, in terms of the taxonomy of regions in the geographical sciences (see, e. g., Montello 2003: 177) such linguistic areas are in the first place "thematic regions" by virtue of "the measurement and mapping of one or more observable content variables or themes" rather than "functional regions […] formed by patterns of interaction among separate locations on the earth," despite our conventional linguistic perception (see also the discussion of African macro-areas in section 3.2). Their possible interpretation in terms of functional regions must be a separate analytical step that can be conceptualized as a kind of discovery procedure within historical linguistics according to the general hypotheses for shared features between languages, as already discussed in Güldemann (this volume, chapter 2) and repeated here for convenience in Figure 1.

Looking at the range of differen scenarios in Figure 1, linguistically homogeneous areas, too, may have various causes. That is, besides contact they can also be primarily due to inheritance and are then akin to what Nichols (1992) has called spread zones. In other words, the term "linguistic area" in the traditional narrow sense refers to a quite specific entity of areal linguistics, namely the historically diagnostic distribution of linguistic features according to a "compact" areal unit that is insufficiently explained by the other major cause of linguistic isoglosses – genealogical inheritance. (In line with Dahl [2001] this does not exclude the possible relevance of genealogically mediated diffusion but rather means that the involvement of contact-mediated feature transfer is crucial for the distribu-

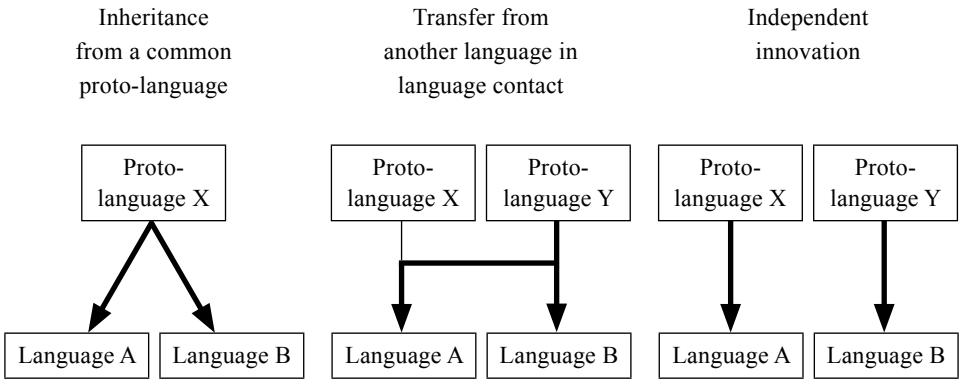


Figure 1: Three major scenarios that lead to shared linguistic features among languages

tion encountered.) This narrow concept, however difficult to define and to establish, is referred to henceforth with the less ambiguous term (linguistic) "contact area".

The present approach implies that there is language contact without areality and linguistic areality without contact. For the first case, one only needs to refer to one of the early but crucial works on linguistic contact areas in the narrow sense, Trubetzkoy (1928) with its concept of "Sprachbund", or language union, where the very term implies that groups of languages related by contact need not be reduced to compact *areal* sets. A good example is Dahl's (2013) study on the global distribution of words for 'tea'; it identifies three sets of languages, two of which crucially concern language contact but hardly contact *areas*. Conversely, and importantly in the context of this chapter, there are geographically clustered linguistic configurations or, in other words, linguistically characterized areal units showing non-random patterns that merit analysis but where linguistic convergence plays no or only a secondary role. One such case has already been mentioned, namely spread zones that are primarily genealogically induced. Another important and well-known phenomenon is the systematically different geographical distribution of linguistic diversity in terms of lineages and languages. Areally clustered genealogical heterogeneity is partly captured by Nichols's (1992, 1997) concept of residual or accretion zone, as opposed to spread zone. Studies like Nettle (1998, 1999) and Collard and Foley (2002) have demonstrated an important areal pattern regarding differential language density on a global scale.

The following sections deal with all of these different types of areal linguistic entities in Africa. A brief look at the continent's linguistic ecology regarding the areal distribution of increased heterogeneity as opposed to homogeneity is presented in section 3.2. The following two sections deal with Muysken's meso- and macro-levels in the analysis of linguistic contact presented in Table 1 of the

introduction of chapter 3. Section 3.2 treats the scale of traditional contact areas without, however, being able to identify a fixed set of geographically defined Sprachbunds, and section 3.2 targets the macro-areal profile of the entire continent. In doing so, this latter section not only deals with signatures of language contact on a larger, more abstract scale but also integrates this with other phenomena like geographically extensive spread zones and hotspots of linguistic diversity in Africa. Finally, section 3.2 addresses the status of Africa as an entity of areal linguistics on a global scale.

3.2.2. Linguistic heterogeneity vs. homogeneity in Africa

The last point of section 3.2 concerning the differential distribution of linguistic heterogeneity vs. homogeneity is fully corroborated on the African continent. The increased diversity close to the equator observed by Nettle (1998, 1999) and Collard and Foley (2002) on a global scale has been known for a long time in Africa, called by Dalby (1977) the "fragmentation belt" (cf. also Nettle's [1996] more recent account of West Africa), and has been shown to correlate with other non-linguistic feature distributions (cf., e. g., Moore et al. [2002] on the parallel between language and vertebrate species richness in Africa).

Stark differences in linguistic diversity also exist on a smaller continental scale. In the following, I attempt to give a first survey of such smaller hotspots of linguistic diversity in Africa, to be discerned according to common practice by the two parameters of elevated lineage diversity and high language density – two factors that can but need not correlate. As to be seen below, not unexpectedly such locations are marked recurrently by geographical landmarks.

Genealogically diverse accretion zones typically display a number of different lineages at least some of which occur exclusively in the respective area. I have ascertained such zones according to my genealogical assessment of Güldemann (this volume, chapter 2). This recognizes approximately 40–45 distinct lineages that arise from a summary evaluation of 50 basic classificatory units and the subunits of two geographical pools, namely five for Kordofanian and four for Omotic. Table 1 lists four accretion zones from the southeast towards the northwest: the southern end of the Eastern or Gregory Rift Valley in north-central Tanzania, the Ethiopian Escarpment along the Ethiopia–Sudan border, the Nuba Mountains in the south of Sudan, and the Dogon Plateau and associated escarpment in the south of Mali. The highest lineage diversity in Africa seems to exist in the Ethiopian Escarpment zone, which even exceeds that of the well-known "Caucasus of Africa", the Nuba Mountains; it could be yet higher, if taking into account some unclassified languages listed by Güldemann (this volume, chapter 2, section 2.3.3).

The four accretion zones outlined in Table 1 only cover a very minor part of Africa's surface but host a surprisingly large portion of the genealogical diver-

Table 1: Four African accretion zones

No.	**1**	**2**	**3**	**4**
Name	**Southern Gregory Rift**	**Ethiopian Escarpment**	**Nuba Mountains**	**Dogon Plateau**
Geographical description	Tanzanian Rift Valley area from the blind drainage zone of the Eyasi and Manyara Lakes southwards	transition area between the Ethiopian Plateau and the lowlands from Eritrea to the northern edge of Lake Turkana	mountainous area in the South Kordofan province of Sudan	mountainous area in southern Mali
Selected sources	Obst (1915); Kießling, Mous, and Nurse (2008)	Bryan (1945), Grottanelli (1948, 1966)	Stevenson (1956–57), Thelwall and Schadeberg (1983), Schadeberg and Blench (2013)	Mayor et al. (2005)
Autochthonous independent classificatory units	*Hadza*, *Sandawe*	*Nara**, *Kunama*, Baga, Jebel, *Berta*, Koman, Mao, *Shabo*, Ari-Banna, *Ongota*	Heibanic, Talodic, *Lafofa*, Rashadic, Katlaic, Kadu, Nyimang*, Temeinic	Dogon, *Bangime*
	2	10	8	2
Other classificatory units	Cushitic, BENUE-KWA (Bantu), Nilotic	Maji, Ta-Ne, Cushitic, Semitic; Nilotic, Surmic	Nubian*, Dajuic, Semitic (*Arabic*)	ATLANTIC (*Fula*), Mande, Songhay, Berber
	3	6	3	4
Unit total	5	16	11 (10)	6

Notes: *Single language*; GENEALOGICAL POOL of Niger-Congo; * = candidate member of promising Wadi Howar family

sity of this continent, irrespective of the kind of genealogical language classification. Under the more conservative approach assumed in Güldemann (this volume, chapter 2), they comprise far more than half of the basic classificatory units recognized there, namely 35 of 50, many of which are autochthonous, isolates and/or endangered. This overall picture remains the same when counting with the larger families Niger-Congo, Afroasiatic, Nilotic-Surmic, and possibly Wadi Howar, in that the four zones then harbor 29 of 45 independent lineages or, when accepting Wadi Howar, 27 of 41. The state of documentation and degree of endangerment of these lineages as mentioned in that chapter make clear that in particular the Nuba Mountains and the Ethiopian Escarpment are the most important areas in Africa in urgent need of intensified language documentation and description.

Cases of genealogical diversity in Africa also exist elsewhere in an attenuated form. There are, for example, areas where several language families abut on each other in an otherwise more homogeneous larger region. An example is the Central Kalahari, which hosts languages from all four relevant lineages: Kx'a, Tuu, Khoe-Kwadi and Bantu. Other locations display enormous diversity on lower genealogical levels. Such a case exists along the South Sudan–Central African Republic border region that traces the Congo-Nile watershed (cf. Tucker 1931; Santandrea 1964, 1981). Mostly on South Sudan territory, this zone hosts numerous immigrant languages of lineages that are normally spoken outside the area, namely Nilotic, Dajuic, Bandaic, and Zandic, but more importantly also several isolated autochthonous lineages of both the Central Sudanic family (Kresh, Aja, Birri) and the Ubangi pool of Niger-Congo (commonly subsumed under Ndogoic but possibly not forming a true family). There are also striking examples in Africa of linguistic diversity in terms of language density without stark genealogical diversity that is remarkable on a continental scale, for example, the Jos Plateau in Nigeria (cf. Ballard 1971; Shimizu 1975; Blench 2011; Longtau 2012) and the Grassfields in Cameroon (cf. Warnier 1978, 1980, 2012; Good 2013; Di Carlo and Good 2014). A more systematic inventory of the opposite cases, namely zones of widespread linguistic homogeneity reflecting spread zones, is also desirable (see section 3.2.3 and section 3.2.4 for some examples).

All these different areal patterns are research objects in their own right, irrespective of whether they correlate with contact-induced distributions of linguistic features. Important questions are, for example, what the internal dynamic of small zones of elevated diversity is and how these zones behave within their larger areal context. There appear to exist major differences between accretion zones that otherwise look superficially comparable. Thus, the Nuba Mountains are argued by Dimmendaal (2015) to be a zone without obvious areal features, while the Jos Plateau gives extensive evidence for more widely distributed linguistic traits and contact-induced interference (cf. section 3.2.3.4). Similar differences seem to exist between spread zones, or even between areas within them. For example, the zones differ systematically according to whether they are in a situation of relative equi-

librium or were subject to considerable change during the transition phase from an older to a newer layer of spread, which among other things is characterized by shift-induced interference. An example of the last situation is the western Sahara spread zone, which is witnessing the replacement of Berber by Arabic and the less dramatic encroachment of the outside lineage Songhay (cf. section 3.2.3.6).

3.2.3. A survey of language-contact cases and patterns

This section will present a survey of the literature on language contact research in Africa. It cannot present a more or less fixed inventory of contact areas on the continent but is rather an opportunistically assembled, geographically organized set of focal locations that give evidence for different types of language contact situations. That is, only some of the "entities" in this survey are linguistic contact areas in the canonical sense; others are such diverse configurations as zones defined by geographical landmarks or areas and frontiers of specific language families or languages involving typical contact patterns. The outline focuses on precolonial contact settings, because later events involving a direct or indirect linguistic and non-linguistic impact by industrial societies changed the overall linguistic landscape on a larger scale, requiring a partly different research approach. Geographically, the survey starts in southernmost Africa (section 3.2.3.1), moves northwards through the Bantu area (section 3.2.3.2), continues into central (section 3.2.3.3) and coastal western Africa (section 3.2.3.4), takes a loop into the Sahel (section 3.2.3.5), Sahara (section 3.2.3.6), and Nile regions (section 3.2.3.7), turns south into the Horn of Africa (section 3.2.3.8), and finally follows the Rift Valley into East Africa (section 3.2.3.9).

3.2.3.1. Southern Africa

Non-Bantu Southern Africa has only recently become the subject of a more comprehensive analysis of language contact, owing to two main factors: a) the long acceptance of the crucial "Khoisan" language groups Tuu, Kx'a, and Khoe-Kwadi as a single family, and b) the considerable delay in the documentation of virtually all its members. Since the late 1990s the region has, however, proven to be a very fruitful object of contact research.

Starting in the south, Güldemann (2002, 2006, 2013a) has identified a contact area in the Cape south and west of the Orange River. It is chiefly characterized by a strong substrate effect from the Tuu languages spoken by indigenous foragers identifiable in the Khoekhoe languages of the Khoe-Kwadi family spoken by colonizing pastoralist groups.

A second area in the central Kalahari, comprising local forager languages from all three relevant families emerged already from Traill's (1980) areal comparison of "Khoisan" phoneme systems. More evidence has been provided by Traill

(2001), Güldemann (2001a, 2013c), and Gerlach (2016, chapters 5–7) in the same linguistic domain, and by Barnard (1988), Traill and Nakagawa (2000), Güldemann and Loughnane (2012), and Honken (2013) regarding lexical exchange.

Last but not least, there is increasing interest in family-internal contact phenomena. First indications for Tuu-internal interference are dealt with by Güldemann (2013a, 2014b), notably between Lower-Nossob languages and their N‖ng neighbors of the !Ui branch. As a result of his extensive historical-comparative research on the Khoe family, Voßen (2011) also identifies several cases of convergence phenomena among the languages of the Kalahari branch of Khoe.

3.2.3.2. Bantu

The Bantu family spreads today over almost the entire southern half of the African continent and its languages have been in a multitude of contact situations in this vast area. The topic of Bantu-internal contacts is deferred to section 3.2.4.3, so that the following discussion is only concerned with the frontiers of this family that involve interaction with diverse non-Bantu languages.

For a long time, a particular research focus has been the southern zone of Bantu-"Khoisan" contact that is graspable in two historically separate areas. One is located in the southeast and predominantly concerns Nguni languages and Southern Sotho. It has been researched in such works as Meinhof (1905), Engelbrecht (1925), Maingard (1933), Bourquin (1951a, 1951b), Lanham (1962), Bill (1974), Louw (1974, 1976, 1977a, 1977b, 1977c, 1979, 1986, 2013), Lickey (1985), Argyle (1986), Herbert (1987, 1990a, 1990b), Voßen (1997), Güldemann (1999), and Pakendorf et al. (2017). A second concentration of notable Bantu-"Khoisan" contact lies in the border region of Angola, Zambia, Botswana and Namibia, as discussed by Engelbrecht (1925), Kubik (1984), Sommer and Voßen (1992), Voßen (1997), Güldemann (1999), Sommer (2013), Möhlig (2013), Barbieri et al. (2013), Gunnink et al. (2015), and Pakendorf et al. (2017). According to such studies as Kubik (1998), it can be assumed, however, that relevant linguistic and cultural interference already took place in the northeast, where "Khoisan" languages have become submerged in the course of time and their possible influence on Bantu is more difficult to detect.

A second major locus of external Bantu language contact is the East African coast and various offshore islands in the Indian Ocean. A first central topic is the interrelationship between Bantu and Malagasy on Madagascar, as investigated by Dahl (1954, 1988), Berchem (1989/90, 1994) and Adelaar (2009a, 2009b, 2010, 2015). The major theme in this research is the Bantu impact on the structure of Malagasy, which cannot be explained by the recent contact between Swahili and Malagasy on the island itself (cf., e. g., Gueunier 1989; Vérin 1989) and thus must be older. Major questions remain unanswered, notably where exactly the first and presumably crucial interaction took place and whether Malagasy also influenced Bantu.

A somewhat reverse contact situation holds for the Swahili complex, which emerged on the African mainland among coastal Bantu speakers and seaborne colonizers from various corners of the Indian Ocean, whereby the non-Bantu influence in the more recent period has come predominantly from speakers of Arabic but during the entire contact history was certainly not restricted to them (cf. Lodhi 2000). In view of the importance of Swahili, the amount of literature on this topic is substantial indeed but some central historical issues are still open, in particular, the origin of the considerable linguistic variation which the Swahili culture complex harbors (cf., e. g., Möhlig [1995] for a list of Swahili dialects and languages and section 3.2.4.3 for more detailed discussion).

Yet another intensively studied contact domain concerns the eastern African mainland where Bantu confronts Cushitic and Nilotic languages. The interference patterns reflect the assumed overall population sequence in the area: Cushitic before Bantu before Nilotic. Cushitic is mostly viewed to have been a substrate for various Bantu languages in the area, for which see Ehret and Nurse (1981), Nurse and Rottland (1991/92), Nurse (1994, 2000a, 2000b), and finally Mous (2001, 2003) for the possibly best-known and sociolinguistically remarkable case of Mbugu-Ma'a. Language contact with Nilotic is more variable depending on the geographical location and the historical period, so that borrowing as well as shift-induced interference took both directions; relevant studies are Adhiambo (1991), Mutahi (1991), Nurse and Rottland (1991/92), Rottland and Okombo (1992), Dimmendaal (1995, 2001b), Reh (2000), Kuteva (2000), Batibo and Rottland (2001), Wrigley (2001), and Hieda (2011).

Further west, the Central African Rainforest and its northern fringe is a final areal focus where Bantu languages were and still are in various contact situations, notably with languages of the Central Sudanic family and the Ubangi pool of Niger-Congo. Lexical interchange aside, Bantu languages have undergone various kinds of restructuring in this new environment such as the acquisition of labial-velar consonants, the loss of prenasalized consonants, the complexification of the tone and vowel inventory, the reduction of the gender system, and the innovation of base-4 numeral systems. These changes are implied or explicitly documented in such studies as Larochette (1959), Vorbichler (1963, 1966, 1968, 1979), Bouquiaux and Thomas (1976, 1994), Kutsch Lojenga (1994), Hammarström (2010: 26), and Bostoen and Donzo (2013). Other studies like Pasch (1987, 1988) demonstrate that interference also went in the other direction, here from Bantu into Mbaic languages. Another highly relevant issue that is still largely untapped from an empirical perspective is the ancient linguistic relationship between Bantu and Pygmy foragers, apart from the general assumption that the Bantu (and other) languages spoken by pygmies today are the result of language shifts, which implies previous contact. Mentioning just one striking example that illustrates that the contact history must have been extremely complex and dynamic, Thomas (1979), Bahuchet and Thomas (1986), and Bahuchet (1992) quite convincingly argue on

linguistic and non-linguistic grounds that the Bantu language Yaka and the Mundu-Baka language Baka are spoken by Pygmy groups that have their origin in a single ancestral forager population.

3.2.3.3. Central Africa

Language contact in central Africa including the northern rainforest belt goes beyond the Bantu family. Languages of Central Sudanic and the various Ubangi lineages have also been discussed in terms of shared isoglosses that at least partly go back to contact interference, for example, by Schebesta (1952), Larochette (1959), and Vorbichler (1974, 1979). Unfortunately, research progress is hampered by a persistent lack of documentation for the majority of the minority languages in the area.

In the savanna zone north of the rainforest the situation differs in that it is characterized by fewer but geographically more widespread lineages like Zandic, Bandaic, Gbayaic, and Bongo-Bagirmi, indicating that language spread and replacement has been prominent here, at least in the more recent past. Certain distributions of language groups and associated linguistic isoglosses even suggest a kind of geographically structured and/or historically layered "expansion cascade". Cloarec-Heiss (1995, 1998) provides evidence for a historical scenario in which Bandaic languages from the Ubangi pool have in large parts of their modern distribution area replaced Bongo-Bagirmi languages from Central Sudanic, as reflected by a clear substrate signal in the former. The Bongo-Bagirmi languages, giving way to Bandaic in their southwestern domain, in turn expanded into southern Chad further north (cf. Boyeldieu and Nougayrol 2008; Boyeldieu 2016) – with two major results. On the one hand, the expanding northwestern languages have been restructured considerably, which differentiates them from their relatives further southeast (cf. Boyeldieu's [2013] discussion of the extreme case of Sinyar, whose structure is so deviant that even its genealogical status is unclear). On the other hand, local languages belonging mostly to the Adamawa pool and the Chadic family have become submerged (cf., e. g., Palayer [1975] on the former presence of Bua languages in the modern Sara area). Similar processes are implied for the relation between Adamawa and Chadic languages themselves (cf. Ruelland 1978, 2014; Seignobos and Tourneux 2001; Frajzyngier and Shay 2008). The intricate sociolinguistic interaction between genealogically distinct languages also becomes clear from Moñino (1988) and Melis (2014), who describe complex initiation networks bridging linguistic boundaries across Bongo-Bagirmi of Central Sudanic and the Ubangi, Adamawa, and Benue-Kwa pools of Niger-Congo, and across Chadic and Adamawa, respectively.

Linguistic isoglosses across Central Africa were also studied on a larger geographical scale, notably by Thomas (1972) and Boyd (1978). However, the former work did not address the findings from a historical perspective, and the latter discussed the data primarily in terms of a doubtful genealogical hypothesis that joins two of Greenberg's supergroups, Niger-Kordofanian and Nilo-Saharan.

3.2.3.4. West Africa

The two last studies with a wider geographical scope also embrace languages further west and thus provide a transition to the adjacent coast and inland region in West Africa. Several focal subareas of contact can be identified here. One that has received particular attention is what Jungraithmayr and Leger (1993) called the "Benue-Gongola-Chad Basin" zone stretching from the Cameroon border area deep into northeastern Nigeria north of the Benue River. I use here "Jos-Mandara region" as it is flanked by these two mountain areas, often interspersed with other mountainous refuge zones. It hosts languages from three larger groups, namely the Benue-Kwa and Adamawa pools of Niger Congo and the Chadic family of Afroasiatic with language density even being high under genealogical homogeneity (see, e. g. MacEachern [2001, 2002] for the case of the Chadic-dominated Mandara Mountains). Kleinewillinghöfer's (2001) identification of the possibly isolated moribund language Jalaa indicates that the genealogical diversity seems to have been even greater in the past. Language shift has been a recurrent phenomenon (cf. Newman 1969/70; Wolff 1975/76), and partly related to this, ethnic identity repeatedly does not coincide neatly with language affiliation (cf., e. g., Adelberger 1992, 1995; MacEachern 2001). A major research theme is the tremendous restructuring of many languages of the historically colonizing Chadic family due to contact-induced interference in lexicon, phonology, and grammar, as discussed, for example, by Hoffmann (1970), Jungraithmayr (1980, 1987a, 1987b, 1992/93), Jungraithmayr and Leger (1993), and Caron (2014). Storch (2003b, 2011), discussing Jukun languages, shows that there are also cases of contact signals being more erratic (cf. also Dinslage and Leger [1996] on Chadic-Jukun interaction). There are two geographical research foci for contact between the peoples and their often unrelated languages in the Jos-Mandara region. One is the Jos Plateau itself, for which see Wolff and Gerhardt (1977) and Gerhardt (1983) on lexical and several structural isoglosses; Hammarström (2010: 28–31) on globally rare base-12 numeral systems; various contributions to Storch, Atindogbé, and Blench (2011) on intransitive copy pronouns; Longtau (2012) on lexicon; Hellwig (2012) on the lexicalization of property words; and Ibirahim (2015: 17–22, 65–72, 143–147) on a verbal reduplication pattern. The other is the Muri Mountains as discussed by Kleinewillinghöfer (1990, 1994, 1995, 2001), Adelberger and Kleinewillinghöfer (1992), Adelberger (1992, 1994, 1995), Jungraithmayr (1992/93, 1995), Leger (2004), and Leger and Zoch (2006).

Further south lies a far larger zone where the concrete study of language and population contact has not yet played such a major role, although various circumstances suggest that this would be a highly promising research topic. To a large extent it traces the (former) West African forest belt from the Cameroon–Nigeria border area toward the west, possibly encompassing the Kru language group in Ivory Coast and Liberia. While it may be called conveniently the (wider) "Gulf-of-

Guinea coast", the linguistic term "Kwa", although loaded heretofore with other connotations, may turn out to be an appropriate but more familiar label for this large region. The area hosts languages belonging predominantly to the numerous Benue-Kwa groups but also to Ijoid in the southeast, Kru in the southwest, and possibly even Gur in the northwest. Under the traditional analysis, all languages are related genealogically as members of Niger-Congo. Following Westermann's view, Greenberg (1963) in fact subsumed all groups but Gur under the narrower genealogical concept of a "Kwa" family. However, this hypothesis has been recognized from the beginning to be rather weak, because the major common denominators of the languages are typological and partly negative classification criteria (cf. Westermann and Bryan 1952: 90-4). Notably, these are widespread monosyllabism and, partly related to it, the absence of the typical morphological Niger-Congo traits of derivational verb and gender affixation that also have important syntactic repercussions, such as serial multi-verb constructions. Moreover, as argued in Güldemann (this volume, chapter 2, sections U6/8/9), at least Ijoid and Kru are not robust members of Niger-Congo and the exact genealogical interrelations across the Benue-Kwa pool is all but uncertain. Accordingly, it has been entertained for some time that the above structural parallelism is an areal signature (cf., e. g., Dimmendaal [2001a: 382–387] on serial verb constructions), and several studies have sketched processes of linguistic change that are typical for languages in the area "becoming Kwa-like" (cf. Williamson 1985; Hyman 2004; Good 2012). In an empirically superficial but neverthless thought-provoking article, McWhorter (2016) has in fact explicitly proposed that this "radical analyticity" in at least some Niger-Congo languages of the area is the "result of acquisition by adults resident in the areas those languages are now spoken in that a branch of earlier Niger-Congo moved to". Granting the possibility that some lineages like Ijoid and Kru may not be genealogical relatives of the Niger-Congo groups, an entirely new perspective on the history of the wider area becomes worth investigating, namely that a) genuine Niger-Congo languages changed to different degrees under areal pressure and b) isoglosses between them and potentially unrelated local languages are also due to language contact rather than inheritance. At least some of these processes are likely to be approachable by in-depth analyses in the future, given the existence of concrete evidence for language contact in the area. This has been discussed, for example, by Donwa-Ifode (1995) for Delta Edoid interacting with Ijoid, by Kleinewillinghöfer (2000, 2002) regarding southeastern Gur and languages from the Potou-Akanic and Ghana-Togo Mountain groups, Connell (2001) for Lower Cross-Bantu contact, and by Ameka (2007a, 2007b) concerning the minority language Likpe from Na-Togo and vehicular Ewe from Gbe. It is currently also investigated from a multidisciplinary perspective in the highly complex Lower Fungom accretion zone (cf. Good 2013; Di Carlo and Good 2014).

Further west in West Africa, the research has focused on the predominating Mande family. This group has not only left a strong political and cultural impact

in its entire modern range (cf., e. g., Tamari's [1995] linguistic argument for the important role of Manding, and partly Soninke and Wolof, for the spread of professional caste systems) but its linguistic frontier also gives evidence for diverse partners and patterns of language contact. In the east, several studies treat the bilateral interaction of Mande with languages of the Gur pool, notably Dombrowsky-Hahn (1999, 2010), Kastenholz (2002), Schreiber (2009, 2014), Beyer (2010, 2014), and Beyer and Schreiber (2013), or even lexcial Mande impact on more southern Benue-Kwa languages (cf. Kropp Dakubu 2001). The southern zone of Mande is characterized by contact with Kru (and Atlantic) languages and has been modeled predominantly in terms of a notable Mande-internal diversity along a north–south cline (cf. Vydrin 2004, 2008). This is arguably due to strong substrate interference in what is called by Vydrin the "Upper-Guinean Coast Sprachbund" in the south, which appears to echo the case further east of the Kwa-type languages within Benue-Kwa. Finally, the western frontier of Mande interacts with languages of the Atlantic pool. Here the research perspective is mostly one of Mande speech communities expanding on the cost of Atlantic minority languages accompanied by a (socio)linguistic impact that can lead to final language shift; at the same time, this phenomenon also results in the emergence of Mande varieties that are characterized by shift-induced changes (cf. Childs 2004, 2010a, 2010b; Vydrin 2007; Cobbinah 2010; Juillard 2010). With Fula from Atlantic, however, the contact situation with Mande is more balanced leading to borrowing in both directions, as described by Diallo (2008, 2010) and Vydrin and Vydrina (2010).

3.2.3.5. Sahel

The case of Fula-Manding contact marks the transition to another larger region that is characterized by a chain of partly similar contact situations, conveniently subsumed under the geographical umbrella of the Sahel Belt. While the early comparative research was characterized by a strong tendency to give cross-language similarities across this zone some form of genealogical interpretation, epitomized by Mukarovsky's (e. g., 1965, 1966, 1987, 1989, 1995) oeuvre, this has given way to more realistic areal hypotheses. This approach started with the long-standing engagement with this area by Zima (cf. 1986, 1988, 1990a, 1990b, 1992, 1995, 1997, 2000, 2001, 2006a, 2006b, 2007, 2009, 2010). Since the late 1990s it has been attracting a wider interest, reflected among other things by such dedicated edited volumes as Baldi (1997), Nicolaï and Zima (2002), and Caron and Zima (2006) with a number of additional relevant contributions. The Sahel belt is in various ways a transition zone to be specified further in section 3.2.4.5. It is characterized by various major languages – some belonging to a larger family, itself deeply embedded in the Sahel – which have undergone phases of expansion and thus interacted with each other and other smaller languages but have only come to dominate subparts of the Sahel. The linguistic units deserving special mention

are, starting in the west, Fula with a specific history of migration across the entire Sahel belt, the Manding complex within the Mande family, the Songhay core, Hausa within the Chadic family, Kanembu-Kanuri within the Saharan family, Maba within Maban, Fur within Furan, and Sudanese Arabic. Most of these spreading languages have been replacing minority languages and at the same time acquiring speakers through language shift, thereby developing vehicular varieties – some of them considerably restructured.

The Mande family with the Manding complex as its historically and demographically major member has already been partly discussed above. Two additional contact spheres in the northeast remain to be mentioned. One is suggested by Hammarström (2010: 32) in that some Mande languages share with geographically close Dogon, Bangime, and Gur numeral systems with a globally rare secondary base 80 (or sometimes 60). Far more attention has been paid to the linguistic similarities between Mande and Songhay, for example, by Mukarovsky (e. g., 1965, 1966), Nicolaï (1977, 1984: 59-144, 2006), and Creissels (1981); since Mande and Songhay are thought to belong to Niger-Kordofanian and Nilo-Saharan, respectively, this has even nurtured speculation about a genealogical relation between these two supergroups.

The close-knit Songhay family plays a pivotal role for language contact in the wider region of the Niger bend. The counterpart of its assumed contact with Mande in the southwest is its linguistic interaction with Chadic and particularly Hausa in the east, as discussed repeatedly by Zima (1986, 1988, 1990a, 1990b, 1992, 2009, 2010). A study like Reichmuth (1988) shows that the impact of Songhay is yet more far-flung. The linguistic affinities of Songhay with various language groups in the wider geographical context are so manifold and extensive that they have crucially determined its genealogical classification (see Güldemann, this volume, chapter 2, U23). That is, as an alternative to the arguably discretionary assignment of the family to Nilo-Saharan, Nicolaï (e. g., 1987, 1995, 2009) has entertained, albeit with limited wider appeal, various versions of a hypothesis according to which it arose in the first place as some kind of mixed language with various Niger-Kordofanian and Afroasiatic contributions.

Songhay's neighbor in the east, the Chadic family, is the next entity that has been intensively investigated with respect to contact-induced areal relations. Its interaction with languages of Benue-Kwa, Adamawa, and Bongo-Bagirmi on its southern frontier has already been discussed in section 3.2.3.4. This and other research is embedded in a wider attempt to explain modern linguistic features of Chadic languages as the outcome of a complex and long-standing interplay between an Afroasiatic heritage and subsequent contact-induced change, which is multifarious and whose assumed links can have a wide geographical scope, concerning in addition the above language groups Mande, Songhay, and Saharan. Such a comprehensive areally inspired approach to Chadic is exemplified, for example, by such studies as Jungraithmayr (1987a), Zima (1995), Jungraithmayr, Nicolaï, and Ibriszimow (1997), Brunk, Ibriszimow, and Jungraithmayr (1999),

Ibriszimow (2000), MacEachern (2001, 2002), and Kossmann (2005). Ironically, early scholars like Lukas (1936), speaking of the "influence of the light-skinned Hamites on the languages of the central Sudan region", presented the major result of the contact processes in an almost upside-down model. Today, contact is overall explained in terms of a strong linguistic impact of the preexisting populations on colonizing Chadic-speaking groups, involving a good amount of language shift. Last but not least, such complex Chadic-internal interaction must also be taken into account (cf., e. g., Newman 1969/70; Wolff 1975/76; Schuh 2001, 2005).

The situation in the north-central domain of Chadic around Lake Chad is somewhat different because of the impact of another major colonizing group, Kanembu-Kanuri, which entered the area from the northeast after speakers of Chadic languages. While the earlier predominant pattern was a notable linguistic impact of the prestiguous Saharan language complex on smaller Chadic communities, involving also shift-induced substrate interference in Kanembu-Kanuri, the later and persisting sociolinguistic role of Hausa partly reversed the situation in that Kanuri, like many other local languages, can now be shown to change under this influence. Fula, having immigrated from the west, was and partly is a third important player in this area, especially in connection with the spread of Islam in the first half of the 19th century, radiating out deep into the south (see section 3.2.3.4). All different contact patterns are discussed in such studies as Cyffer (2000, 2002, 2006), Löhr (1995), Cyffer et al. (1996), Schuh (2003, 2011), most contributions to Cyffer and Ziegelmeyer (2008), Ziegelmeyer (2008, 2009, 2014, 2015), Baldi and Leger (2014), and Allison (2015).

3.2.3.6. Sahara

The area north of the Sahel belt is a region of comparatively great linguistic homogeneity in that it is dominated today by just two entities, which are even genealogically related, namely the close-knit Berber family and local varieties of the Arabic language complex. Nevertheless, various important language contact events and patterns can also be identified here.

A first case relates to the partial encroachment of a sub-Saharan language group on the Sahara, namely Songhay. That is, the northern branch of this family is essentially the outcome of contact between a more southern type of Songhay and Berber varieties that were predominantly but not exclusively from the Tuareg group – an event that initially gave some such varieties the fame of mixed languages. This topic has been studied quite intensively, notably by Nicolaï (1990), Wolff and Alidou (2001), Christiansen-Bolli (2010), and Souag (2010, 2013, 2015a, 2015b).

A second major research theme is the intensive language contact between Berber languages and colonizing Arabic, attested in a large geographical region that reaches still today from northwestern Egypt to the Maghreb. Although parts of the contact signals are difficult to discern due to the relatively close genealogical

relationship between the two contact partners, both heavy borrowing in Berber from dominant Arabic as well as substrate influence of Berber in Arabic can be identified, for which compare, for example, Lucas (2007, 2013), Souag (2007, 2010, 2014), Tilmatine (2011), and Kossmann (2014).

The expansion of Arabic and the accompanying interaction with and partly replacement of local African languages is also relevant in more eastern regions. Such phenomena are reported in various general treatments and surveys of Arabic, some of them with a focus on Africa, notably Versteegh (1982, 2010), Owens (1993, 2006), Jastrow (2002), and Lafkioui (2013). Especially borrowing from Arabic into a multitude of languages is widespread. According to Heine (2011: 56–58), such interference has even affected grammar: he proposes that a number of languages in Northeast Africa have replicated the Arabic-typical grammaticalization of such words as 'soul' and 'life' toward reflexive markers. As some of the above-cited works show, contact between Arabic and African languages has also led more recently to the emergence of pidginized and creolized varieties of the former. Since Arabic has a deep history in many areas of northeastern Africa, however, there is at times little information on the exact identity of the submerged languages and the concrete linguistic effects on both contact partners; this holds in particular for the Chad-Sudan area.

3.2.3.7. Nile valley

East of the Sahara, the area has an overall similar geographical character except that it is marked by the presence of the Nile. The immediate environment of the river must have attracted different ethnolinguistic groups throughout history and thus has been the likely focal locus of diverse contact events. There are indeed a number of historically known or hypothesized languages in the Nile valley, some attested with written records for certain periods (given in parentheses), notably Egyptian-Coptic (3000 BC to 14th century AD), other partly hypothesized Afroasiatic languages, Meroitic (300 BC to 400 AD), several Nile Nubian languages (including Medieval Old Nubian, 8th to 15th century AD), and such non-African colonizing languages as Greek, Latin, and finally Arabic.

A first contact event has been proposed by Kammerzell's (2005) empirically rich discussion for the very emergence of the oldest stage of Egyptian in that he views it as the result of the "merger" in Lower Egypt of an early Afroasiatic language and another language with a historical connection to Indo-European. While this hypothesis has been hardly recognized so far, it would have enormous historical repercussions not only in Northeast Africa but also western Asia and Europe. There is robust non-linguistic evidence that once Egyptian was in its place the Nile polity was in contact with neighboring peoples located adjacent to the river and along its course further south, some of which also immigrated into Egyptian territory itself (cf., e. g., Budka and Kammerzell 2007). However, there are hardly any concrete

data on the languages contemporary with Egyptian let alone their linguistic interaction with it. One notable exception is Peust's (1999) hypothesis that the specific features of the "Napatan" variety of Egyptian, attested 500–300 BC in the south and characterized by the author as a modified form of Demotic, can be related partly to the influence of local Meroitic and/or Nile Nubian.

The history of the Nile area south of the Egyptian heartland has been and still is a hotly debated topic and linguistic arguments including language-contact hypotheses have played a prominent role in the discussion. There is little doubt about the early presence of Meroitic, Nile Nubian, and Cushitic Beja (cf. Trigger 1966; Shinnie 1978; Hofmann 1979; Dahl and Hjort-af-Ornas 2006) as well as of such later immigrating languages as Egyptian-Coptic, Greek, and Arabic (Shinnie 1974; Ochała 2014). Due to the time depth and the nature of the data sources, the concrete mechanisms and results of the language contacts are hard to define, though. There are additional hypotheses based particularly on assumed loanword evidence on the early presence on the Nile of other Afroasiatic populations, notably Berber (Behrens 1981, 1984/85; Bechhaus-Gerst and Behrens 1985) and Cushitic other than Beja (Bechhaus-Gerst 1989b). The major linguistic controversy relates, however, to the Meroitic-Nile Nubian complex. Bechhaus-Gerst (1985, 1989a, 1989b, 1996) has advanced the idea that the modern Nile Nubian languages reflect a family-internal "Sprachbund" due to multiple Nubian immigrations from the west, thereby arguing that language contact has obscured the genealogical relationships. As opposed to this, Rilly (e. g., 2008, 2016) follows the traditional analysis within his wider Wadi Howar hypothesis, according to which Nile Nubian forms a clade in the family tree emerging from a single movement to the Nile that followed its assumed more remote relative Meroitic.

The latest contact event along the Lower Nile is historically uncontroversial, namely the immigration of Arabic and the subsequent replacement of most other languages preceding it. Some studies like Bishai (1960, 1961, 1962), Behnstedt (2006), Lucas and Lash (2010), and Lucas (2013) have argued in this context that Coptic, as the latest chronolect of Egyptian, was a major substrate for the Egyptian variety of Arabic.

3.2.3.8. Horn of Africa

The Horn of Africa southeast of the Nile valley region is in various ways a paradigm case for contact research on the continent. Ferguson's (1970, 1976) hypothesis (following Greenberg 1959) about an Ethiopian area in the sense of the then existing national state was, and partly still is, so well received that it has come to be included regularly in global lists of contact areas. At the same time, the study did receive criticism (e. g., Zaborski 1991) and finally was viewed by Tosco (2000) to contain so many shortcomings as to require complete rejection of the concept. This situation reflects the apparently contradictory approaches to areal

Table 2: Assessment of Ferguson's (1976) "Ethiopian" features

Feature		I	II	III	IV	V		
						Anywa	Kunama	Nara*
P1	/f/ for /p/		X		X		X	X
P2	Palatalization			X				
P3	Glottalic [emphatic] consonants		X		X			
P4	Presence of /d'/ [as opposed to /d/]				X			
P5	Presence of /ħ/ and /ʕ/		X		X			
P6	Gemination		X	X	X	X	X	X
P7	Presence of /ɨ ɛ/							
P8	Helping [anaptyctic] vowel	X						X
G1	SOV word order				X		X	X
G2	Subordinate clauses first			X	X		X	X
G3	Converb			X	X		X	X
G4	Postpositions			X	X		X	X
G5	"Quoting clauses"			X	X		X	
G6	Compound verbs			X	X		X	X
G7	Negative copula			X		X		
G8	Singular with numerals			X			X	
G9	Possessive suffixes		X	X		X		
G10	Person-gender pattern	X	X					
G11	Prefix tense	X	X				X	
G12	Root and pattern	X	X					
G13	Reduplicated intensives			X				
G14	Broken plurals	X	X					
G15	Independendt-subordinate tenses				X			
G16	Plural-feminine singular concord	X						
G17	Irregular imperative of 'come'		X	X				
G18	Singulative		X		X			X
	Total	6	11	12	13	3	10	8

Notes: I = Restricted to Ethiosemitic; II = Inherited from Afroasiatic; III = Typologically recurrent; IV = Adjacent distribution beyond Ethiopia; V = Presence in Ethiopian Nilo-Saharan; * added after Schadeberg (1987: 227) and Güldemann (2005: 137)

linguistics in Africa and beyond. I argue here that many of Tosco's reservations are well founded, even when granting the existence of the above-mentioned problems of defining a contact area. Although Tosco's final conclusion may not be warranted, his and other additional criticisms of Ferguson's highly successful proposal are substantial enough that anybody continuing to speak of a contact area in this region would be required to reframe the whole concept considerably. In order to show this, Table 2 lists the linguistic features Ferguson proposed to be shared commonly by Ethiopian languages together with an evaluation of their diagnostic value by Tosco (2000), some other scholars, and myself.

A first but major problem with Ferguson's proposal is the geographical definition of the area – this in two major respects. On the one hand, there is a geographical cluster of Ethiopian languages that predominantly lack the features in question. On the other hand, several features are so recurrent in the immediate neighborhood of Ethiopia that they do not adequately define the contact area in geographical terms.

The first caveat holds for most non-Afroasiatic languages of Ethiopia, which are conventionally classified as Nilo-Saharan, with the caveat that the status of Omotic lineages remains unclear. Against the possible impression that these are a negligible portion of the Ethiopian linguistic landscape, in genealogical terms they represent in fact the majority of lineages according to Güldemann (this volume, chapter 2).

Table 3 presents the inventory of genealogical units and reports their consideration in previous treatments of the Ethiopian area and the results, if any. The picture is clear: while the few languages that have been dealt with, namely Anywa aka Anuak, Kunama, and Nara, score low for their possession of the 26 relevant features (cf. column V of Table 2, and Table 3 where the numbers in parentheses record features without counting word order traits multiply, see below), the remaining majority of languages and lineages have not yet been investigated, leaving it entirely open whether they comply with the areal criteria. My brief characterization of the lineages with respect to their basic syntactic order profile makes it clear that at least the five head-initial lineages are likely to behave like Anywa with respect to many grammatical features – for this reason alone the area should have been, while not necessarily abandoned, certainly (re)defined some time ago. Since the non-Afroasiatic languages have a compact geographical distribution in Ethiopia (and Eritrea), the areal concept insofar as it refers to any country borders has simply been inadequate and thus misleading.

With respect to the second geographical problem, column IV of Table 2 shows that 13 of the 26 features have a distribution well beyond Ethiopia and, more importantly, that half of them conform to a regular areal pattern that defines the far larger macro-area Chad-Ethiopia. Since this issue is discussed in more detail in section 3.2.4.6, I only mention here a few examples for traits that transcend narrow Ethiopia. Thus, it applies to P1, lack of /p/, according to Maddieson (2003, 2013e) and Clements and Rialland (2008: 65–67) as well as to G5, "quoting clauses"

Table 3: Lineage inventory of Ferguson's (1976) "Ethiopian" area according to Güldemann (this volume, chapter 2)

Lineage	Unit No.	Analysis and result for Ferguson's traits
Semitic	U42	recurrent
Cushitic	U45	recurrent
Ta-Ne (Omotic)	U46.A	recurrent
Maji (Omotic)	U46.B	(recurrent)
Mao (Omotic)	U46.D	not analyzed
Ari-Banna (Omotic)	U46.C	not analyzed
Ongota	U47	not analyzed
Shabo	U25	not analyzed
Kunama	U24	10 of 26 (7 of 23)*
Nara	U31	8 of 26 (5 of 23)*
Berta	U39	not analyzed
Koman	U40	not analyzed
Baga	U41	not analyzed
Nilotic (Anywa)	U36	3 of 26 (3 of 23)*
Surmic	U37	not analyzed

Notes: * = if four word order traits are counted as one; frame = Afroasiatic; shading = head-initial syntactic profile

(which essentially stands for the grammaticalized attribution of internal awareness by means of [mostly] direct reported discourse), and G6, "compound verbs" based on quotative and other generic auxiliaries according to Cohen, Simeone-Senelle, and Vanhove (2002) and Güldemann (2001b, 2005, 2008b: sections 6.5, 6.6.4, 6.6.5, 7.1). It is symptomatic for the perception and discussion of Ethiopian language contact that such studies as Crass and Bisang (2004), Crass and Meyer (2008), Meyer (2009), and Darmon (2012) treated the two last features again but failed to sufficiently address the implications of some of the linguistic and even more of the geographical findings of the previous work cited.

Another set of 12 features, recorded in column III of Table 2, are typologically so recurrent that again a survey in the geographical neighborhood is required to show that they are indeed typical for Ethiopia in particular, this apart from the greater probability of independent parallel innovation. The situation that a feature recurs in Ethiopia but also in adjacent territories does, of course, not rule out that there is relevant contact in Ethiopia but it renders the feature non-diagnostic for

defining just this area. An additional point also recorded in column III relates to the possible structural interrelationship between traits, which provides a possible explanation other than/in addition to contact. In Ferguson's framework this holds at least for G1–G4 for which it is accordingly questionable to count them as entirely separate pieces of evidence for the contact hypothesis (see Hayward [1991: 140] and Tosco [2000: 344]; cf. also Hayward [2005] for another Ethiopian trait that could be interpreted as an areally induced isogloss but may be driven to a considerable extent by universal tendencies).

Columns I and II of Table 2 relate to a caveat made in particular by Tosco (2000), namely the potential inheritance of individual traits. Column I shows that six of the 26 features are according to the author virtually restricted to Ethiosemitic so that they are unlikely signals of pan-Ethiopian language contact. For the features in column II, this holds in a different sense: they have a wider distribution in Ethiosemitic, Cushitic and Omotic but may be inherited there from their common ancestor, namely some earlier form of Afroasiatic.

Despite Tosco's (2000) substantial critique, the perception of Ethiopia as a contact area in the geographical sense of Ferguson has remained largely unaffected both among Africanists and general linguists. The reaction to Tosco did not so much address his concrete empirical arguments or, for that matter, Ferguson's obvious contradictions but dealt more with the theoretical problems of defining a contact area (cf. Crass and Bisang 2004; Bisang 2006b; Zaborski 2010a) and/or silently shifted the empirical focus by describing new features shared by various smaller sets of Ethiopian languages, which significantly were now mostly restricted to the plateau (cf. Crass and Meyer 2008l; Rapold and Zaugg-Coretti 2009; Zaborski 2010b). Authors like Zaborski (2003, 2010a, 2010b) and Bender (2003), on the other hand, even entertained an enlargement of the areal concept, thus rendering it yet vaguer. Thus, Bender (2003: 39, 38), while conceding that the "original 26 Ferguson features, on close examination, do not make the case" for the original areal concept, even claimed oddly enough that in comparison with the quite robust Mesoamerican area "an equal or better case can be made for the [far more inclusive] N[orth] E[ast] Africa area".

To avoid misunderstanding, there is extensive evidence for contact-induced language change in Ethiopian languages. However, according to the published data, the overall picture needs to be circumscribed more narrowly compared to Ferguson's proposal, which the work after Tosco (2000) has not done; this concerns a) the involved languages, b) the geographical area, and c) even the predominant long-term trajectory of contact transfer. Regarding languages, the bulk of the relevant literature, for example, Leslau (1945, 1952), Palmer (1974), Raz (1989), Hudson (1994), Crass (2002), Meyer (2002, 2009), Crass and Meyer (2008, 2011), and Lucas (2013: 419–423), deals with linguistic isoglosses and the sociolinguistic interaction between specifically Cushitic and Ethiosemitic – in full agreement with the earliest research, which focused on the Cushitic substrate so crucial for

the distinct profile of Ethiosemitic, even though other patterns certainly did and still do exist. Contact interference between Cushitic and Omotic and within these two groups are much less investigated, although this is unlikely to be less intensive; moreover, Omotic languages in general are not covered as a whole but are usually represented only by Ta-Ne and to a far lesser extent Maji (which are likely Afroasiatic like Semitic and Cushitic). Cushitic-internal contact is reported, for example, by Sasse (1979, 1986), the second study arguing for a genuine Sagan "Sprachbund" in southern Ethiopia. More important for the deep history of the area is linguistic interference between Cushitic and the various lineages subsumed under Omotic for which both Omotic substrate in Cushitic (cf. Treis 2012) as well as borrowing from Cushitic into Omotic (cf. Hayward 2000: 626; Zaugg-Coretti 2009) is attested. Finally, Hayward (1991), Appleyard (2001), Rapold and Zaugg-Coretti (2009), and Darmon (2012) report isoglosses affecting languages from all the three groups. In summary, the languages forming the core of the convergence network are from Ethiosemitic, Cushitic, and Omotic.

From a geographical perspective, most of the empirical evidence for sustained long-term contact thus concerns the Ethiopian highland area. Isoglosses peter out from the center, for example, toward the eastern lowlands (cf. Hayward [2000: 633–634] regarding Somali) and the western escarpment (cf. Rapold and Zaugg-Coretti [2009] regarding Ta-Ne languages), show a relatively sharp break at the Red Sea despite the close historical and linguistic genealogical links across this landmark (cf. Simeone-Senelle and Vanhove 2006), and, most importantly, largely exclude the escarpment transition and adjoining plains in the west, where the non-Afroasiatic languages are located. As far as the published literature goes, cases in which a feature encroaches on this frontier are only sporadic, which supports the narrower areal hypothesis. Examples are ejectives also occurring in adjacent languages of Surmic and Baga (Wedekind 1990), comparatives based on the so-called "source schema" existing also in Baga, Koman, and Surmic Majang (Zelealem and Heine 2003: 56–61), and a "head"-based reflexive marker, which is frequent in Ethiosemitic but seems to have been transferred at least to Kunama (Heine 2011: 58). It is significant that in all these cases the relevant languages border on those of the plateau, and the two last cases involve contact-induced grammaticalization that arguably reflects more recent contact.

Regarding the final point of transfer patterns and directions, Zaborksi (2010b: 33) is correct in stating that:

> The influence of the contacting and interfering languages has been mutual or bidirectional although the degree of this mutual influence, its intensity and scope has been different for various linguistic and sociolinguistic reasons. The same language could be both a donor and a borrower …

However, standard assumptions about Ethiopian history should be taken into account, particularly that a) Omotic peoples, whether Afroasiatic or not, typically

appear to represent the earliest population layer in their respective areas, and that b) Ethiosemitic speech communities emerged as the result of a historically identifiable immigration from the Arabian Peninsula. Before this background, it is hard to avoid the conclusion that, common Afroasiatic inheritance aside, a considerable amount of shared features across the three relevant groups are due to shift-induced substrate interference according to the population sequence of Omotic before Cushitic before Ethiosemitic, with the caveat that major Cushitic languages like Oromo also have been and still are the target of language shift. The role of Omotic lineages in the southwest as a donor may possibly apply also to contact partners other than from Cushitic, in particular from the Southeast branch of Surmic (see possible examples mentioned above and section 3.2.3.9 below). Another potential case is the notorious contact zone between Mao from the Omotic pool and Koman, where even ethnolinguistic identities have been hard to disentangle until recently (see Küspert [2015] for the most recent discussion).

In view of this general picture, it is somewhat ironic that Ethiopia came to be perceived by Nichols (1992, 1997) as a residual~accretion zone, because it can alternatively be argued to be a spread zone that gives evidence for (successive) lineage replacement but abuts on a genuine accretion zone, namely the western non-Afroasiatic escarpment (cf. section 3.2.2).

The more circumscribed contact zone is better conceptualized as the Horn of Africa, arguably even called that, because it steers clear of the undesired and inadequate connotation of a state territory. According to such authors as Sasse (1986), Zaborski (1991, 2010a, b), Hayward (2000), and Tosco (2008), it contains subareas – a fact to be expected by its considerable geographical, historical, and ethnolinguistic substructure. In agreement with other scholars, notably Zaborksi (2010b), a good strategy is to investigate such micro-level contacts, because they will crucially inform the larger picture. At the same time, this possible progress is put at risk by some of this author's own practices, such as effectively shelving attempts to establish a more precise external delineation of the area or simply proposing new shared features without any exposition of the empirical facts.

3.2.3.9. Nilotic-Surmic and East Africa

Apart from the southern Cushitic extension along the eastern coast, the linguistic landscape west and south of the Ethiopian Plateau is dominated by languages from Nilotic and Surmic, which very likely form a larger language family Nilotic-Surmic (cf. Güldemann, this volume, chapter 2, section 3.6.4.1) and thus can be argued to establish a single spread zone. Here, contact between languages of differentiated subgroups of this family has been reported both between Nilotic and Surmic as well as within the two branches (cf. Dimmendaal 1982, 1998a, 2001b, 2005, 2008b; Hieda 1991b, 2011; Moges and Dimmendaal 1998; Moges 2005).

Equally pervasive is family-external contact. Before I deal with some concrete studies, reference should be made to a hypothesis by Dimmendaal (2005, 2007: 56–65) that crucially involves assumed contact interference in Nilotic-Surmic before the background of the so far unproven concept of a larger East Sudanic language family (see Güldemann, this volume, chapter 2, section 3.6.4.2). That is, this family is thought to comprise a northern group with a largely head-final structure as well as a southern group including Nilotic-Surmic with a head-initial profile. Since the former pattern is viewed by Dimmendaal to be original, the southern languages must have changed; the author (2007: 60) sees this to be the "result of language contact and multilingualism … But we do not know, and presumably will never know, what kind of languages these absorbed speakers spoke." As should be clear from the above information, the wider area is genealogically and typologically extremely complex and thus unsurprisingly also hosts languages that might have served as the substrate triggering the hypothetical change in Nilotic-Surmic and other similar groups. At the same time, Dimmendaal's complex historical scenario hinges on the uncertain genealogical concept of East Sudanic. It thus seems preferable to first prove this hypothesis conclusively and then assess the necessity and viability of the dramatic contact-induced restructuring in Nilotic-Surmic.

Looking at more graspable language contact involving the Nilotic-Surmic family, several patterns are discernible. On its eastern flank it faces in particular languages subsumed under Afroasiatic, which, for the record, happen to be head-final rather than head-initial and thus are unlikely to be implied in Dimmendaal's assumed restructuring. As indicated in section 3.2.3.8, the fringe of the Ethiopian Plateau gives evidence for Surmic-Omotic contacts. The apparent linguistic isoglosses have been interpreted partly in terms of vague and conflicting genealogical hypotheses, notably concerning Ari-Banna, which is viewed to belong once to Omotic within Afroasiatic and once to Nilo-Saharan (cf. Güldemann, this volume, chapter 2, section U46.C). Recent and empirically concrete studies by specialists indicate, however, that substantial similarities can be explained in terms of language contact. Thus, Hieda (1991a, 1993, 1996) deals with a concrete case of interference between Surmic Koegu and Kara from Ari-Banna, and Dimmendaal (1998a, 1998b) has provided an insightful general discussion of the "transitional" character of various Surmic languages between the two quite distinct typological profiles of canonical Nilotic-Surmic in the west and Omotic and Cushitic in the east. Further south, Nilotic languages seem to have encountered Cushitic languages and are in fact implied in their widespread submergence in eastern Africa, in turn reflected partly by associated substrate interference in Nilotic (cf. Heine, Rottland, and Voßen 1979; Winter 1979; Brenzinger 1992). Finally, in addition to the contact with Bantu in the southern realm of Nilotic, referred to already in section 3.2.3.2, its western frontier is characterized by interaction with languages from Ubangi and Central Sudanic. This has been treated by such contributions as Dimmendaal (1995, 2001b) and Storch (2003a, 2007a, 2007b).

A final location of language contact research in eastern Africa has a different character, because it seems to be a genealogically complex accretion zone, mentioned in section 3.2.2. The contact history of languages in the Tanzanian part of the Gregory Rift has been dealt with in such studies as Elderkin (1978), Nurse (2000a), Kießling (2001), and Rottland and Mous (2001), and more recently and comprehensively by Kießling, Mous, and Nurse (2008).

3.2.3.10. Summary

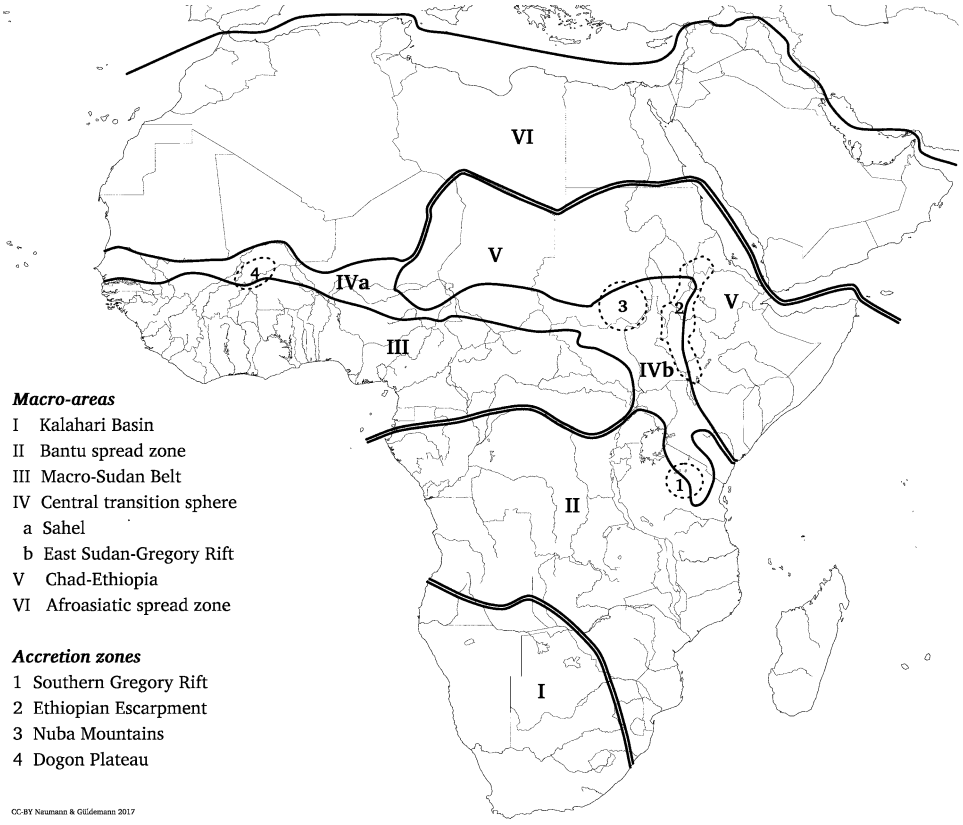
The above survey has demonstrated that language contact is ubiquitous all over Africa without, however, necessarily leading to geographical "sedimentation" in the form of enduring contact areas. It is possible, though, to give in many cases a more specific characterization of the contact situation, in particular with respect to Thomason and Kaufman's (1988) useful distinction between borrowing and shift-induced substrate interference.

It is clear that in real-world cases of contact the two principal scenarios are in fact often not neatly separable. For example, many clear cases of language shift accompanied by substrate effects have a longer history of interaction between the contact partners whereby the final shift was preceded by a more equilibrated socio-linguistic relation, so that (potentially long-term) linguistic borrowing preceded the shift-related impact. Nevertheless, it is a potentially crucial finding to identify especially substrate-superstrate relationships between linguistic populations, for example, such pairs as Tuu and Khoekhoe in the Cape, western Central Sudanic and Bandaic in Central Africa, Kru and Mande in West Africa, Berber and Arabic in the Maghreb, and Cushitic and Ethiosemitic on the Ethiopian Plateau. Such cases are important because they can give a broader perspective about the historical dynamics of languages and language groups in a certain area and presumably their deeper trajectories through space and time. This in turn better characterizes the different geographical spaces themselves, which is important for macro-areal patterns on the continent that are treated in the following section.

3.2.4. Macro-areal research

3.2.4.1. Introduction

It is no coincidence that Greenberg with two articles (1959, 1983) also became the founder of macro-areal research in Africa, because his work fulfilled for the first time two major preconditions for this to be feasible, namely an overall comprehensive picture of linguistic diversity and a modern genealogical classification framework for the entire continent. A second major achievement in this domain is Heine's (1975, 1976) continental survey of word order variation. Other studies



Map 1: Macro-areas and accretion zones of Afrabia

with a wider areal scope, for example, Bryan (1959, 1968, 1975) and Schadeberg (1987) lack Greenberg and Heine's comprehensiveness and/or a sufficiently clear historical model for interpreting the empirical facts, pace Storch's (2007a: 6–8, 2007b: 95–9) optimistic reception of Bryan's work (see Güldemann, this volume, chapter 2, section 2.6.2.1 for a more detailed discussion).

Research in the spirit of Greenberg and Heine's pioneering work was only resumed more recently. While Güldemann (1998, 2003, 2005, 2008c) proposed to recognize three macro-areas involving language contact, which culminated in Güldemann's (2010) continental macro-areal profile by also incorporating two spread zones, Clements and Rialland (2008) independently developed a similar areal picture on account of a continental survey of phonological features. The reader is referred to the above studies for the methodological and empirical details, in particular to Güldemann (2010), which also addresses the differences of my proposal vis-à-vis that by Clements and Rialland (2008). The following discussion

focuses on the changes and updates I deem necessary for the individual areas and the continental picture as a whole. The latter is presented in Map 1 (cf. also the large map inserted at the end of this volume, which also retains the genealogical information presented in Güldemann, this volume, chapter 2).

Map 1 is similar to the relevant map in Güldemann (2010) in that it identifies on the one hand two macro-areas that are not only typologically but also genealogically homogeneous – spread zones in terms of Nichols (1992) – namely zone II, hosting the Bantu family, and zone VI, which is covered by Afroasiatic languages. On the other hand, the map shows three macro-areas that are characterized by a large-scale clustering of isoglosses that are globally and/or continentally diagnostic for the long-term involvement of a considerable amount of contact-induced feature transfer, namely the Kalahari Basin (zone I), the Macro-Sudan belt (zone III), and Chad-Ethiopia (zone V). Another hypothesized macro-area, Southern High Africa, is reconstructed but has become submerged entirely by the Bantu spread zone and is thus not represented in Map 1.

The major differences between the present discussion and Güldemann (2010) are twofold. First, the northern spread zone I is reconceptualized to include the Arabian Peninsula and the Lower Nile region, which host(ed) languages of the Semitic and Egyptian lineages of Afroasiatic, respectively, and is thus renamed from Sahara to Afroasiatic spread zone (cf. section 3.2.4.7). Second, I now recognize an additional transition sphere IV that separates the Macro-Sudan belt from the Afroasiatic spread zone and Chad-Ethiopia (cf. section 3.2.4.5). This area is internally highly complex and diverse in including different types of border territories and, significantly, hosting or abutting on all four accretion zones identified in section 3.2.2.

The last new point should also make clear that the change in the macro-areal representation from transition zones in Güldemann (2010) to line-like boundaries in Map 1 is only apparent and does not really reflect a reconceptualization. In Güldemann (2017b) I argue that in the majority of cases macro-areal boundaries are rather geographical spaces themselves or cannot even be realistically demarcated, as is the case with the moving linguistic frontier of the Bantu spread zone encroaching on the Kalahari Basin, which Map 1 quite inadequately symbolizes with a line tracing what is in fact the attested earlier extension of non-Bantu languages in southern Africa.

The individual entities of the macro-areal profile in Map 1 are discussed in the following sections, starting in the south of the continent with the Kalahari Basin.

3.2.4.2. Kalahari Basin

The Kalahari Basin, named after a similar if smaller entity of physical geography, was proposed in Güldemann (1998). It conceptually emerged to a considerable extent from the dissatisfaction with Greenberg's (1963) classification of the so-called "Khoisan" languages of southern Africa and is thus a case where a weak

genealogical hypothesis has an attractive areal contender in line with Nichols (2010). A lot of the early contact research in the region concentrated on the Khoisan-Bantu interaction (cf. section 3.2.3.1). Today, the focus has shifted to the non-Bantu languages that are or were distributed over the entire geographical area (cf. Güldemann [2001a, 2013a] and Naumann [2016] on structural features and Sands [2001], Honken [2006], and Güldemann and Loughnane [2012] on lexical diffusion).

Table 4 summarizes the results of the latest survey of the Kalahari Basin area by Güldemann and Fehn (2017), giving the list of isoglosses found so far across all three core families, Tuu, Kx'a, and Khoe-Kwadi, as well as the extent to which later colonizers like some geographically entrenched Bantu languages and Afrikaans share these features.

It is important to take into account that the data in Table 4 no longer reflect a compact geographical signal in the present but rather a reconstructed situation before the Bantu expansion and European colonization came to change the demographic and linguistic picture drastically. Given that Bantu languages have completely replaced other earlier languages north and east of the Kalahari Basin, there is another important caveat. It must remain largely open whether the area's geographical delimitation as defined by the current feature distribution reflects an old areal configuration or is merely an artifact of the extent of the Bantu spread at the time of our linguistic data collection. It is important in this context that Naumann (2016) demonstrates that southern Africa, including the Kalahari Basin *and* the southeastern Bantu languages up to northern Zimbabwe and Mozambique, forms a phonological area, which may indicate that the linguistic areality may have had a (partly) different spatial configuration in the past.

Finally, the Kalahari Basin demonstrates the difficulty of ascertaining the nature of a macro-area in a long-term perspective. Güldemann (1998) initially viewed it as a residual~accretion zone, based on the adequate observation of its higher lineage diversity vis-à-vis the adjacent homogeneous Bantu spread zone and its historical accrual of new unrelated languages. However, subsequent research leads to the conclusion that one major member of the Kalahari Basin area, the Khoe-Kwadi family, is itself a colonizing lineage. This suggests a more general pattern of "sedimented" linguistic populations, namely Tuu and Kx'a before Khoe-Kwadi before Bantu before Germanic. Moreover, even the first layer displays a considerable internal homogeneity, which includes the possibility of an old genealogical relation (see Güldemann, this volume, chapter 2, section 2.4.4.1), and the predominant interaction history between all these linguistic clusters is one of replacing each other. Hence, it can be questiond whether one is confronted with a long-term accretion zone; alternatively, the Kalahari Basin could also have the character of a spread zone whose particular geography and ecology simply generated a more protracted history of language replacement, because it entails zones where, depending on the subsistence requirements of colonizing populations, earlier linguistic layer(s) hold out longer.

Table 4: Linguistic features of the Kalahari Basin (after Güldemann and Fehn 2017)

Feature	Tuu	Kx'a	Khoe-Kwadi	Nguni (Bantu)	Tswana (Bantu)	Afri-kaans
Phonetics-phonology						
Lingual ingressives = clicks	X	X	X	X	(X)	(X)
Glottalic egressives = ejectives	X	X	X	X	(X)	
Uvular stops	X	(X)	(X)	–	–	–
Aspirated obstruents	X	X	X	X	X	–
Obstruent-obstruent clusters	X	X	X	–	–	–
Nasalization	X	X	X	–	–	–
Pharyngealization	X	X	(X)	–	–	–
Register tone system	X	X	X	–	–	–
Specific lexical root phonotactics	X	X	X	–	–	–
Lexical structure						
Restricted numeral system	X	X	(X)	–	–	–
Specific perception verb conflation	X	X	(X)	X	X	–
Morphosyntax						
Head-final genitive	X	X	X	–	–	X
Host-final locative flagging	X	X	X	X	X	X
Host-final derivation	X	X	X	X	X	X
Clusivity	X	X	(X)	–	–	–
Multi-verb constructions	X	X	X	–	–	(X)
TAM morphotactics	X	(X)	(X)	–	–	–
Clause-second pivot	X	X	(X)	–	–	(X)
Non-semantic participant flagging	X	X	(X)	–	–	–
Non-canonical clausal noun modifiers	X	(X)	(X)	X	X	–
Reduplicative causative	(X)	(X)	X	–	–	–
Dedicated associative plural	X	(X)	(X)	–	–	X

3.2.4.3. Bantu spread zone

As mentioned above, from a neutral perspective, macro-areas are not only due to language contact. The large-scale expansion of a language family can also lead to a linguistically homogeneous "spread zone" that may qualify as an entity comparable to a contact-induced area on the continental level. The large Bantu spread zone is a macro-area of this type.

The historical expansion of the Bantu languages is a major population event in African history and has always been a central focus of research, for which linguistics provides without doubt crucial empirical data. A central step forward was Greenberg's (e. g., 1972) convincing proposal that the staging point of this migration was southern Nigeria and Cameroon, an area which still today hosts the closest relatives of Narrow Bantu languages. A major new development can be seen in such recent studies as Bostoen, Grollemund, and Muluwa (2013), Bostoen et al. (2015), and Grollemund et al. (2015), which conclude that the spread out of the original homeland was positively affected by the temporary opening of the dense rainforest cover in the south, enabling Bantu groups to cross the region through a more savanna-like corridor without having to adjust fully to an entirely different environment. Given the modern settlement of Bantu all over the rainforest, this would imply that such an adaptation process would have started intensively only in a later historical phase and possibly according to geographical trajectories not emanating only from the northwest.

In section 3.2.3.2 I have already provided some information about language contact patterns of Bantu languages in different parts of the family's expansion range. Dedicated intensive research on the diverse local signatures of such contact will certainly allow inferences about the typological profile of a given area before it was colonized by Bantu. However, the colonization process has been so intensive in most regions that the identification of the exact affiliation of any submerged languages mostly remains speculative. The central area of the spread zone is exclusively covered by Bantu languages and there are only a few non-Bantu enclaves in the fringes, notably the three indigenous families of the Kalahari Basin treated in section 3.2.4.2, various lineages of the Ubangi pool and Central Sudanic in Central Africa, and finally two isolates and Cushitic in East Africa (Nilotic languages in the area predominantly reflect their relatively recent expansion rather than being linguistic remnants).

While the traditional bias toward research on genealogical relationships has also nourished an overwhelming focus on this type of investigation in the Bantu domain, the results are still very inconclusive regarding the family's internal and external classification. One likely reason for this situation is the presence of areal effects within the spread zone, as contact has also been and still is rampant among these genealogically related languages (cf. Ngonyani [2001] on the multiple linguistic components of Tanzanian Ngoni as just one relevant case).

An instructive example for the scientific treatment of this methodological problem is the early assessment of different degrees of lexical similarity across the Bantu area. On the basis of retention rates vis-à-vis his reconstructed Bantu vocabulary, Guthrie (e. g., 1962) determined an area south of the Central African Rainforest as the so-called "Bantu nucleus": it displayed purportedly the closest proximity to the proto-language and was thus also viewed as the place of the origin of the family. As mentioned above, this was, however, convincingly refuted by Greenberg. Important in the present context is Möhlig's (1979) proposal to view the lexically homogeneous Bantu nucleus as the reflex of linguistic homogeneization in line with the results of dialectological research approaches. In other words, a genealogically homogeneous area like the Bantu spread zone can also be subject to considerable contact-induced convergence.

A well-known but historically inconclusive example for the potential importance of contact and convergence among closely related Bantu languages is the highly diverse Swahili complex briefly treated altready in section 3.2.3.2. The mainstream hypothesis about its origin, outlined in detail by Nurse and Spear (1985) and Nurse and Hinnebusch (1993), assumes a single founder event of contact with non-African populations that gave rise to a Proto-Swahili language that later diverged into the many modern varieties. However, Nurse (1988, 1991, 1996) himself has also entertained contact scenarios within and across Swahili that are far less compatible with a simple genealogical model. In general, linguistic variation across the entire Swahili spectrum amounts to a degree of diversity holding elsewhere between clearly differentiated Bantu subgroups. This does not only apply to such deviant varieties as spoken on the Comoro islands (see Nurse 1989) but even to the relation between the adjacent primary dialect clusters in Kenya and Tanzania, so-called "northern" vs. "southern" Swahili (see Nurse 1982). Moreover, there are clear cases in which coastal Bantu communities shifted, so to speak, their cultural and arguably also linguistic alliance toward the Swahili complex; this is relevant for Mijikenda (Möhlig 1992; Nurse and Walsh 1992), Makonde (Rzewuski 1991; Schadeberg 1994; Devos 2007), and Makhuwa (Schadeberg and Mucanheia 2000). Accordingly, it is still open season to investigate an alternative hypothesis, namely that the Swahili complex is a Bantu-internal "Sprachbund" that arose in a complex history of contacts that were diverse in space and time and even involved more than a single Bantu source (see Möhlig 1984/85, 1989; Güldemann 1992).

Möhlig's (e. g., 1977, 1978, 1981) general approach is an exceptional framework according to which precolonial Bantu history should be explained primarily in terms of secondary family-internal contact and so-called "stratification" of different family layers. However, his model had relatively little impact. Apart from the prevailing focus on the family-tree model, tracing linguistic divergence processes and thus neglecting convergence, this is due to the fact that Möhlig or other like-minded scholars unfortunately never developed such a proposal fully, so that it remains difficult to evaluate it in detail from an empirical perspective. However,

that the in-depth investigation of precolonial contact and convergence in the Bantu domain is a fruitful path in addition to the traditional phylogenetic research has been shown by recent research (see, e. g., Bostoen 2007) and seems to be garnering interest in the wider community (cf. Gibson, Guérois, and Marten 2016).

3.2.4.4. Macro-Sudan belt

The Macro-Sudan belt has been argued for by several studies like Greenberg (1959, 1983), Güldemann (2003, 2008c, 2010), and Clements and Rialland (2008). There are even earlier predecessors of an areal approach to isoglosses in the wider area like Tucker's ([1940] 1967) "Eastern Sudanic" that was conceived of as a structurally defined group of unrelated lineages subsumed today under Central Sudanic and the Ubangi pool of Niger-Congo and is coextensive with the eastern half of the area at issue here. The geographical delimitation of the Macro-Sudan belt can be defined approximately by the following boundary zones: a) in the north, the Sahel up to the border triangle between Chad, Sudan, and the Central African Republic; b) in the northeast, the Congo-Nile watershed running east of the South Sudan–Central African Republic border; c) in the southeast, the Western or Albertine Rift Valley marked by the Albert and Edward Lakes; and d) in the south, the linguistically defined fuzzy frontier between non-Bantu and Bantu languages running east–west through the Central African Rainforest.

The above boundaries in the north and even more so in the northeast represent the major difference between my and Clements and Rialland's similar concept of the Sudan(ic) belt. Although these authors (2008: 67–68) acknowledge that the languages in Sudan and the larger parts of Chad and South Sudan lack the core features of their core area in the west, they join these zones with it, while I assign them to a transition sphere (see section 3.2.4.5) and the Chad-Ethiopia area (see section 3.2.4.6).

The Macro-Sudan belt in my geographical extent turns out to display a considerable correlation with a couple of non-linguistic areal units. One is an entity of physical geography according to the Köppen-Geiger climate classification, namely the latitudinal profile of the equatorial winter-dry zone (Aw) north of the Central African Rainforest (see Kottek et al. 2006). The other is the combined area formed by two major and adjacent "culture provinces" called the "Western Sudan" and the "Yam belt", as defined primarily in terms of precolonial food production by Murdock (1959: part 3 and 7, see his Maps 10 and 13).

This macro-areal hypothesis has probably seen the most intensive research since it was proposed more than 10 years ago. Among other things, this is reflected by the research initiatives at LLACAN in Paris and the University of California at Berkeley as well as the dedicated workshop "Areal Phenomena in Northern Sub-Saharan Africa" organized by Dmitry Idiatov and Mark Van de Velde at the 8th World Congress of African Linguistics in 2015 in Kyoto, Japan (see http://

idiatov.mardi.myds.me/Areal_Phenomena_in_NSSA.html). Hence, there is an extensive amount of new work to be reported since the last published treatments by Güldemann (2010, 2011).

Although I start here from a different genealogical perspective on African languages according to Güldemann (this volume, chapter 2), the profile of the area at issue does not change drastically compared to Güldemann (2010). Changes concern more the renaming and classificatory reordering of some units rather than their (re)assignment to the different macro-areas. The most important reorganization is caused by the new recognition of the Sahel transition (see section 3.2.4.5) with the effect that the more restricted participation in the area of such units as Atlantic, Songhay, Dogon, etc. is in fact better accounted for. Some changes also seem to be appropriate due to the identification of new isoglosses, which potentially affects the status of an individual unit vis-à-vis the area, for example, grouping Ijoid with the core rather than the periphery.

Table 5 contains an updated list of features of the Macro-Sudan belt. Almost half of them are phonological, which connects with an older tradition in this part of Africa of investigating similarities in sound structure with an areal perspective (cf. Wolff 1959; Ladefoged 1968; Thomas 1972). Apart from such newly added traits as lax question prosody and the last three morphosyntactic characteristics,[2] it can be observed that some older isoglosses have been modified based on the growing knowledge on and more dedicated search for them in and beyond the Macro-Sudan belt. For example, as rightly pointed out already by Idiatov (2009: 1394–1395), the complex vowel inventories typical for the area cannot all be ascribed to an ATR harmony system, so that the relevant feature is now recast in terms of a more neutral inventory size of vowels following Maddieson (2013 f); as acknowledged earlier, the distribution of the feature includes what is called here the East Sudan-Gregory Rift zone (see section 3.2.4.5). Also, while I focused earlier on the cross-linguistic rarity of V-O-NEG according to Dryer (2009) and characterized it as a subareal feature, Idiatov (2010, 2012) and Idiatov and Van de Velde (2015) have brought forward plausible arguments for viewing post-verbal and clause-final negation more generally as a trait of the entire Macro-Sudan belt (see also the contributions to the workshop "The History of Post-Verbal Negation in African Languages" organized by Maud Devos and Dmitry Idiatov at the 7th World Congress of African Linguistics in 2012 in Buea, Cameroon (see http://idiatov.mardi.myds.me/WOCAL7_Negation.html).

[2] It goes without saying that additional candidate features (may) exist. They are not included here, either because they escaped my attention or I consider them to be still inconclusive (cf., e. g., Sinnemäki's [2010] study on the association of zero-marking for core arguments and verb-medial word order, the results of which with respect to the Macro-Sudan belt are based on a genealogical and areal language classification that differs from mine).

Table 5: Linguistic features of the Macro-Sudan belt

Feature	Source(s)
Phonetics-phonology	
Implosive consonants	Maddieson (2013a)
Labial-velar consonants	Maddieson (2013b), Idiatov and Van de Velde (2016), Segerer (2015), Cahill (2017)
Three+ level tones	Maddieson (2013c), Clements and Rialland (2008), Hyman et al. (2015)
Seven+ vowel qualities	Dimmendaal (2001), Maddieson (2013f), Rolle, Lionnet, and Faytak (2016)
Nasalized vowels	Hajek (2013), Rolle (2015)
"Lax" question prosody	Clements and Rialland (2008), Rialland (2009, 2015)
Morphosyntax	
*"(Sur)pass" comparative**	Stassen (2013)
Logophoricity	Güldemann (2003), Segerer (2002-7), Nikitina (2015)
Post-V/clause-final negation	Dryer (2009), Idiatov (2010, 2012), Idiatov and Van de Velde (2015)
OBJ-V-OTHER	Gensler and Güldemann (2003), Dryer and Gensler (2013), Baier, Sande, and Jenks (2016)
Split predicate/STAMP morph	Güldemann (2011), Anderson (2011, 2012, 2015, 2016)
Plural word	Dryer (2013)
Locative-existential conflation	Creissels (this volume, section 6.1.4.5)

Notes: *Old feature* as per Clements and Rialland (2008) and Güldemann (2003, 2008c, 2010);
* not excluding Bantu spread zone

Table 5 also displays an areally frequent word order trait with a new label, albeit without a new analysis: while the previous literature commonly defines it as SBJ-(AUX)-OBJ-V-OTHER, I have recasted it intentionally as a more restricted OBJ-V-OTHER pattern.[3] It is the syntagmatic split of the non-subject participants

[3] Note that SBJ-(AUX)-OBJ-V-OTHER involves two typologically, and in Africa areally significant, splits, which in certain languages interact but are nevertheless in principle independent, namely the split at issue here, between an object and other non-subjects,

effected by the verb that Güldemann (2008c: 161) has argued to be diagnostic for the Macro-Sudan belt against its cross-linguistic rarity established by Dryer and Gensler (2013). In a treatment of the more inclusive SBJ-(AUX)-OBJ-V-OTHER order, Creissels (2005: 50) writes regarding the comparability of its different language-specific instantiations across the area:

> … a fine-grained typology of constituent order patterns in West Africa does not confirm the current view according to which, in languages with alternant constituent order patterns, the variant with the object between the subject and the verb can be identified with the Mande type of constituent order.

I fully subscribe to this view, as reflected already in Gensler and Güldemann's (2003) first survey of the feature. However, as also argued there in detail, the recurrent surface order OBJ-V-OTHER can still be treated as an areal phenomenon despite its considerable structural diversity across Macro-Sudan belt languages, because "multiple factors can be (and probably typically are) at work together; relevant both for: a) the emergence of the feature in an individual language [and] b) the distribution of the feature in a geographical area …" Concretely, the frequent African occurrence of the quirky order pattern is argued to result from a conspiracy of various factors, two of which are particularly important. First, there is the propensity in Niger-Congo and other nearby languages to allow for an order alternation of (certain types of) objects, fueled by recurrent grammaticalization paths (Heine and Claudi 2001) and/or mediated by information structure (Güldemann 2007); *pace* Creissels's (2005: 42) claim, this is all that I deem necessary for reconstruction in Niger-Congo, not generalized OBJ-V. Second, there are the areal pressures in the western Macro-Sudan belt, especially through contact with Mande languages that have been playing an important sociopolitical role in the wider area and possess SBJ-AUX-OBJ-V-OTHER as a deeply entrenched basic order.

Another case of a partly necessary reevaluation of a Macro-Sudan trait concerns what I proposed in Güldemann (2008c: 169–171) as a feature of the Central African hotbed, namely minimal-augmented pronoun systems. Their central characteristic is a first-person dual inclusive form whereby dual is not a systematic trait anywhere else in the language. This is illustrated by the system of Dar Daju in Table 6, whose first-person form *kóká* is the only pronoun in the paradigm that conveys semantically dual number but which does not arise from the introduction of an additional number category but rather from the combination of the positive values of just two privative person features, ∓speaker and ∓addressee, without any additional number specification.

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and that between an auxiliary(-like element) and the content verb, called here "split predicate" following Bearth (1995). Their independence is also evident in Table 5 in that the second predicate-related split has been proposed as a separate Macro-Sudan feature.

Table 6: Personal pronouns in Dar Daju (after Palayer 2011: 56–60)

Person features		**Minimal number**	**Augmented number**
Traditional label	**Underlying features**		
First person exclusive	+Speaker/-Addressee	*àná*	*óská*
First person inclusive	**+Speaker/+Addressee**	***kóká***	*kóónà*
Second person	-Speaker/+Addressee	*ìní*	*óŋŋà*
Third person	-Speaker/-Addressee	*máá* (M), *céé* (F)	*sáá*

While such pronoun systems were discussed for Africa as early as Houis (1971), they have previously failed to be recognized as reflecting a special typological feature, as in Creissels (2000: 247). Given the overall rarity of dual number in Africa, a good approximation of this system's distribution on the continent can be derived from Segerer's (2002–2007) list of languages with a dual pronoun; that is, most of his 48 languages with any dual form, namely all but Dizin, Mambila, Lamnso', and Lega, have this in the first person only. The original list by Güldemann (2008c), the relevant languages in Segerer (2002–2007), and a few more cases still absent in the two first sets are given in Table 7. While there are a few new language groups such as Atlantic, Dajuic, and several Ubangi subgroups, the basic distribution profile of this feature arising from this larger sample does not change considerably: it is recurrent in the east-central hotbed of the Macro-Sudan and its adjacent part of the Sahel, with a few dispersed cases in Atlantic and Mande in the far west.

However, there is a cross-linguistic observation that requires a more nuanced areal perspective on this feature. According to Cysouw (2003) the emergence of a minimal-augmented system largely implies the pre-existence of a feature that is typologically far more common, viz. the basic opposition of inclusive vs. exclusive. One can hypothesize then that the cases of minimal-augmented systems are geographically embedded in a larger clusivity area. This is indeed borne out by the pronoun data available. Segerer (2002–2007) lists 125 African language varieties with this feature the geographical distribution of which is at first glance virtually identical with but, as expected, denser than that of the minimal-augmented subset. However, taking Bender's (1989: 28–29) Nilo-Saharan survey of clusivity into account, the picture changes considerably. At least the following lineages also have languages with an exclusive-inclusive distinction: Kadu (U20), Kuliak (U21), Kunama (U24), Nyimang (U30), Nubian (U33), Temeinic (U35), Surmic (U37), Koman (U40), and Baga (U41), so that this more general feature is certainly not confined to the Macro-Sudan Belt but can only define its boundary with the two neighboring spread zones of Afroasiatic and Bantu, where the trait is largely absent. This picture is not surprising, because the feature is privative and cross-lin-

Table 7: (Likely) languages with a minimal-augmented pronoun system

Group	Subgroup	Languages
KORDO-FANIAN	Heibanic	Heiban, Moro
	Talodic[a]	Proto-Talodic
Nilotic	West	Nuer
Dajuic	–	*Dar Daju (Palayer 2011: 56); Dar Sila*
Chadic[c]	West	Fyer, Ron, Sha, Kulere
	Central	Central Marghi, Lamang, Xedi, Gude, Buduma, Lagwan, *Psikye, Mofu-Gudur*
	East	Lele, *Tobanga, Migaama, Mubi*
Central Sudanic	Bongo-Bagirmi[b]	Gula, Furu, Mbay, *Kaba Démé, Kaba Náà, Kulfa, Lutos, Bedjond, Bongo*
ADA-MAWA	Samba-Duru	Dii
	Kebi-Benue	*Mambai (Anonby 2011: 293 ff)*
UBANGI	Zandic	*Geme*
	Mundu-Baka	*Baka, Monzombo*
	Bandaic	*Banda-Bambari*
	Ndogoic[d]	Belanda Viri; *Bai, Ndogo, Sere*
BENUE-KWA	Non-Bantu Bantoid	Ghomálá', Ngiemboon, Ngemba, Limbum, Vengo
	Bantu	Akoose A15b, Makaa A83, *Koonzime A84*
Mande	Southeast	Dan, Yaouré; *Kla-Dan (Makeeva 2010)*
	West	Toma; *Zialo, Loma (Babaev 2010a)*
ATLANTIC	Bak	*Mankanya (Wilson 2007); Jola-Kasa, Kuwaataay*
	Tenda	*Oniyan, Ménik*

Notes: POOL; *Italic* = language not in Güldemann (2008c) but listed in Segerer (2002–2007) or another source; [a] Norton and Alaki (2015: 153–154); [b] Boyeldieu and Nougayrol (2004); [c] Dittemer, Ibriszimov, and Brunk (2004); [d] Tucker and Bryan (1966: 91)

guistically quite common, so that it can easily emerge independently, a clear case being the clustered occurrence of clusivity in the Kalahari Basin (see section 3.2.4.2), whose languages are largely absent in Segerer's data base. Overall, clusivity is relatively evenly distributed in Africa, except that it happens to be lacking in the two large spread zones of the continent.[4]

As also indicated in Table 5, a number of other features have received a more fine-grained investigation in terms of their distribution across languages and geographical space than was undertaken by Clements and Rialland (2008) and Güldemann (2008c, 2010), partly in response to these macro-areal hypotheses. It goes without saying that more detailed data may always require adjustments to areal feature assessments. For example, this may turn out to be the case with the comparative action schema using such verbs as '(sur)pass' that is so far thought to define the north(eastern) Macro-Sudan boundary to the Afroasiatic spread zone and Chad-Ethiopia. Zelealem and Heine (2003: 56–60) show that languages in the Horn of Africa not only employ the locally typical source schema (see section 3.2.3.8) but have also recourse to the action schema. The reason that I retain it here as a Macro-Sudan belt trait is that the overall picture for Ethiopia remains inconclusive.[5]

A major step forward is that recent feature surveys target the language level rather than that of larger lineages, as still done in Greenberg's and my work, and ultimately aim at exhaustivity rather than being based on a selective sample, such as in Clements and Rialland (2008). While such quantitatively and qualitatively denser analysis has consolidated some features (cf., e. g., Idiatov [2009: 1395] regarding logophoricity in the Mande family), considerable distributional gaps in the area have been identified for other traits, the potential implications of which will be discussed in section 3.2.4.9 below.

The impression that a few more traits have consolidated the Macro-Sudan belt as a whole is paralleled by a similar increase in subareal features. For central Africa, in addition to labial flaps and (possibly no longer diagnostic) minimal-augmented pronoun systems, one can mention an *m*-based alliteration in singular pronouns discussed by Güldemann (2017a) and possibly possessee-like quality expressions as reported by Van de Velde (2012) and Idiatov and Van de Velde (2015). As men-

[4] More generally, a possible pattern whereby the two spread zones of Afroasiatic in the north and Bantu in the south differ generally from the African languages in between can be a challenge for the assessment of the Macro-Sudan belt. That is, such a wider distribution should be excluded for an assumed Macro-Sudan belt trait, because this could be a signature of the older profile of greater parts of Africa that was simply erased in the two spread zones.

[5] Virtually all examples claimed by the two authors for the action schema concern the single dimension of size, so that it remains unclear to what extent they are generally productive comparatives in Ethiopia.

tioned in section 3.2.3.4, the Gulf of Guinea or Kwa coast also seems to be a larger hotbed of subareal features like, for example, serial verbs (Dimmendaal 2001a). As with the proposed pan-areal traits, the ongoing research revolving around the areal hypothesis will also refine these and other feature profiles.

3.2.4.5. Central transition sphere

The Macro-Sudan belt appears to be separated in large parts from the other more coherent macro-areas in the north and east by a zone with its own internal dynamics, which I call here for convenience central transition sphere. It is itself structured into at least two broader areas and also comprises all four accretion zones identified in section 3.2.2, namely the Dogon Plateau, the Nuba Mountains, the Ethiopian Escarpment, and the Southern Gregory Rift.

The first subarea, the east–west belt of the Sahel, which mediates between the northern flank of the Macro-Sudan belt on the one hand and the Afroasiatic spread zone and the western part of Chad-Ethiopia on the other hand, has already been characterized to a large extent in section 3.2.3.5 regarding its language contact profile. Central properties in terms of linguistic ecology are that the language density is overall in between that of its adjacent macro-areas, that it hosts (important parts of) various larger lineages like Mande, Songhay, Chadic, and African Arabic, including major vehicular languages, but also such apparent remnant lineages as Dogon, Bangime, Laal-Laabe, Kujarge, and Dajuic. I have described above the geographical chain of big languages that have been replacing other minor languages and partly each other, implying intensive contact today and in the past. The most recent spread is that of Sudanese Arabic within the Baggara belt (cf. Braukämper 1995), which is a clear case of a language having started to blend in into the new Sub-Saharan environment.

As mentioned already in section 3.2.3.5, language contact in the Sahel, especially in the western and central parts, has received considerable attention since the 1980s through Zima's and later also other scholars' work. Although the Sahel has been called in this research a linguistic area or "Sprachbund", I do not treat it here as a macro-area itself. This is because there are so far no linguistic isoglosses that span the entire area; the shared features are restricted only to smaller zones in accordance with the above chain of contact partners and/or they are also widely relevant in neighboring macros-areas like, for example, the interaction between verbal morphology, clause status, and information structure (cf. Zima 1991, 2006b; Frajzyngier 2004). The only feature I am aware of that has been entertained to span a large part of the Sahel is, according to Heine (2011: 54–56), the parallel grammaticalization of the body part noun 'head' toward a reflexive marker. If indeed contact-induced, it involves historically transparent grammaticalization and is thus an apparently recent phenomenon (cf. the similar cases of shared reflexives mentioned in section 3.2.3.6 and section 3.2.3.8). Another reason for not treating

the Sahel as a macro-area in its own right is that it has been settled in its central-eastern portion concentrated in southern Chad by languages from the Saharan, Maban, and Furan families that are aligned structurally with another genuine macro-area, namely Chad-Ethiopia to be treated in section 3.2.4.6. This confirms the interpretation of the Sahel as a transition zone rather than an entity that can be robustly defined by linguistic isoglosses.

Another token of the "mediating" role of the Sahel within the Central transition sphere is that some of its typical families are recurrently distributed across more than one areal entity and as a result display an ambiguous behavior regarding their areal isoglosses according to an internal north–south diversity axis, notably Mande, Songhay, and Chadic. Songhay is a particularly striking case in that it is present in all three relevant areas, but appears in each one with a somewhat different structural profile. In addition to the vehicularization of some larger Sahel languages as such, a recurrent phenomenon can be observed when these encroach onto the Macro-Sudan belt in the south, namely the emergence of restructured varieties in a process that has even been compared occasionally with creolization. This is relevant for Manding (cf. Gingiss [1979] and Partmann [1979] on Jula), Songhay (cf. Nicolaï, e. g., 1987, 1995, 2009), Hausa (cf. Zima 2000, 2001), Fula (cf. Tourneux and Konaï 2014), and Arabic (cf., e. g., several contributions in Owens [1993] and Lafkioui [2013]).

Further east the character of the Central transition sphere is considerably different. First, the axis of its major part is north–south rather than east–west. Moreover, according to its current makeup it can be characterized as a spread zone of a single family, Nilotic-Surmic, having a remnant enclave of the Kuliak family and, more importantly, being flanked and delimited by several accretion zones. These were identified in section 3.2.2 as the Nuba Mountains, the Ethiopian Escarpment, and possibly the South Sudan–Central African Republic border region, all in the north, and the Southern Gregory Rift in the south. For want of a better term, the combined area of these accretion zones and the central spread zone is called here "East Sudan-Gregory Rift", because it ranges from the southern parts of Sudan through South Sudan along the Eastern or Gregory Rift Valley up to its southern tip in north-central Tanzania (the term East Sudan merely takes up the connotation of a general geographical region and must not be confounded with any nation state or the linguistic genealogical concept of the East Sudanic family proposed by Greenberg).

The large but linguistically very diverse entity overlaps to some degree with the area entertained by Schadeberg (1987) and taken up partly by Clements and Rialland (2008: 67–68). One could argue in addition that head-initial syntax with a verb-initial transitive clause (Heine 1975, 1976) and marked-nominative case systems (König 2006, 2011) are other locally typical features. However, these findings can and, I argue, should be interpreted in a different way, rather than viewing them as some kind of area-defining signals. That is, the impression of

areality emerges first of all from the fact that Nilotic-Surmic, which displays all relevant traits, occupies the crucial core area. While this family can be assumed to have emerged in the vicinity of the two northern accretion zones, the features only occur there sporadically and thus cannot qualify for the entire East Sudan-Gregory Rift as widespread, stable, and transferred recurrently by contact. Accordingly, this zone is similar to the Sahel in not forming a contact area itself but rather separating two macro-areas and giving contact signals in diverse directions. As opposed to the Sahel, the core territory is currently a spread zone of a single family, Nilotic-Surmic, whereby it remains unclear whether this areal character is stable or tied accidentally to this particular expansion event.

3.2.4.6. Chad-Ethiopia

Chad-Ethiopia is another macro-areal entity that is thought to be contact-mediated. It was first proposed as a convergence zone by Heine (1975, 1976) on the basis of its shared head-final syntactic profile that is globally not rare but overall untypical and thus diagnostic on the African continent. Güldemann (2001b, 2005, 2008b) and Cohen, Simeone-Senelle, and Vanhove (2002) identified the possibly first isogloss that has a geographical distribution similar to but independent of word order, namely a specific type of "light verb construction". The feature can be characterized as a complex predicate that is composed of a generic auxiliary and a non-verbal content sign of otherwise diverse part-of-speech status that can thus be used to render a state-of-affairs expression. Güldemann (2010) tried to substantiate the macro-area with a couple of additional features.

Chad-Ethiopia is not identified by Clements and Rialland (2008), who only recognize a much smaller "East" zone, which effectively is the Horn of Africa aka "Ethiopia" (see section 3.2.3.8). Their non-recognition of a larger area seems to be related to two circumstances. One is their exclusive focus on phonology, leading them to disregard morphosyntactic isoglosses that more clearly call for a westward extension of their "East" zone. As mentioned in section 3.2.3.8, a number of such features are not exclusive evidence for Ferguson's (1976) Ethiopian contact area, because they are just as prominent further west up to Lake Chad, so that the Horn of Africa is a part of this larger area (cf. also Schadeberg 1987: 227), irrespective of how to define it as a smaller contact zone. This relates to the other reason for Clements and Rialland's result, namely the modern geographical profile of Chad-Ethiopia. Today it is in fact not a single compact entity but comprises two zones, an eastern one in the Horn of Africa and a western one centered on Chad; a few remnant languages aside, these are separated by a large territory that became uninhabited desert and/or was subject to colonization by a new language, Arabic.

The reconstructed large area turns out to correlate with a geographical configuration that in fact helps to explain this modern geographical configuration. That is, the center of Chad-Ethiopia in the north of Sudan traces the major, albeit partly

defunct, tributaries of the (White) Nile, namely the Blue Nile and the Atbara entering from the Ethiopian Plateau in the southeast and the currently dry Wadi Howar (or Yellow Nile) and Wadi el Milk coming from the southwest. Precisely this western confluence zone, while disrupting Chad-Ethiopia today, has been independently argued by Rilly (2004, 2010) and Dimmendaal (2007) to have hosted the ancestor(s) of such modern lineages as Taman, Nubian, Nara, Nyimang, and Meroitic, which clearly belong to the Chad-Ethiopia area. It is also noteworthy in geographical terms that some of its languages encroach in various locations onto the Central transition sphere just dealt with in section 3.2.4.5, namely with Nara and Kunama in the accretion zone of the wider Ethiopian Escarpment, with Nubian and Nyimang in the accretion zone of the Nuba Mountains, and with Taman, Furan, Maban, and Saharan in the Sahel transition.

Table 8 recapitulates the proposal by Güldemann (2010) regarding the lineages partaking in the Chad-Ethiopia area and its defining linguistic features. An important new aspect here is the more fine-grained genealogical picture because the conventional classification of many units is uncertain (see Güldemann, this volume, chapter 2).

The updated overview reveals that recent research has not brought up new linguistic isoglosses but it provides more details on the distribution of those proposed in Güldemann (2010), based on the improved state of documentation of such hitherto understudied or completely unknown lineages as Maji, Mao, Ongota, Shabo, Meroitic, Nyimang, and Taman. Dimmendaal (e. g., 2007: 41–45) independently assembled similar survey data about such (sub)features of Table 8 as converbs (related to head-finality), differential object marking (related to case), and complex predicates, thereby also entertaining an areal explanation. Apart from the fact that the features are shared by languages that under any hypothesis belong to different genealogical groups, an important argument in favor of the areal hypothesis is the fact that the Afroasiatic languages outside the Chad-Ethiopia domain do not display the relevant traits (except for missing /p/, cf. Maddieson 2013e) – a fact that suggests that those inside it innovated them. This lack of Chad-Ethiopia traits not only holds for such entire Afroasiatic lineages as Egyptian, Chadic, and Berber but also for Semitic on the Arabian Peninsula and in North Africa, and for South Cushitic in East Africa (which lost the features after leaving the Horn of Africa).

A few remarks about the linguistic characterization of features are in order, some of them referring to new data. The situation for the complex of head-final syntax, identified initially by Heine (1976), is parallel to that mentioned in section 3.2.3.8 for the Horn of Africa: individual traits like OBJ-V, etc. within this feature complex correlate to a considerable extent with each other from a cross-linguistic perspective but are also not entirely interdependent, so that their weighting should be in between counting each trait separately and all together as a single isogloss. Azeb and Dimmendaal (2006a, 2006b) and Dimmendaal (2008a) have proposed converbs as an additional areal feature, which, however, are typical for head-final

Table 8: Linguistic features of Chad-Ethiopia across the lineage inventory

Lineage*	Unit No.*	Head final syntax	Peripheral case	Complex predicate	Missing /p/
Semitic	U42	(X)	X	X	X
Cushitic	U45	X	X	X	X
Ta-Ne (Omotic)	U46.A	X	X	X	X
Maji (Omotic)	U46.B	X	X	X	X
Mao (Omotic)	U46.D	X	X	–	–
Ari-Banna (Omotic)	U46.C	X	X	X	X
Ongota	U47	X	X	–	X
Shabo	U25	X	X	X	–
Kunama	U24	X	X	X	X
Nara	U31	X	X	X	X
Meroitic	U32	X	?	?	?X
Nubian	U33	X	X	X	X
Nyimang	U30	X	X	X	X
Taman	U29	X	X	X	X
Furan	U26	X	X	X	X
Maban	U28	X	X	X	X
Saharan	U27	X	X	X	X

Notes: * = according to Güldemann (this volume, chapter 2); frame = robust Afroasiatic family; dashed frame = promising Wadi Howar family

languages in general and should be viewed as a further isogloss that is convincing but not fully independent.

Peripheral case is viewed here as bound nominal flagging of grammatical relations beyond the core roles of subject and object. The feature thus includes relevant affixes irrespective of their position vis-à-vis the nominal host and their recurrent language-specific label of "adpositions" rather than affixes or clitics. This feature remains a strong areal signal even in the more comprehensive sample of languages in Table 8.

The same holds for the special type of complex predicate with a predicativizing generic auxiliary. New and more detailed data demonstrate that it exists in virtually all languages allied to the Chad-Ethiopia area. Relevant sources are Lydall (2002) for Hamar of Ari Banna, Hellenthal (2010: 237–245) for Sheko of Maji,

Azeb (2010) for various Ta-Ne languages, Dimmendaal (2009: 313–315) for Tama of Taman, Fiedler (2013) for Ama of Nyimang, and Kibebe (2015) for Shabo; the Mao languages and Ongota are the only lineages for which the available data do so far not give evidence for its existence there.

Finally, the survey by Clements and Rialland (2008: 65–67) and additional language-specific sources show that all lineages but the Mao family and Shabo attest for the absence of the phoneme /p/, or at least its marginal status as a phoneme. This cross-linguistically rare trait also recurs in other areas of Africa, notably in the adjacent Afroasiatic spread zone, but it appears to delineate Chad-Ethiopia relatively well on its southern flank.

3.2.4.7. Afroasiatic spread zone

The continental profile of Güldemann (2010: 576) involved a geographically defined Sahara spread zone predominated today by the two Afroasiatic language groups Berber and Arabic. This concept failed to accomodate the Lower Nile valley and its African neighborhood east of the river. However, the overall linguistic picture does in fact not change dramatically if one goes further east, and this not only up to the Red Sea but even including the Arabian Peninsula. That is, both the Nile valley as well as Arabia differ little in crucial linguistic aspects from the African Sahara territories west of the Nile. I thus venture that a more appropriate macro-areal approach to northern Africa is to identify an Afroasiatic spread zone ranging from the Persian Gulf in the east to the Atlantic coast of the Maghreb in the west. This not only implies a considerable extension of one African macro-area but also the areal reconceptualization of the entire continent vis-à-vis its northeastern neighborhood, because the entire Semitic-speaking domain on the Arabian Peninsula should be conceived of as being linguistically closer to Africa than to southwestern Asia (see section 3.2.5 for more discussion). It is noteworthy that this larger spread zone has a neat non-linguistic correlate in a geographical entity of the Köppen-Geiger climate classification (see Kottek et al. 2006), namely the northern arid hot desert zone (BWh) of Africa-Arabia.

There are good linguistic reasons for this new macro-areal proposal. For one thing, all central lineages involved – Egyptian, Berber, and Semitic – belong genealogically to the same family, Afroasiatic, and thus share a good portion of common inherited features. What is more, they even have a similar typological profile within this family in opposition to other areally detached Afroasiatic groups like Chadic, Cushitic, and Omotic – to such an extent that the three families are classified repeatedly, if without consensus, under a single Afroasiatic subbranch (see Güldemann, this volume, chapter 2). The historically known dominant dynamic of this augmented area also parallels that of my previous Sahara spread zone in that it is characterized by language expansion replacing on a large scale other languages, which, to the extent known, were themselves the result of previous spreads. Last

but not least, the major relevant population events strongly suggest that the two adjacent territories of Africa and Asia can be viewed to have acted for a long time as a single whole in historical terms. While the central dynamic is epitomized by the still ongoing Arabic colonization emenating from outside Africa, this is anything but a historical exception. According to the majority views among historical linguists Semitic is implied in two other crucial events of linguistic migration transgressing the boundary between Africa and Arabia, and this in both directions. First, an early Semitic colonization from southern Arabia into the Horn of Africa gave rise to Ethiosemitic in the Chad-Ethiopia area (see section 3.2.3.8 and section 3.2.4.6), which, however, resulted in a comparatively weak areal signal across the southern Red Sea (see Simeone-Senelle and Vanhove 2006), because Ethiosemitic was subject to considerable restructuring in its new environment. Second, the assumed African homeland of Proto-Afroasiatic implies the ancient migration of Pre- or Proto-Semitic into Arabia, presumably in the northern location of the Sinai. The two cross-continental language expansions that occurred in the confines of the Afroasiatic spread zone proposed here had the same dramatic effect in the colonized area: Semitic came to replace all other languages in the Arabian Peninsula, and Arabic has been acting much later in the same way in both Arabia and northern Africa.

Similar to the Bantu spread zone, the Afroasiatic expansion in the area has been so complete that there is no direct evidence left for determining the identity of at least some submerged pre-Afroasiatic languages. The only chance to detect some signals of such a linguistic layer is to investigate the history of neighboring areas, particularly the Sahel, which may well host one or the other lineage that once had relatives in what is today the Sahara.

Another parallel to the Bantu spread zone is that there are clear indications for language contact between the genealogically related if far less numerous languages of the Afroasiatic spread zone, here particularly in the wake of the large-scale expansion of the latest colonizer Arabic and the accompanying language shift on the part of speakers of related Egyptian-Coptic and Berber (see section 3.2.3.6 and section 3.2.3.7 above).

The Afroasiatic spread zone has also witnessed linguistic encroachments with less dramatic consequences. Phoenician, Greek, and Latin are historically attested intrusions from the Mediterranean littoral in the north but were submerged by latitudinal spread dynamics. Moreover, the Sahel zone is the origin of a few non-Berber and non-Arabic language enclaves in the Sahara, not reflecting old linguistic remnants but rather more recent sporadic incursions from the south, notably northern Songhay languages, including Korandje far north in Tabelbala in Algeria but also the Chadic language Hausa in Agadez. Finally, there are Saharan languages in northern Chad and western Niger that display the linguistic profile of Chad-Ethiopia and thus compose the only major territorial portion of the Sahara that does not belong to the Afroasiatic spread zone. A study of the current and past linguistic

dynamics at this little-known macro-areal frontier would be an interesting research topic from a more general perspective.

3.2.4.8. Southern High Africa submerged by the Bantu expansion?

In addition to the five macro-areas that are currently still perceptible and shown in map 1, I have entertained in Güldemann (2010: 578–579) another more ancient one that would have been submerged in its center by the eastward expansion of Bantu and the formation of the associated spread zone. The presumed areal-linguistic signature is thus only present today in the southern and northern periphery, quite similar to the modern profile of Chad-Ethiopia comprising an eastern and western portion. The hypothesis is that before this major but relatively recent population event an area stretching from the southern tip of the continent northwards was characterized by affinities that are cross-linguistically or continentally diagnostic. These pertain to nominal morphosyntax (Güldemann 1999) and phonetics-phonology (cf. Maddieson 2013a, 2013b, 2013d); regarding the second domain, Naumann (2016) has made similar findings and furnished some additional candidate features.

This large linguistically defined region coincides to a considerable extent with and is thus named after an entity conceived in physical geography, namely "High Africa". This area is bounded in the east by the Indian Ocean and in the west by a line running northeast–southwest separating it from "Low Africa", which comprises the Sahara, the Sahel, West Africa, and Central Africa, including the rainforest and its environs (cf. Lobeck 1946; O'Brien and Peters 1999: 116). It is also noteworthy that High Africa is largely coextensive with a cluster of two entities identified in the classification of Later Stone Age cultures, namely the "southern and eastern African savannah and highland tradition" and the "area with later stone age rock art" (see Newman 1995: 32). However, the linguistic hypothesis is based on few traits that do not all clearly incorporate the Horn of Africa. Accordingly, I prefer to restrict the hypothesis for the time being to an area only extending to East Africa, opposed to my generic proposal in Güldemann (2010).

Apart from the fact that the modern wedge was caused by the Bantu expansion along a west–east trajectory, there is evidence that recent population and associated linguistic dynamics typically occur in High Africa along a north–south axis. This phenomenon may well be steered by the major topographical landmarks of the African Rift Valley in relation to the coastline. The most recent migration is the southward spread of Nilotic languages in the East African interior (see section 3.2.4.5). Another southward spread most likely emanating from further east and thus taking place closer to the East African seaboard and its hinterland is associated with Cushitic. The result of this spread is still peceivable directly in northeastern Kenya but reached areas much further south in the past, as evident from the South Cushitic enclaves in north-central Tanzania as well as the reconstructed Cushitic substrate in Bantu and Nilotic languages of the intermediate area in Kenya

(see section 3.2.3.2 and section 3.2.3.9). Finally, there is the linguistically reconstructed pastoralist spread associated today with the Khoe-Kwadi family located in the Kalahari Basin (Güldemann 2008a), which is also supported by non-linguistic research (see, e. g., Henn et al. 2008; Coelho et al. 2009).

3.2.4.9. Summary discussion

Taking up research pursued since the early 2000s, I have proposed above several macro-areal entities for Africa that are thought to reflect the continent's linguistic profile in terms of large-scale geographical diversity and feature aggregations. This research has received different types of reactions, notably on areas mediated considerably by contact to which accordingly most of the following discussion refers. New developments and refinements that do not cast doubt on the general approach have mostly been discussed above. In the following, I address some of the critical views. However, I deal only with specific counterarguments, and not with voices like Zaborski (2010b) that express general dissatisfaction with the approach but raise very few sufficiently concrete objections against the individual hypotheses.

A first type of negative stance against macro-areal research in Africa, and the Macro-Sudan hypothesis in particular, arises from disagreement with the accompanying questioning of weak genealogical hypotheses for African languages. Blench (2013: 49) in particular writes:

> Recent publications … have used geographical and typological mapping of traits to suggest that Niger-Congo in particular is somehow not a valid phylum. … As an example of this type of construct, consider 'Macro Sudanic' [sic] (Güldemann 2008[c], 2011). This consists of a series of maps and tables showing that particular phenomena (labial-velars, logophoricity, vowel harmony) have quite similar distributions across a wide area of northern Sub-Saharan Africa. Güldemann concludes from this that the historical linguists are wrong and that 'the Macro-Sudan belt is genealogically highly heterogeneous'.

However, Blench's statement turns the argument he refers to upside down because the actual research procedure was different: what Blench claims to be causally related has demonstrably developed independently. Greenberg (1959, 1983) himself had already entertained the notion that widespread typological isoglosses in the relevant area and beyond involved language contact, and this idea was well-embedded in the very framework of his genealogical classification that is partly disputed today but Blench tries to defend. My dissatisfaction with the insufficient evidence Greenberg gives for certain non-obvious genealogical relationships – say, between Mande or Ijoid and a more narrow Niger-Congo – is an independent stance assumed irrespective of any research on the Macro-Sudan belt (see, e. g., Güldemann 1998, 2001b, 2008b), and it is shared by some scholars with entirely different concerns. Another misrepresentation in Blench's statement is that the Macro-Sudan hypothesis implies that "Niger-Congo in particular is somehow

not a valid phylum" (see Güldemann, this volume, chapter 2, regarding my support for a large Niger-Congo family and the concrete hypotheses actually questioned). *Pace* Blench's above suggestion, a macro-areal approach in Africa does in no way replace or marginalize but rather supplements genealogical language classification in the attempt to explain remote historical language relationships. Before the background of new areal hypotheses, certain isoglosses that do exist across relevant lineage boundaries simply receive a necessary but alternative historical explanation. This conclusion appears to be in line with standard methodological practice because, the problematic interpretation of sporadic lexical similarities aside, the affinities identified so far for language groups of uncertain genealogical interrelation are merely typological rather than indicative of a language family. At the same time, this is in opposition to the widely discredited approach of using some of these very typological traits to support a hypothetical super-lineage that comprises Niger-Kordofanian and Nilo-Saharan, as done by Blench (1995).

The majority of skeptical reactions to African macro-areal research arise from diverse conceptions about linguistic contact areas. This holds from a general perspective but even more so for the macro-units at issue here. Apart from not engaging with theoretical considerations about areas in other sciences (see section 3.2.1 on "regions" in geography), the relevant criticisms fail in particular to engage with both the general discussion on macro-areas (see, e. g., Muysken [2007, 2008], cf. Table 1 in the introduction of chapter 3) and the concrete treatment of the African scene by Güldemann (2008c, 2010), where it is argued that these contact areas of a larger scale should be viewed to have a partly different status and thus require a modified conceptualization and methodology compared to geographically smaller and historically shallower settings.

Typical for an approach in terms of an overly restricted and, I argue, inappropriate concept of a contact-mediated area is Childs' (2017: 289) recent contribution to the topic.

> Assuming agreement on how the languages are classified, the next step is to determine what features are areal and which are not. It is not enough to invoke propinquity and shared typological features (the "circumstantialist" approach); the proper socio-historical conditions must obtain as well, typically intense and sustained interaction. Furthermore, for claims of areality to be accepted, other explanations such as internal change, must be shown to be inadequate, an action which can be performed only after detailed study of the relevant languages.

Cahill's recent assessment of the global distribution of labial-velars that questions its diagnostic value for areal linguistics in Africa betrays a similar approach. His argument is summarized at the beginning (2017: 13) as follows. Merely referring to Heine and Zelealem (2008), he briefly claims that "a 'linguistic area' is defined by unusual features which cannot be explained by chance, genetic relationship, or normal language development" and implies that the relevant areal linguists assume that labial-velar consonants "largely arise through language contact."

Since according to him, "the occurrence of KPs [labial-velars] in the vast majority of [African] languages can be attributed to genetic inheritance or regular sound change," he dismisses an areal approach to the relevant clustered distribution in the Macro-Sudan belt.

The two works imply several requirements for entertaining an areal explanation, namely that the presence of "proper socio-historical conditions" is demonstrated and that both language-internal change and inheritance are excluded or at least shown to be negligable. I consider them all to be unrealistic and thus questionable, even for contact areas of a canonical size.

With respect to the sociolinguistic preconditions, one wonders why Childs apparently does not require the same standard when it comes to the historical explanation of isoglosses that seems still today to be a kind of default for many linguists, namely genealogical inheritance – this although the conditions for this type of feature transmission are arguably more constrained in terms of space, time, and transfer pattern than for the greater variety of possible contact hypotheses. Requiring such a standard specifically for contact scenarios is even more surprising in the Africanist context where the widely accepted genealogical language classification by Greenberg (1963) is already weak on account of the narrow linguistic evidence. What if one were to evaluate in addition the plausibility that, for example, purportedly Nilo-Saharan lineages as remote as Songhay and Central Sudanic have ever been part of a single historical network of languages that by links through space and time provided proper conditions for *genealogical* feature transfer? In any case, I think that proper conditions for contact among neighboring speech communities are the default in normal sociolinguistic environments, as opposed to cases where contact is for whatever reasons impeded or even blocked entirely. Thus, unless the lineages concerned are in principle unlikely to have ever been linked, prehistorical cases do not require explicit proof, certainly not more proof than implied by genealogical hypotheses of a comparable scale and time depth.

The demand to exclude other possible explanations for the emergence of shared features is equally unwarranted and disregards the possibility, in fact, likelihood, of what is commonly called *multiple causation* in historical linguistics and other sciences (cf., e. g., Malkiel 1967). For one thing, contact areas cannot only be due to contact, just as isoglosses within lineages or spread zones are not exclusively due to inheritance (cf., e. g., the brief discussion of contact in the Bantu and Afroasiatic spread zones in section 3.2.4.3 and section 3.2.4.7, respectively). That is, such areas are multivariate rather than univariate in the sense of Montello (2003: 177). If not, the area concept would be essentially reduced to entities that involve a single event of contact-induced feature transmission across space without subsequent generational transmission and also excluding other genealogically related languages that have the feature but do not partake directly in the contact setting. In general, a linguistic contact area is one among other conceptual tools for explaining non-random linguistic distribution patterns rather than a hypothesis entailing the univer-

sality of a single mechanism of feature transmission. In the most extreme case, if a feature distribution must be viewed as historically diagnostic but inheritance is an insufficient historical account (cf., e. g., clicks in the Kalahari Basin), then the interpretation as a contact area without evidence for contact is not incongruous with but rather a logical consequence of our current explanatory tools in historical linguistics (see section 3.2.1 on the two-step approach to linguistic areas in general).

Such a more realistic conception of contact-mediated macro-areas implies that they not only entail a scenario of how linguistic traits expand across different languages but also why they are retained in languages that already have them and even emerge language-internally. For example, for a feature like labial-velar consonants, which displays an extremely biased geographical pattern even according to Cahill's (2017, Map 1) own more comprehensive data, one must ask and seek to answer why it keeps being inherited and/or is innovated by sound change with this particular distributional outcome. If contact-mediated areality did not play a role, the expectation would be a random or at least more even occurrence of this consonant type across Africa and the globe.

Last but not least, a contact area in the conceptualization of Childs, Cahill, and others appears to overestimate the overall role of "horizontal" feature transfer between neighboring languages as the cause of their formation, in particular if they involve a large territory that would imply multiple events of "handing-down" the feature along an extensive chain of contact settings. Contact areas not only involve horizontal transmission through space but also vertical transmission through time, echoing Thomason and Kaufman's (1988) distinction between borrowing and shift-induced substrate interference. With reference to African macro-areas at issue, I have already proposed in Güldemann (2010: 576) that

> … ancient founder effects may also apply in that one or the other feature may have been present in a considerable portion of a macro-area from very early on and subsequently seeped up into each new colonizing layer from the then relevant substrate – "vertical diffusion through time", so to speak. In an abstract, metaphorical sense one could model this as a pattern in which "features sit while populations move".

In Güldemann (2014a) and Güldemann and Hagemeijer (2015), this historical model is exemplified by the case of the Gulf of Guinea creole family, which can be viewed as the result of a process in which a language, concretely Portuguese, expanded into the realms of the Macro-Sudan belt and entered a superstrate-substrate relationship with Edoid and nearby languages – the final outcome was a linguistic lineage that is not only new itself but also new in the macro-area yet has come to display most of the macro-area's defining features.

Under this approach, it must no longer be assumed, as is (partly) the case in Greenberg (1983), Güldemann (2003, 2008), and Rialland (2009), that a synchronically widespread feature distribution is necessarily due to such lineages as Niger-Congo and Central Sudanic, which demographically and geographically

predominate today. This point is related to Hyman's (2011) appropriate reservations against the implied old age of several Macro-Sudan belt features in the Niger-Congo family, which thus ceases to be a problem for the hypothesis as a whole.

Last but not least, apart from the far greater diversity of linguistic mechanisms that contribute to macro-areal isoglosses, these should be detached conceptually from the area's spatial dimension. That is, the modern configuration of areas in terms of shape and size may be quite independent of the past and present processes relating to contact-induced feature transfer. That is, just as the current geographical patterns of the Kalahari Basin and Chad-Ethiopia have been primarily shaped by processes emanating from the outside, namely the expansions of Bantu and Arabic, respectively, so could the profile of other macro-areas have been determined (partly) by external rather than internal historical dynamics and trajectories. At a time when parallel environmental drift is increasingly pursued as a serious research topic on the basis of quantitatively and qualitatively more reliable data it may only be a question of time before one or another macro-areal feature in Africa can be partly related to certain geographical conditions.[6] In general, our ideas about possible direct or indirect causes for certain macro-areal aggregations of linguistic features can only be as good as our understanding of these entities themselves, which after all is only now starting to take shape.

Another caveat against the macro-areal proposals in Africa comes from the observation that most features do not have a complete and regular distribution and even involve large sub-areal gaps. The very studies proposing the Macro-Sudan belt area had already pointed out this problem, a particularly striking example being the absence of the word order pattern OBJ-V-OTHER in large parts of Central Africa (Gensler and Güldemann 2003; Güldemann 2008c). As expected, the intensified areal research on other features has confirmed this overall situation, for which see notably Idiatov and Van de Velde (2015, 2016) on labial-velar consonants, Rolle (2015) on nasal vowels, and Hyman et al. (2015) on complex tone and vowel quality inventories.

The last authors are led to a more general conclusion, namely that their denser empirical data "do not provide evidence for the Macro-Sudan Belt as a unified phonological area. Instead, we find evidence for smaller linguistic micro-areas."[7]

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[6] For example, Everett, Blasi, and Roberts's (2015, 2016) hypothesis of humid climates being conducive for the development of complex tone systems is certainly relevant for one feature of the Macro-Sudan belt. However, according to the various reactions printed in the same journal issue as the last article, the case remains inconclusive (see Hammarström 2016 as a particularly strong rejection of the hypothesis in its proposed form).

[7] Incidentally, such a situation appears to be intuitively inconsistent with a generalization Hyman (2011) himself made in another context, namely that the areal signatures in the Macro-Sudan belt seem to be of rather recent vintage, because considerable areal gaps in overall clustered feature distributions would be harder to reconcile with their young age.

However robust their empirical findings, do they warrant abandoning the macro-area? As already argued in Güldemann (2008c, 2010) and in line with Muysken's (2007, 2008; see the introduction to chapter 3) general approach, the kind of evidence required for establishing any contact area crucially depends on the scale of observation. It is in fact quite likely that, when zooming in yet more, the "micro-areas" acknowledged by Hyman et al. (2015) will equally turn out to display distributional gaps, but just on a smaller scale. Should they be abandoned then? The macro-areal distributions at issue here are identified against the backdrop of continental and global profiles. On such a large scale, it would be unreasonable, I argue, to expect that there are no territorial gaps. This holds even more so for globally rare features that are less likely to have arisen multiple times independently in the relative proximity implied by the Macro-Sudan belt. I side with Stolz (2004: 7) who states that "the larger a *Sprachbund* is geographically, the more likely it becomes that there will be a certain degree of internal heterogeneity," which in turn is parallel to common dialectological findings about fuzzy areality of dialect areas (cf., e. g., Chambers and Trudgill [1998: chapters 7–8] and several contributions to Watt and Llamas [2014] for more detailed discussions). Before this background, more forceful arguments against the Macro-Sudan belt and other similar hypotheses would have to take other lines of reasoning, for example, that a seemingly clustered feature distribution is not significant on the continental and/or global level, or that the synchronic configuration in terms of micro-areas results demonstrably from multiple events of independent innovation, which is, of course, more plausible for less remarkable traits like nasal vowels and the like.

Yet another reservation against the comparison of linguistic traits across a large number of geographically distant languages may arise implicitly or explicitly from the recurrent observation that they turn out to be linguistically heterogeneous across languages from a synchronic or diachronic perspective and/or require in some cases a different characterization. That is, features proposed for a macro-area are defined "superficially" but are triggered in individual languages by another underlying trait, they display a considerable diversity according to deeper language-specific analyses, or they have different historical origins. Several studies revolving in particular around the Macro-Sudan belt have pointed out such a situation. Although not all necessarily question the areal proposal explicitly, I refer to them because they potentially cast doubt on subsuming language-specific features under one or the other areal isogloss listed in Table 5 above. For example, Idiatov and Van de Velde (2015) propose that clause-final negation, itself emerging recurrently from metalinguistic negation renewal, may be related to a particular conversational strategy manifesting itself more widely by utterance-final pragmatically oriented "(inter)subjective" markers. Nikitina (2015) has discussed the topic of logophoricity in a similar vein in arguing that such systems arise from an underlying, not directly morphosyntactic phenomenon of a so-called "logophoric style" and that the "spread [of the narrow grammatical trait] across genetic

family boundaries need not depend directly on linguistic borrowing". While possibly differing in some important details, her general proposal is in fact in line with the approaches in such previous work as Güldemann (2003) and Ameka (2004): these studies also entertain discourse styles and cultural practices as one probable basis of logophoricity as well as the possibility of multiple causation of the areal phenomenon, including transmission via shared behavior in culture and discourse rather than direct borrowing of an abstract linguistic feature or even a concrete form. An additional point regarding logophoric systems is their structural diversity across different languages (cf., e. g., Curnow 2002; Comrie 2004), which arguably makes them less likely to form a single phenomenon subject to borrowing. A statement concerning incomparableness has been made explicitly by Creissels (2005) for the word order SBJ-AUX-OBJ-V-OTHER, whose sub-feature OBJ-V-OTHER I argue to be a trait of the Macro-Sudan belt in spite of recognizing its synchronic and diachronic diversity (cf. Gensler and Güldemann 2003, Güldemann 2007, and the brief discussion in section 3.2.4.4). Baier, Sande, and Jenks (2016) have taken up this topic and conclude in their abstract "that typological generalizations which use [underlying] structural variables lead to more fruitful predictions than those based on [superficial] word order alone". While this may be true, it is orthogonal to the historical question at issue, namely whether the recurrence of the globally rare OBJ-V-OTHER pattern in the African area is partially mediated by language contact, either targetting the rare word order pattern itself or affecting the areal prevalence of underlying traits that foster its emergence.

In general, characterizing the details of an assumed areal isogloss in individual languages and thereby elucidating its cross-linguistic diversity are, of course, crucial for a better understanding of the historical processes implied by a macro-areal hypothesis. However, the viability of the Macro-Sudan belt proposal appears so far to be rather strengthened than weakened by the later specifications of several features. Research on contact areas does not require "surface" isoglosses to have the same language-internal profile let alone a single historical origin in all languages affected but more realistically views a modern areal picture as the result of multiple causation. I would even argue that contact-induced transfer is more likely to target linguistic surface phenomena rather than traits that are deeply entrenched in structural, cognitive, or cultural terms, and to produce a poor replica rather than a full copy of the source, so that isoglosses end up being superficial and possibly having very different interrelations with other components in each language-specific system. The decisive argument for an areal interpretation remains that the surface phenomenon has a biased distribution and is quirky, or at least diagnostic, on the given distributional scale.

In conclusion, I venture that the present macro-areal approach remains viable and has in fact several merits for a comprehensive synchronic and diachronic analysis of African languages. For one thing, it was mentioned already that in line with Nichols (2010) it potentially provides an alternative hypothesis for isoglosses

explained heretofore by genealogical proposals that still remain poorly substantiated despite their having been advanced by Greenberg more than 50 years ago. Such a situation is by now acknowledged by many specialists for the Kalahari Basin, which replaces the persistingly weak idea of a South African Khoisan family. The investigation of macro-areal patterns also has the potential to inform the historical-comparative analysis of language families, as I argue in Güldemann (2011) in oppositon to Hyman (2011).[8] Another positive effect of macro-areal research concerns the conceptualization of the entire African continent with respect to its internal coherence and vis-à-vis its geographical neighborhood; I refer in particular to the novel hypothesis about an Afroasiatic spread zone proposed in section 3.2.4.7 and to be discussed again in section 3.2.5.2, especially regarding its trans-African implications.

Last but not least, a geographical macrostructure is not only useful for African linguistics itself but also for the study of linguistic typology and history on a global scale in that it provides information that is necessary for genealogically and areally balanced language sampling in Africa in as informed a way as possible. To achieve this goal better, Table 9 contains a systematic overview of the relationship between these macro-areas and genealogically based language groups in Africa whose inventory is presented according to Güldemann (this volume, chapter 2) and whose typical contact patterns in a certain area have been dealt with partly in section 3.2.3 above.

Table 9 distinguishes between classificatory units forming the core of an area and others that are in various respects peripheral to it. For the Afroasiatic spread zone and the two subzones of the Central transition sphere, the Sahel and East Sudan-Gregory Rift, a peripheral status refers to a unit's geographical position, occupied territory and/or demographic importance. For the three contact-mediated macro-areas, peripheral means first of all that a given unit only partakes in areal isoglosses to a limited extent, that is, only in few features and/or with relatively few languages. It goes without saying that some such assigments will have to be reviewed after more systematic research into these questions, particularly so for lineages still underdocumented. An additional caveat is that the character of several classificatory units as a pool rather than a proven family requires a fine-

[8] Hyman's (2011) rejection of the general idea can unfortunately not be separated from the case of his primary interest, namely morphosyntactic reconstruction within Niger-Congo and Bantu. This cannot be discussed here in detail (but see Güldemann [2013b] for more discussion beyond the initial exposition in Güldemann [2011]). Suffice to say here that Hyman bases his conclusion largely on the inadequate claim that my non-orthodox hypothesis hinges on macro-areal hypotheses. In fact, a large part of Güldemann (2011, notably section 2) gives concrete arguments for my conclusion for early Niger-Congo and Bantu from a pureley internal historical-comparative and diachronic typological perspective, which by and large remain unaddressed in Hyman's (2011) response.

Table 9: Basic classificatory units and macro-areas in Afrabia

Macro-area	**Core classificatory unit(s)**	**Peripheral classificatory units**
I Kalahari Basin	Tuu (U1)/ Kx'a (U2)/ Khoe-Kwadi (U3)	**Niger-Congo**: Bantu of BENUE-KWA (U6)
II Bantu spread zone	**Niger-Congo**: Bantu of BENUE-KWA (U6)	–
III Macro-Sudan belt	Central Sudanic (U22)/ Ijoid (U8)/ **Niger-Congo**: UBANGI (U17), DAKOID (U7), BENUE-KWA (U6), ADAMAWA (U16), GUR (U15)/ KRU (U9)/ *Pere* (U10)/ Mande (U12)	Songhay (U23)/ **Afroasiatic**: Chadic (48)/ **Nilotic-Surmic**: Nilotic (U36)/ **Niger-Congo**: Bantu of BENUE-KWA (U6), ATLANTIC (U11)
IVa Sahel	Songhay (U23)/ **Afroasiatic**: Chadic (U48), *Arabic* of Semitic (U42)/ Dajuic (U34)	Mande (U12)/ Dogon (U13)/ *Bangime* (U14)/ Laal-Labe (U49)/ *Kujarge* (U50)
IVb East Sudan-Gregory Rift	**Nilotic-Surmic**: Nilotic (U36), Surmic (U37)	KORDOFANIAN (U18)/ Katlaic (U19)/ Kadu (U20)/ Temeinic (U35)/ Jebel (U38)/ *Berta* (U39)/ Koman (U40)/ Baga (U41)/ Kuliak (U21)/ *Hadza* (U5)/ *Sandawe* (U4)/ **Afroasiatic**: Cushitic (U45)
V Chad-Ethiopia	Saharan (U27)/ Furan (U26)/ Maban (U28)/ **(Wadi Howar)**: Taman (U29), Nyimang (U30), *Nara* (U31), *Meroitic* (U32), Nubian (U33)/ *Kunama* (U24)/ **Afroasiatic**: Ethiosemitic of Semitic (U42), Cushitic (U45), Ta-Ne (U46.A) + Maji (U46.B) of OMOTIC/ Ari-Banna (U46.C) of OMOTIC	? *Shabo* (U25)/ ? Mao (U46.D) of OMOTIC/ ? *Ongota* (U47)/ **Nilotic-Surmic**: Surmic (U37)
VI Afroasiatic spread zone	**Afroasiatic**: *Egyptian* (U43), Berber (U44), Semitic (U42)	Songhay (U23)

Notes: GENEALOGICAL POOL; AREAL POOL; *single-language unit*; **(possible) family above basic units**; / separates independent units

grained analysis of its individual subgroups regarding their concrete areal alliance, which cannot be achieved in this context.

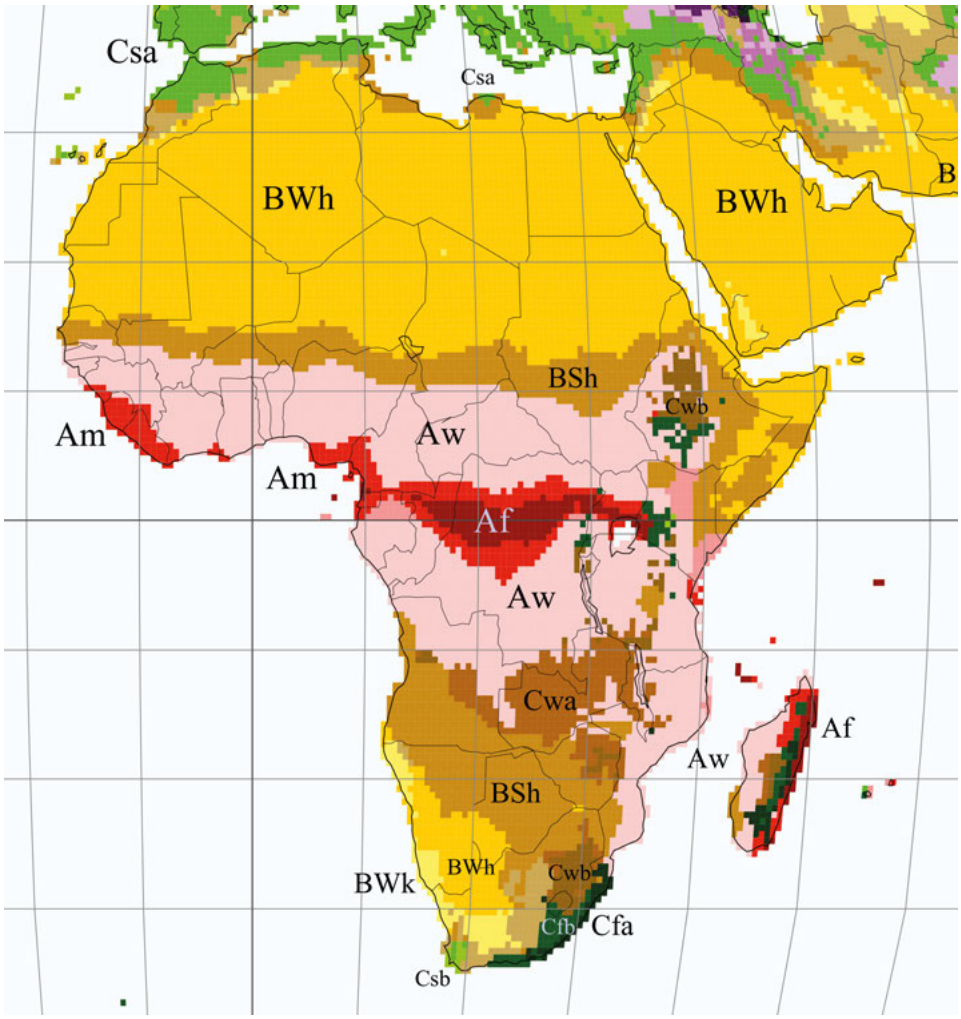
The area-language group overview of Table 9 provides a welcome background for the following discussion of some general topics concerning macro-areas in Africa and beyond. One important observation arising from Table 9 is that languages of the same lineage repeatedly differ according to their areal alliance. This arguably relates to the possible role of geography for the historical dynamics in linguistic entities like languages, families, etc. In this connection, I have entertained in Güldemann (2010: 579–582) the hypothesis that two related factors, called later the "latitude spread potential" and the "longitude spread constraint", determine the way linguistic features aggregate over long time spans and large geographical space, and Hammarström and Güldemann (2014) and Güldemann and Hammarström (forthcoming) have undertaken first systematic tests that provide some support for these assumptions. The longitude spread constraint is assumed to support a trend that linguistic diversity within sufficiently large language families and areas is higher along longitudinal axes. The latitude spread potential is argued to contribute to a tendency that, all other things being equal, contact-induced feature distributions like macro-areas (as well as language families with a sufficient geographical extension) have a latitudinal orientation. The overall picture in Africa as analyzed in Map 1 is compatible with this supposition, as pointed out already in Güldemann (2010).

A token of this continental picture is the overall considerable overlap between the climatic conditions on the continent and the macro-areal profile based on my linguistic findings. According to a comparison between Map 1 and Map 2, which glosses over a few climate zones with more restricted geographical relevance, one can make the associations as given in Table 10. It may or may not be significant that this tripartite areal "super-structure" aligns the languages of the two spread zones with their relatives in other adjacent macro-areas.

Table 10: Overlap of climate zones and linguistic macro-areas in Afrabia

Climate zone	**Linguistic macro-area**
Arid south = B	I Kalahari Basin
Equatorial = A	II Bantu spread zone, III Macro-Sudan belt, IVb East Sudan-Gregory Rift
Arid north = B	IVa Sahel, V Chad-Ethiopia, VI Afroasiatic spread zone

Without being able in this context to go into further details I refer the reader to the above studies for more discussion and only show here briefly that the relationship between areas and lineages in Table 9 can also be interpreted in terms of the geographical hypotheses. First, there are a number of cases where classificatory units are represented in more than one macro-area and then repeatedly differ in structural terms according to their distinct areal alliance. The two largest African



Map 2: Köppen-Geiger climate zones in Africa (Kottek et al. 2006)

lineages, Afroasiatic and Niger-Congo, provide some of the clearest cases in this respect. Afroasiatic displays three larger structurally definable clusters neatly corresponding to their location in three different macro-areas, namely Berber, Egyptian, and mainstream Semitic in the Afroasiatic spread zone vs. Ethiosemitic, Cushitic, and relevant Omotic in Chad-Ethiopia vs. Chadic in the Sahel. Niger-Congo offers a similar picture in that Bantu in the Bantu spread zone differs in several respects from the Niger-Congo mainstream in the Macro-Sudan Belt (see Güldemann 2011). Importantly, in both cases the structural differentiation cuts

across languages within relatively close-knit groups of the two larger lineages, namely Semitic in Afroasiatic and Bantoid of Benue-Kwa in Niger-Congo.

Similar patterns can be observed on a lower scale, too, in that the structural profile of languages and smaller groups of one and the same lineage or genealogical pool correlates to a considerable extent with their geographical location vis-à-vis macro-areas or subzones within them. This is systematized in Table 9 and briefly documented by means of citing relevant published sources in section 3.2.3, to which the reader is referred for more details. That is, in addition to the cases of Semitic and Bantoid a different macro-areal alliance can be argued to offer a major explanation for the notable linguistic diversity across the three Songhay branches North, West, and East; of northern vs. southern Mande languages; of mainstream Chadic vs. certain family members in the Jos-Mandara area; of northern Benue-Kwa groups vs. Kwa-like ones in the south; of core Cushitic vs. South Cushitic; of some western languages of Nilotic vs. the rest of the family; and of Kalahari Khoe in the north vs. Khoekhoe in the south. That such a family-internal diversity is areal rather than genealogical is supported by the fact that the distinction does not necessarily follow genealogical lines: thus, Vydrin's (2008) proposed "Upper-Guinean Coast Sprachbund" in the south affects the two separate Mande branches South and Southwest, the Chadic languages entrenched in the Jos-Mandara area are from the two branches West and Central, and certain Nilotic languages with observed interference from Central Sudanic are from the West and East branches (cf. Dimmendaal 1995: 99–105). Finally, the more frequent reference in the above cases to a distinction or cline within families according to a north–south rather than east–west axis is compatible with my idea about a longitude spread constraint.

As argued by Güldemann (2010), in addition to the latitude-longitude pattern there are other important but more erratic factors of geography that can impact linguistic distributions both on a continental and a more local scale, namely sufficiently influential topographical conditions like coastlines, mountain ranges, marked vegetation zones, and various water bodies like lakes, rivers, swamps, etc. While I have referred in section 3.2.4.8 to the likely impact of the Rift Valley complex for the African picture as a whole, such geographical phenomena may also be relevant on a more restricted scale, for example, within macro-areas or the transition between them.

In the following I discuss as an example a particular configuration involving the central Macro-Sudan belt and the Bantu spread zone. I start out from Idiatov and Van de Velde's (2015) hypothesis that the densest occurrence of labial-velar consonants in the Macro-Sudan Belt is centered on what they call "refuge zones" while major distributional gaps correlate with two geographical configurations, namely the Dahomey Gap, roughly in modern Togo and Benin, and the elevated region of mountains and plateaus along the Cameroon–Nigeria border. I consider this idea worth pursuing from a more general perspective with respect to the

history of Niger-Congo and particularly the Benue-Kwa pool. It is this last group of languages that predominates the part of the Macro-Sudan belt where the above two geographical entities are located and it is this wider region where this group gives evidence for the rampant restructuring, reduction and even complete loss of its inherited system of noun classification (see Good [2012] for a recent survey of this well-known historical phenomenon). Three points are important in this connection: a) the degree of losing the inherited noun classification system follows an overall north–south cline with its peak in the typical "Kwa" languages of the south (see the brief discussion of this area in section 3.2.3.4); b) language contact is assumed to be one important contributing factor; and most crucially c) a stronger system retention is found in the above two geographical areas to be correlated with poor labial-velar presence – this in opposition to the general north–south cline of reduction. The last observation holds in the Dahomey Gap for many languages of the Ghana-Togo Mountain pool and Guang in Potou Akanic and in the Cameroon–Nigeria border region even more so for numerous languages in the Kainji-Platoid, Bantoid, and Cross River pools (cf., e. g., the relevant survey of Niger-Congo in Güldemann [this volume, chapter 2, Table 29]). Thus, the hypothesis emerges that Idiatov and Van de Velde's (2015) "refuge zones", which generally have a lower altitude and denser forestation, have nurtured a stronger decay of the noun classification systems, while zones of higher altitude and savanna-like vegetation have a more conservative profile in this respect. The latter situation holds for two types of areas in the central portion of the Macro-Sudan belt: a) the latitudinal savanna zones in its northern sphere (see, e. g., Kleinewillinghöfer [1996, 2010, forthcoming] for the similarity between the well-retained class systems of the geographically distant Gur and Adamawa languages that would have been linked historically by an area of earlier Niger-Congo presence and expansion) and b) the longitudinal north–south corridors of the Cameroon–Nigeria border region and, in a more attentuated form, of the Dahomey Gap. The unscathed retention of noun classification in the Bantu group despite its crossing through the rainforest yet further south strengthens rather than weakens this idea, because this southward spread is thought today to have in fact occurred under different climatic conditions through another then-existing north–south savanna-like corridor (see section 3.2.4.3), which can thus be viewed as a temporary geographical prolongation of the northern corridor in Cameroon and Nigeria induced by altitude.

The more general scenario to test is then as follows. The expansion of the far-flung Niger-Congo family and its effect on the typological profile of its various subgroups were influenced in important ways by the different conditions in the newly colonized areas. In particular, a crucial portion of early Niger-Congo populations was not adapted to the lowland rainforests of the Macro-Sudan belt. The colonization of such areas and their different subsistence conditions necessitated a longer process of adaptation that was accompanied by increased language contact with autochthonous non-Niger-Congo groups, including shift-induced substrate interfer-

ence (cf. McWhorter [2016], already referred to in section 3.2.3.4). One reflex of such a context would be the widespread reduction of the inherited system of noun classification. The current, seemingly contradictory rainforest penetration by Bantu groups under retention of the class system could have been a later process, occurring after Bantu speakers had gained a greater familiarity with this special natural environment (see section 3.2.4.3). The resulting pattern of the geographical distribution of noun class decay is obviously complex but I argue that it can potentially be conceived of as the outcome of the interplay between, on the one hand, the latitude spread potential and the longitude spread constraint, and on the other hand more localized geographical factors that are independent from the more general axis factor.

Another final but central question about macro-areas is their stability. I pointed out already in Güldemann (2010: 577–579) that their endurance over time may be limited up to their wholesale disintegration, as is currently taking place before our very eyes in the Kalahari Basin (cf. Güldemann and Fehn 2017). The reason to take up the topic here is that major linguistic expansions that lead to large-scale language replacement can also have results that are more structured in geographical terms and thus form new macro-areal configurations. The case in point is what Gil (2015) calls a "saddle distribution" in connection with his proposal of a Mekong-Mamberamo area in Southeast Asia and Papunesia, This refers to a geographical pattern whereby similar linguistic signals occur in more than one area abutting on a linguistic expansion zone or some other geographically delimitable entity. A saddle distribution can be diagnosed in Africa for the two cases that I have interpreted above as the late reflex of macro-areas that are intact or at least still discernible at the periphery but have disintegrated in their center. These are on the one hand Chad-Ethiopia, interrupted today by widespread desertification and the southern expansion of Arabic, and on the other hand Southern High Africa, submerged by the Bantu expansion along a west-east trajectory.

3.2.5. Afrabia in a wider geographical perspective

3.2.5.1. Africa as a "linguistic area"

Scholars have variously addressed the question of whether Africa as a whole can be viewed in some sense as a "linguistic area". It is necessary in this respect to distinguish between two aspects of such a general idea, namely whether it is a) a useful entity of areal linguistic research in terms of a unitary, geographically defined object and b) a linguistic area relating in the conventional narrower sense to the relevance of language contact.

The question in its first reading should be answered in the affirmative in line with, for example, MacEachern (2007). The present discussion has referred to ample linguistic evidence for the historically deep and multiple interactions of

languages from such uncontroversial African areas as the Macro-Sudan belt and Chad-Ethiopia with those in the Sahara and further north, and this not only via the Sahel transition zone. This view opposes the empirically inadequate and thus detrimental practice of separating the continent into Northern and sub-Saharan Africa, as done repeatedly by various studies up to this date. This conventional approach is evident in several important reference works and continental surveys, for example, in the two complementary volumes by Ferguson, Hodge, and Paper (1970) and Berry and Greenberg (1971), which separate the entire Afroasiatic family, including its parts squarely embedded in "sub-Saharan" Africa, from the rest of the continent's languages and treat it together with Eurasian languages of West Asia, but also in such later studies as Greenberg (1983) and Wald (1994).

From a wider linguistic perspective, I have ventured here to go even further in defining Africa as the core of a larger entity of areal linguistics. That is, the Arabian Peninsula, which is geographically assigned to Asia and is also conventionally treated by linguists in this context, is in both genealogical and areal linguistic terms more closely allied with Africa rather than southwestern Asia (see also section 3.2.5.2).

The proposal that the whole of Africa should be viewed as a contact-related linguistic area vis-à-vis other continents, as entertained implicitly or explicitly in such works as Greenberg (1959, 1983), Meeussen (1975), Gilman (1986), Heine and Zelealem (2008), and Creissels et al. (2008), has not produced substantial evidence in its favor. Already Greenberg (1983: 3) had to concede:

> Ideally, if what is meant by an Africa areal characteristic is one which is found everywhere in Africa but nowhere else, then clearly none exists.
> For present purposes then, we will define areal properties in less stringent terms, as those which are either exclusive to Africa, though not found everywhere within it, or those which are especially common in Africa although not confined to that continent.

Four articles in Heine and Nurse's (2008) recent areal survey of Africa address this idea, namely the two works just cited above with an apparently favorable position as opposed to two others, Clements and Rialland (2008) and Güldemann (2008c), with a negative stance and explicit counterarguments (cf. also Idiatov's [2009] similar position in his review of the book). Thus, Clements and Rialland (2008: 36–37) write:

> Our preliminary research quickly confirmed that there is no characteristically African phonological property that is common to the continent as a whole, nor even to the vast sub-Saharan region. Indeed, many of the characteristics for which Africa is best known to non-specialists, such as its clicks, its labial-velar consonants or its tongue-root based (ATR) vowel harmony, are geographically restricted.

Other skeptical reactions have been voiced, for example, by Zaborski (2010b: 36–38) and Kawachi (2011). The second author, looking for Heine and Zelealem's (2008) "African" features in Sidaama and Kambaata, is forced to come to the odd

conclusion that despite their geographical location these and proabably most other languages in the Horn of Africa do not belong as a larger and areally compact group to the "African linguistic area" – a result clearly related to the tendency going back to Greenberg (1959) to view as typical African features those that are recurrent in the Macro-Sudan belt, whose languages may predominate the continent in numerical terms but certainly not regarding territorial extent and genealogical diversity (see Güldemann 2008c: 183–184).

Looking at Heine and Zelealem (2008), the most recent and explicit study in favor of the areal hypothesis for Africa as a whole, it should be clear that its methodology is unsuitable to yield any convincing result due to its theoretically arbitrary but, as argued here, areally biased choice of features and its uncontroled sampling both within and outside of Africa. With the stark increase of more extensive and representative typological databases with a global scope and more sophisticated methods to analyze them the research situation is, however, becoming ever more favorable for assessing the areal status of Africa on a global scale.

3.2.5.2. Areal effects across Africa's boundaries

Another and final question about areal linguistics concerning Africa is the interaction of its languages beyond the conventional continental boundaries. While some speculations in this direction entertained in the past may shed a negative light on this idea in general, it is warranted by a couple of clearly attested cases that make it worth investigating more systematically.

In section 3.2.4.7 I have already made a case for one important trans-African link, namely with the Arabian Peninsula, arguing that from a macro-areal perspective the latter is better conceptualized as a part of an Afroasiatic spread zone that has its main pillar in Africa. In line with the title of this chapter, I would go further and propose that for this very reason global areal linguistics should conceive of Africa not in its narrow geographical sense but rather as a larger unit to be called conveniently "Afrabia" – parallel to such rather a-geographical but arguably preferable linguistic concepts and terms as "Multinesia" in Hammarström and Donohue (2014) and "Papunesia" in Hammarström, Forkel, and Haspelmath (2017). That is, on account of the close linguistic links in both genealogical and areal terms, it is more appropriate from a macro-areal perspective to exclude the Arabian Peninsula from Eurasia when segmenting the world into comparative continent-like units for the purpose of controled global language sampling. This is in line with some earlier approaches like Dryer (1989) and Nichols (1992) but at variance with such current works as Nichols, Witzlack-Makarevich, and Bickel (2013), Hammarström and Donohue (2014), and Hammarström, Forkel, and Haspelmath (2017). The Afrabia concept also affects the perception of the adjacent area of Western Asia, which then is better considered to be a transition zone between it and Eurasia. This seems in fact to be the rationale, albeit implicit,

behind Haig and Khan (forthcoming), which focuses on the intensive language contact in the area (see also Haig 2017), and with respect to Semitic, deals more with the historical linguistic ecology of its frontier with the non-Semitic languages rather than providing a systematic survey of the Asian Semitic languages as, by convention, an "integral part" of Western Asia.

A second graspable external connection of African languages exists with languages of an area across the Atlantic Ocean, namely the "new" languages of the Caribbean and the adjacent littoral from the southeastern United States to Brazil. The linguistic history of this link is comparatively well understood because it emerged recently in connection with the worldwide seaborne colonization by Europe and its inglorious phenomenon of the transatlantic slave trade (see, e. g., Thornton 1998). The explanation of a considerable number of traits found in Atlantic creoles in terms of substrate interference from African languages has, of course, a long tradition. However, at one period, the structural profile of creole languages was alternatively explained in terms of purported universals in language (genesis) within Bickerton's (1981) bioprogram hypothesis, and the African substrate explanation was downplayed or even relegated to an unscientific approach with reference to a random "cafeteria principle" (Dillard 1970). In the meantime, it has been possible to pin down concrete African founder-like substrates for a number of individual Atlantic creoles, for example, Eastern Ijo (Ijoid) for Berbice Dutch (Smith, Robertson, and Williamson 1987; Kouwenberg 1992), varieties of Gbe (Benue-Kwa) for Haitian Creole (Lefebvre 1986, 1988, 1995, 1999) and the Surinamese creole family (Migge 1998, 2003), Kongo from Bantu (Bantoid, Benue-Kwa) for Palenquero (Schwegler 2000, 2002, 2006), and Edo from Edoid (Benue-Kwa) for the Gulf of Guinea creole family (Hagemeijer 2011; Hagemeijer and Rocha 2014; Güldemann and Hagemeijer 2015) (cf. also the contributions to Muysken and Smith [1986], Migge and Smith [2007], and Lefebvre [2011], which are collected volumes revolving around this topic).

A different type of response to the challenge of identifying a historically realistic substrate was the argument that many relevant features are supposedly widely distributed in Africa so that Atlantic creoles were likely to acquire such features irrespective of the concrete African languages involved, as argued by Gilman (1986). At the time, this hypothesis still suffered from the lack of a sufficiently broad knowledge on how the relevant isoglosses shared by certain African languages and Atlantic creoles are precisely distributed. Both questions can be answered today more conclusively, in particular on the basis of the macro-areal research in Africa by Güldemann (2010) and the worldwide survey of pidgins and creoles by Michaelis et al. (2013a, 2013b). Güldemann (2009) argues in more detail that several typical traits of Atlantic creoles on both sides of the Atlantic and African languages along the continent's western seaboard allow one to define a "Sprachbund", called here for convenience West Africa-Wider Caribbean, under exclusion of both creoles and African languages outside it. One can even argue

more specifically that in line with the temporal and geographical progression of Europe's colonial expansion the earliest layer of the interaction should be associated with contact in the confines of the Macro-Sudan belt, determining some basic structural traits of Atlantic creoles in a kind of founder effect, whereas the Bantu impact predominantly occurred later and can be modeled as the reflex of canonical contact between founder creoles and languages of a structurally different African macro-area, the Bantu spread zone. To some extent, one could view the Wider Caribbean as an attenuated extension of the Macro-Sudan belt emerging from the forced translocation of its speakers. That a number of features across Atlantic creoles are indeed explained best by specific interference with the relevant African languages is demonstrated more systematically by Michaelis (2017a, 2017b) before the background of the worldwide panorama of creoles and their heretofore underestimated typological diversity. It remains to be seen whether/how these findings are compatible with and can be integrated in Muysken's (2008: 11–20) quite abstract wider concept of the Atlantic as a linguistic contact area.

Other trans-African linguistic links are far more difficult to identify or even highly controversial. On the one hand, this holds for potential linguistic similarities between languages across the Mediterranean – this apart from Mukarovsky's (1959, 1963, 1963/64, 1965) speculative hypothesis about even a "Euro-Saharan" language *family*. A contact-induced historical link that crosses this geographical boundary has been entertained between the relatively remote Insular Celtic group and the Afroasiatic languages in the North African spread zone of the same name. Gensler (1993) has offered a comprehensive and typologically informed treatment (including a good summary of all previous literature) of the idea that structural parallels could be interpreted as a historical but non-genealogical signal. This has prompted various reactions, ranging from extensive critiques (e. g., Isaac 2007) over balanced verdicts (e. g., Hewitt 2009) to tacit acceptence that may even involve other non-Afroasiatic African languages (cf. Matasović in Matasović and Mikhailova 2012). A later hypothesis of a historically far shallower Circum-Mediterranean "Sprachbund" remains equally inconclusive (cf. Cristofaro and Putzu 2000; Ramat and Stolz 2002; Stolz 2004), although there is no doubt about partly intensive contact events crossing this continental boundary. As mentioned in section 3.2.4.7, the African part of the Mediterranean littoral seems to have remained part of its local Afroasiatic spread zone and at the same time has not expanded north – this despite repeated linguistic encroachments in both directions.

The situation in the Circum-Indic sphere, which excludes here the clear and multiple interaction between languages across the Red Sea within the Afroasiatic spread zone, seems to be generally similar to the Mediterranean, although language contact has admittedly been researched less intensively and systematically. There certainly was linguistic colonization in both directions, with Asian languages moving to offshore islands and the coast of Africa (see particularly section 3.2.3.2) and African, especially Bantu, linguistic traditions being taken to nearby islands

and the Asian littoral in connection with the European and Asian slave trade in this region. While the former phenomenon has not yet been claimed to have had any major impact on the continent except for Asian and especially Arabic influences on Swahili, the latter is not sufficiently known for ascertaining whether its results parallel the situation outlined above concerning Atlantic creoles on the western side of the continent. In general, any impact of African languages in Asia over a longer distance must for the time being remain speculative (cf., e. g., Holst [2007] on the distribution of retroflex consonants around the wider region of the Indian Ocean).

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4 Phonetics and African languages

Ian Maddieson

4.1. Introduction and background

The phonetic sciences have contributed greatly to the understanding of the languages of Africa, and African languages in turn have inspired much of the most productive work in scientific descriptive and experimental phonetics since this field of research was set on a sound foundation in the nineteenth century. The insights from work on African languages have particularly influenced the understanding of the production of complex consonants, of the nature of vowel harmony systems and of a variety of prosodic issues, including tone and syllabification. This chapter is organized in three large sections, on consonants, vowels, and prosodic features respectively, with subsections within these devoted to more specific issues. In addition it includes this short introductory section and a brief set of concluding remarks.

It is notable that the research reviewed here has most often been conducted in Europe or North America, rather than in Africa itself, although sometimes by African scholars resident in or visiting these areas, or by non-Africans working in Africa. The limited resources often available to African universities and individuals may have been a more limiting factor in earlier times, but now that cheap and powerful computers and free software for acoustic analysis and the preparation of perceptual experiments are readily available, economic considerations should be less restricting. This raises the hope that more, and more detailed, phonetic research on the great diversity of African languages will be forthcoming in the near future from those best placed to provide it – speakers of the languages themselves, and their fellow citizens.

Broadly speaking, the phonetic sciences can be thought of as oriented around three main axes concerning how the sounds of spoken languages are generated by speakers, how these sounds are perceived by listeners, and how the patterns of sounds are organized into linguistic systems. The relation between the first two of these, the production and perception of speech, is mediated through the acoustic structure of the sounds themselves – the pattern of sound waves in the air between speaker and listener. Studying acoustic patterns makes a valuable contribution in itself, as this can be one of readiest ways of showing within- and cross-linguistic differences. However, acoustic analysis also importantly serves as a tool allowing a well-informed user to infer many aspects of the control of speech that must be implicated in creating the patterns seen, and in addition to suggest which properties of the signal might be most relevant in speech perception. The third axis, linguistic phonetics, closely relates to the sister discipline of phonology in considering questions such as contrastive function and the dynamics of variation. The

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linguistic dimension helps to reveal what properties detected in the analysis of production, or in acoustic or perceptual data, have significance for the users of any given language, in particular in establishing and maintaining lexical and grammatical contrasts.

Phonetic study most often begins with simple observation of speakers' speech behavior, relying on careful looking and listening and attempts to imitate what is heard and seen. These traditional auditory-imitative approaches still form the basis for the phonetic and phonological descriptions provided in most fieldwork reports and grammars (and not only on African languages). However, an increasingly diverse set of methods have been developed over the years that enable more exact observation of production in both its articulatory and aerodynamic aspects. These are often adapted from medical diagnostic techniques and include the use of X-ray, ultrasound and MRI imaging tools, and techniques that may be used to study swallowing or other functions involving the various parts of what phoneticians call the vocal tract. Every one of these techniques has been applied in deepening our understanding of the languages of Africa, and the development of these techniques has been shaped by their application to African languages. Their capabilities and limitations will not be described in any detail in this chapter, but it is good to be aware that they have both.

As mentioned earlier, acoustic analysis of speech has now been fully democratized through the free availability of software capable of providing all the standard analyses of spectral and temporal aspects of speech waveforms. Particularly prominent is the PRAAT package (Boersma and Weenink 2016), which is available at no cost in variants that can run in Windows, Macintosh and Linux environments. Some background knowledge is required to set appropriate analysis parameters and interpret the results obtained, but this program is a very powerful tool that can serve both to allow informal inspection of individual utterances and to conduct extensive quantitative acoustic research.

PRAAT also includes a suite of tools that facilitate the preparation of stimuli for perceptual experiments and their presentation to subjects. Work on speech perception has predominantly been conducted in American and European university settings, often in departments of psychology using students as the research pool. The ecological validity of much of this research might be questioned. A welcome and growing research trend is taking perceptual experimentation into a greater variety of environments but it is still comparatively rare for speakers of less well-studied languages to be involved. Research on perceptual aspects of African languages has a relatively modest history, and this area is where African-oriented work has been the least influential on the field of phonetics in general. As a result the remainder of this chapter will have a much stronger focus on speech production and acoustics than on perceptual issues. However, all properties of the speaker-listener interaction that constitutes an act of speaking contribute to shaping the way that language is constructed. Understanding this is the ultimate goal of all linguistic research.

4.2. Consonants

The consonantal repertoires of African languages are characterized by, among other things, frequent exploitation of voicing contrasts in obstruents, and rather common recourse to supplemental ways of generating speech power, i. e., what have traditionally been called the glottalic and velaric air-stream mechanisms. These terms were introduced by Beach (1938) in reference to Khoekhoe and popularized by Catford (1939). As speech requires the continuing flow of air from the lungs, punctuated only by brief interruptions, these supplemental mechanisms are in no way equivalent to the basic pulmonic air-stream, but are overlaid on the pulmonic airflow. The pulmonic airflow itself is modulated by differences in the position of the vocal folds, producing the contrast between voiceless and voiced segments (including non-modal creaky or breathy voicing), and these modulations can be combined with the supplemental airstreams to produce a large variety of classes of consonants. Taken together, the languages of Africa exploit the widest range of possibilities of combination. For this reason they have provided the essential "laboratory" for the understanding of these aspects of human speech. However, exploiting supplemental air-stream mechanisms, and their intersection with voicing parameters, is but one of a variety of ways in which consonants of more than simple structure can be created. Most languages in the world have some complex consonants in their inventory, but certain complex consonant types are particularly found in Africa. These will be the focus of the next section.

4.2.1. Complex consonants

As noted above, a striking characteristic of the phonetic patterns of many African languages is the presence of complex consonants. Their complexity may stem from the sequencing of different articulatory states or from the superposition of different gestures – doing several different things at once – or from a combination of both of these properties. Examples of complexity from sequencing include prenasalized stops and affricates. Doubly-articulated stops and nasals as well as implosives and ejectives exemplify complex consonants produced by the superposition of gestures, whereas certain varieties of clicks illustrate both sequencing and superposition effects. The study of these consonants has been central to understanding just how finely coordinated the movements in the production of speech can be required to be.

4.2.1.1. Doubly-articulated stops and nasals

To begin with a relatively simple case, many languages in western and central parts of Africa have distinctive consonants normally transcribed /kp/, /gb/. These are produced with almost simultaneous gestures of bilabial and velar closure. Nasals

produced in a similar way, transcribed /mŋ/, occur in rather fewer languages, as do the prenasalized stops /mŋkp/ and /mŋgb/. These symbols can be written with a ligature (i. e., as /k͡p/ etc) if there is a risk of ambiguity with a sequence of consonants, which is only very rarely the case (Maddieson 1981). Only a very few languages outside Africa, notably Yélî Dnye (aka Yele), Kâte and Dedua of Papua New Guinea, are known to use such double articulations (Ladefoged and Maddieson 1986). The mechanism by which these are produced was understood quite early by Africanists, and was studied in some detail in Peter Ladefoged's classic *Phonetic Study of West African Languages* (1968). As Westermann and Ward (1933: 58–59) wrote about the /kp/ and /gb/ sounds, "a double stop is made, the lips being together and the back of the tongue touching the soft palate … at the same time." They also note these sounds are "most difficult to hear and imitate in initial positions: in intervocalic positions the onglide from the vowel makes it easier to hear the **k** and **g**" although they later add that "when the sound occurs between two vowels there must be no onglide to the **k** heard before the lips come together for the **p** position". Their intention in the later comment was to stress that the timing was unlike that in an English word such as *backpack* containing a /k/ + /p/ sequence, but obviously they were aware of a critical auditory property of these sounds: when a vowel precedes, the onset of the consonant sounds primarily like a velar, whereas the release into a following vowel sounds more labial. It is now known that this occurs because the timing of the two closures involved is slightly offset, with the velar closure leading the bilabial one by some 10–20 milliseconds (ms) (Garnes 1975; Maddieson 1993; Connell 1994). This is illustrated in Figure 1, based on electromagnetic articulography data from an Ewe speaker (reported more fully in Maddieson 1993), plotting the normalized vertical movements of sensors attached to the lower lip and the tongue back.

The traces in Figure 1 show the mean of 10 repetitions by one male speaker aligned at the acoustically identified release burst of the stops, which occurs at 350 ms on the time axis. The two horizontal lines on the movement tracks link the height of the respective articulators at (a) the acoustic onset of closure (upper line, for the velar articulation, and (b) the acoustic release (lower line, for the labial articulation). These provide estimates for when contact between the lips occurs near the beginning of the consonant, and for when the release of the velar closure occurs near the end. The fact that the two gestures largely overlap in time is obvious, but also it is very clear that the velar gesture anticipates the bilabial one by a few milliseconds.

As is also the case for various other types of complex consonants, the precise temporal coordination of various movements is critical to creating the auditory "signature" of many of these sounds. In labial-velar stops the timing is also responsible for creating some secondary effects resulting from changes in the air pressure in the oral cavity between the two closure locations. In particular, there are often

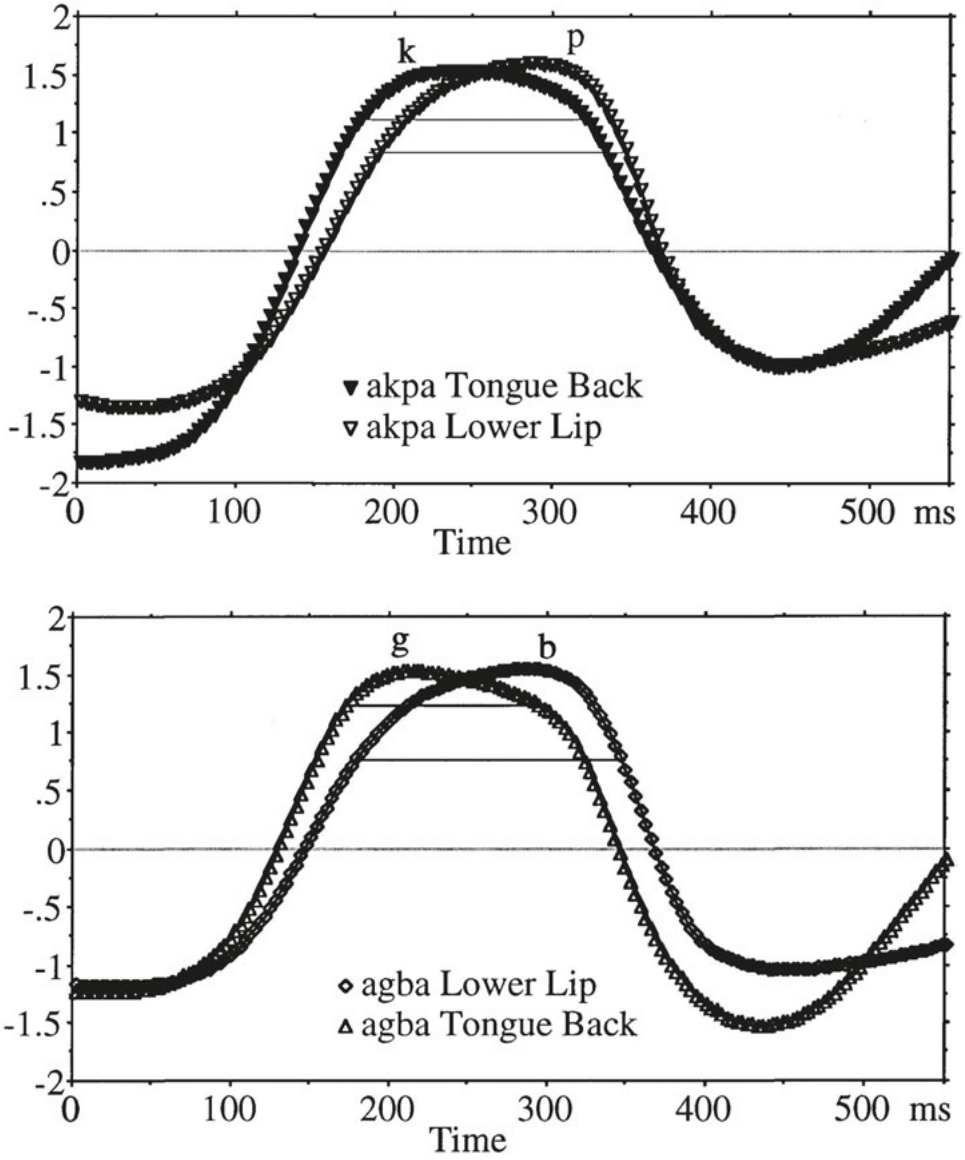

Figure 1: Relative timing of lip and tongue back movements in the vertical plane during production of Ewe /kp, gb/ shown on a normalized scale

movements that result in an expansion of the cavity between the labial and velar closures resulting in rarefaction of the air enclosed (as noted in Ladefoged [1968] and discussed in Ladefoged and Maddieson [1986]). Further illustration of this pattern is provided in Figure 2, showing the changing intraoral air pressure during the production of sample labial-velar stops in Legbo. This language contrasts singleton and geminate (or "fortis") consonants of all types (Bendor-Samuel and Spreda 1969; Udoh 2004, 2007), including the doubly-articulated stops (Udoh and Larson 2005). These data are uncalibrated but to scale. The pressure changes are larger in the geminate than in the singleton, but maintain the same profile.

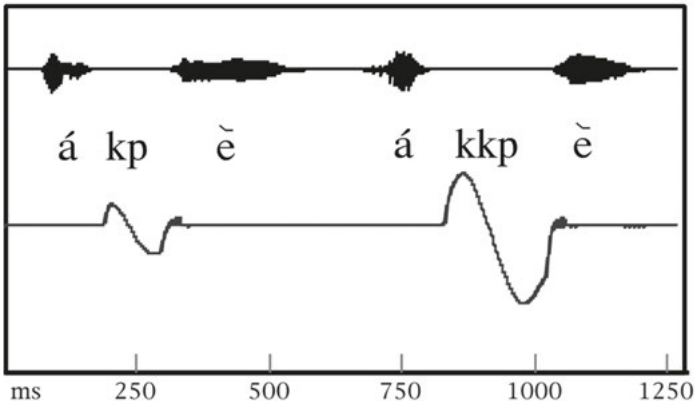

Figure 2: Waveform and intraoral air pressure record of singleton and geminate labial-velar stops in Legbo /ákpɛ̃/ 'you have taught' and /ákkpɛ̃/ 'you have picked' (data are uncalibrated but to scale; speaker Imelda Udoh)

Figure 2 shows air pressure measured behind the lips but in front of the location of the velar closure. Intraoral air pressure begins to build up after the lips close (the earlier-occurring velar closure can be detected at the end of the vowel in the waveform). But roughly a quarter of the way through the consonant, pressure stops rising and actually turns negative (relative to atmospheric pressure outside the lips). This is most likely because the location of the tongue contact on the velum is moving further back, resulting in an expansion of the cavity between the lips and this location. Tongue retraction is clearly visible in the articulographic records of Ewe /kp, gb/ (Maddieson 1993). This movement then reverses and pressure again begins to climb before the closure is released, at which time air pressure rapidly rises to an equilibrium level because the oral cavity is now connected again to the pharyngeal cavity (and hence to the lungs). Air flow is only weakly explosive at the labial release, but the fact that pressure in the oral cavity is lower than it would be in a simple plosive has an important effect. Initiating voicing requires a pressure difference across the vocal folds. The lower the pressure above the vocal folds, the easier it is to meet the threshold of pressure difference required to set the

folds in vibration (see, e. g., Ohala 1983). Consequently labial-velar voice onset time (VOT) is lower for /kp/ than it is for other voiceless stops. One way to look at this is to picture the onset of voicing after /kp/ as phased in relation to the velar release, rather to the slightly later labial one. Cahill (1999, 2008) suggests this timing accounts for historical changes in which /kp/ but not other voiceless stops becomes voiced, as in the Senufo language Sicite.

There may also be contrastive labial-uvular stops. This was suggested by Vorbichler (1969, 1971, 1979) and supported by Demolin and Soquet (1999). The languages concerned are Mamvu, Lese and Efe, which are reported to have both labial-velar and labial-uvular stops. Demolin and Soquet transcribe the principal variant they encountered of the labial-uvular stop as [qɓ] rather than [qp] as a way of implying that there is both a significant lowering of the larynx during the stop and that voicing is initiated well before the final bilabial release. The evidence presented by Demolin and Soquet is reasonably convincing as far as the difference in the dorsal place of articulation is concerned, as indicated by the spectrograms in Figure 3.

Demolin and Soquet (1999) include a figure illustrating air pressure contours in the oral cavity between the labial and dorsal closures and in the pharyngeal cavity behind the back closure. This shows raised pressure in the pharynx, which is not the expected pattern if there is an actual implosive mechanism involved. There is, however, sustained strong voicing before the final stop release in the lower panel of Figure 3. Strong voicing is facilitated by larynx lowering. Both the voiced /gb/ token and the mostly voiceless /qp/ token in Figure 3 seem to show a detectable release burst for the back closure on the order of 50–75 ms before the labial release, which is a longer lag than other studies have shown for doubly-articulated stop releases. These ambiguous results demonstrate that there is much more research remaining to be done on complex segments of this type.

An interesting side issue concerning labial-velars (and the same would go for labial-uvulars) relates to their prevalence in initial position. Given that the disparate formant transitions into and out of /kp, gb/ provide crucial evidence for auditorily distinguishing labial-velars from plain labials or velars, a principle put forward by Steriade (1997) should be expected to apply. Steriade notes that "true" retroflex consonants are frequently absent or non-contrastive in word-initial position (e. g., in Dravidian and Australian languages). Such retroflexes typically have dynamic articulation with the tongue tip moving forward during the consonant, resulting also in different acoustic transitions into and out of the constriction. Thus, if there is no pre-consonantal vowel to provide the transitional cue at the consonant onset, a retroflex consonant is harder to distinguish from other coronals. Steriade argues that a consonant that fails to display one of its identifying properties in a given context is less likely to occur in that context. This "licensing by position" would seem to predict that labial-velars would be rare word-initially, since it is known that /kp, gb/ without a preceding vowel transition tend to be confused with simple

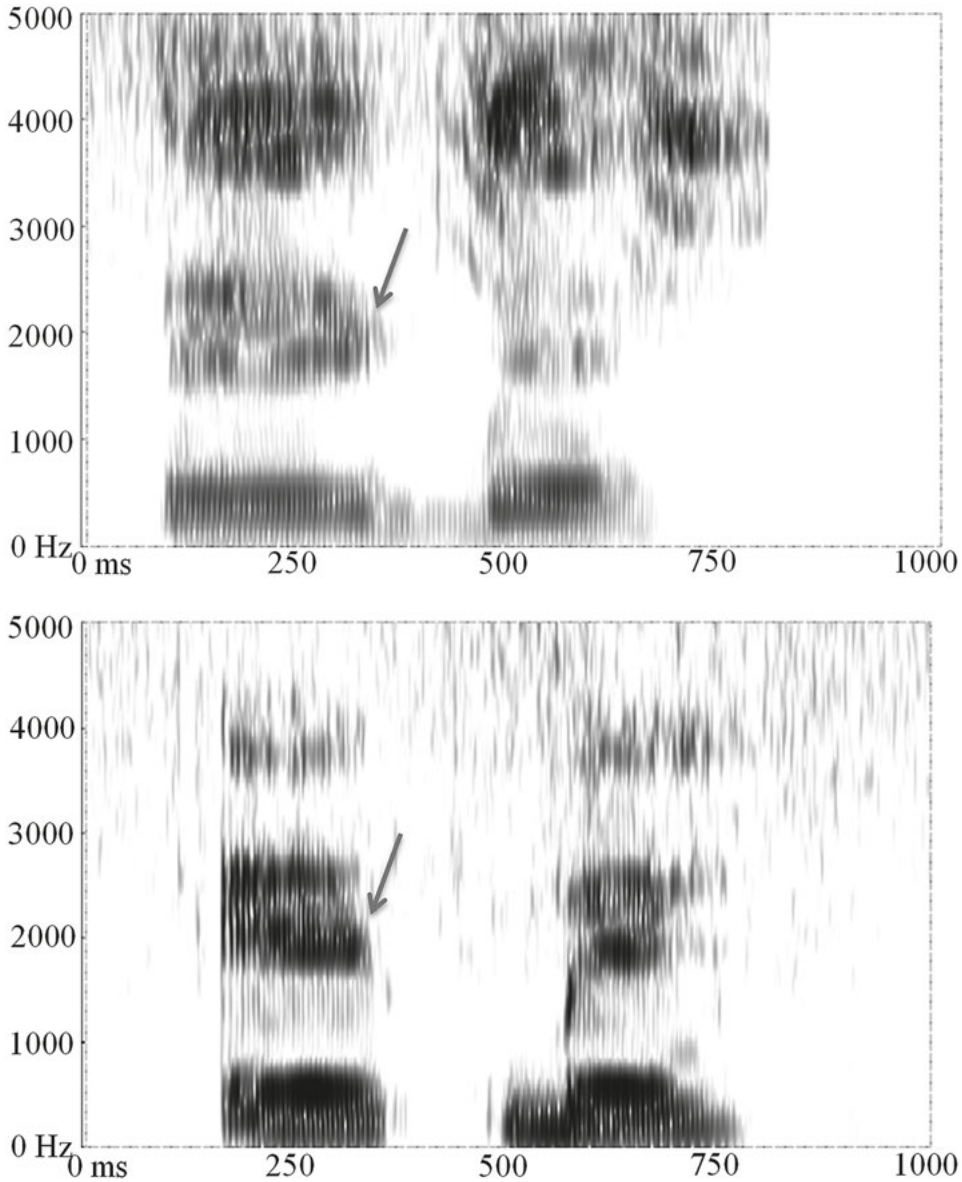

Figure 3: Spectrograms of words meaning ‘in’ and ‘two’ in Efe, after figures 4 and 5 in Demolin and Soquet (1999). The first word (top panel), transcribed [ɛgɓɛ] by Demolin and Soquet (1999), shows the canonical “velar pinch” with the second and third formants approaching each other at consonant closure (highlighted by the arrow). The second word, transcribed [ɛqɓɛ] by Demolin and Soquet (1999), shows no comparable movement of the formant frequencies.

bilabial stops /p, b/ (but see Cahill [2006] for counter-evidence from Yorùbá). However, this prediction does not seem to be upheld.

4.2.1.2. Clicks

The most spectacular representatives of complex consonant types are found among clicks. The basic mechanism of click production has been well understood for a long time. A closure is formed with the back of the tongue against the roof of the mouth, and another is formed toward the front of the oral cavity with the tip or blade of the tongue in the coronal area or with the lips. A small volume of air is thus enclosed above the tongue between the two closures. While both closures are maintained the tongue center is depressed and the location of the back closure may also be rotated further backwards so that the size of the space above the tongue is expanded and air contained in it is rarefied. One critical difference from the labial-velar stops described above is that the front closure in a click is released before the back one. Typically the back closure is also held for considerably longer than the front one, whereas in labial-velar stops the two closures are held for very similar durations. The relative timing of the two closures in the three click types of Zulu is illustrated in Figure 4 based on data from Vilakati-Thomas (2010). In a typical click the air pressure within the enclosed air space at the time of the front release is considerably below the ambient atmospheric pressure outside the mouth by 150–200 hPa (Vilakati-Thomas 2010); consequently a brief strong inflow of air occurs at the release.

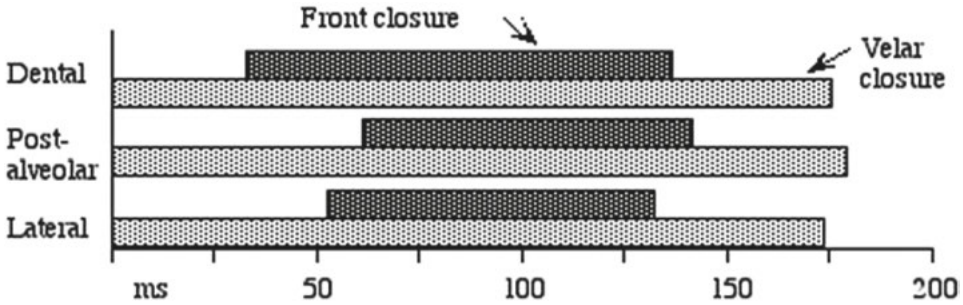

Figure 4: Relative timing and duration of front and back closures in Zulu plain clicks (orthographic <c, q, x>), aligned at onset of the back closure.

Articulatory, aerodynamic, acoustic and perceptual properties of clicks have been investigated quite intensively in recent decades and this research has often been at the leading edge of the application of experimental techniques to less well-known languages.

In earlier literature it was common to discuss clicks in terms of two factors,

the "click type" – properties of the front closure and its release – and the "click accompaniment" (originally "efflux"; Beach [1938]), which grouped together all the other variations distinguishing one click from another. The front closure differs in location and, where the tongue is concerned, in how extensive the contact area is, and the front release differs in whether it is central or lateral, and in whether it is abrupt or slow. Experts working on the languages containing clicks as part of their normal phonological repertoire are in general agreement on the set of click types laid out in Table 1. An additional type labeled "retroflex" has a somewhat marginal status.

Table 1: Basic click types

Click type	Symbol	Front location	Contact	Release
Bilabial	ʘ	Lips	—	Slow
Dental	ǀ	Upper teeth	Broad	Slow
Alveolar	ǃ	Post-alveolar zone	Narrow	Abrupt
Palatal	ǂ	Front & mid palate	Broad	Abrupt
Lateral	ǁ	Alveolar region	Narrow	Lateral, slow

The bilabial, dental and lateral types are relatively straightforward, but the types labeled alveolar and palatal do not really align with the usage of these labels as applied to other consonants. Alveolar clicks are typically apical post-alveolar, an articulatory configuration that might well be described as retroflex in other circumstances. Confusingly, this click type was labeled "palatal" in earlier literature. Palatal clicks are produced with a long contact involving the tongue blade and front of the dorsum. Exter (2009) labels this type "prepalatal" in the N|uu dialect of N‖ng. A further basic click type called "retroflex" has been proposed in recent literature (e. g., Scott et al. 2010). These are laterally-released clicks with a forward movement of the tongue tip at release from a position that may have a sub-apical contact at its start. It is now thought they are allophonic in the Grootfontein !Xuun and Ekoka !Xuun dialects of Ju, but something similar may have occurred in the now-defunct and obscurely described ceremonial language Damin of the Lardil and Yangkaal peoples of Australia (Hale and Nash 1997).

The click types with abrupt releases have a single sharp transient at their release, as in the waveforms shown on the left of Figure 5, whereas those with a slow release generate a noisy fricative-like interval after the initial release, as in the cases on the right. Bilabial, dental and lateral clicks thus have a structure rather like an affricate with respect to their front release. It is perfectly possible to produce a lateral click without affrication of the release, and such sounds are used paralinguistically in some cultures, including in English-speaking ones. However, all lateral clicks used as regular phonological elements have an affricated release, both in the "Khoisan" languages and in the Bantu languages influenced by them

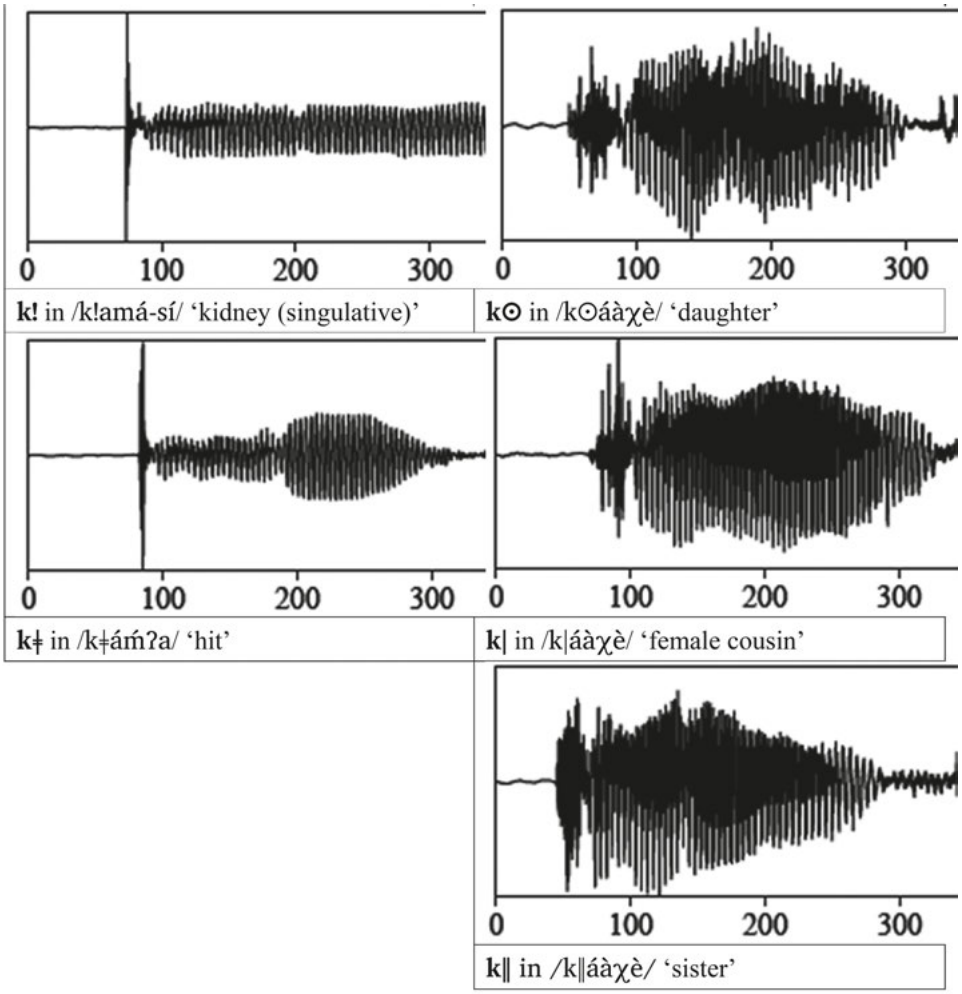

Figure 5: Onset portions of words illustrating the five basic click types of N|uu based on figures in Exter (2009). Each panel shows 350 ms, covering approximately the first syllable of each of the word

(Sands 1991; Fulop et al. 2003). This suggests that there is an areal effect, not just in the fact that clicks only occur in languages of a rather restricted area of the world, but also in that some details of their production are shared.

The second major aspect in the production of a click is the location of the rear closure and the potential movement of that closure. Traill (1985), Nakagawa (2006) and others had posited that the back closure could have distinctive velar or uvular locations. More recent work has suggested that, although clicks in several languages evidently can be divided into those with more forward and more

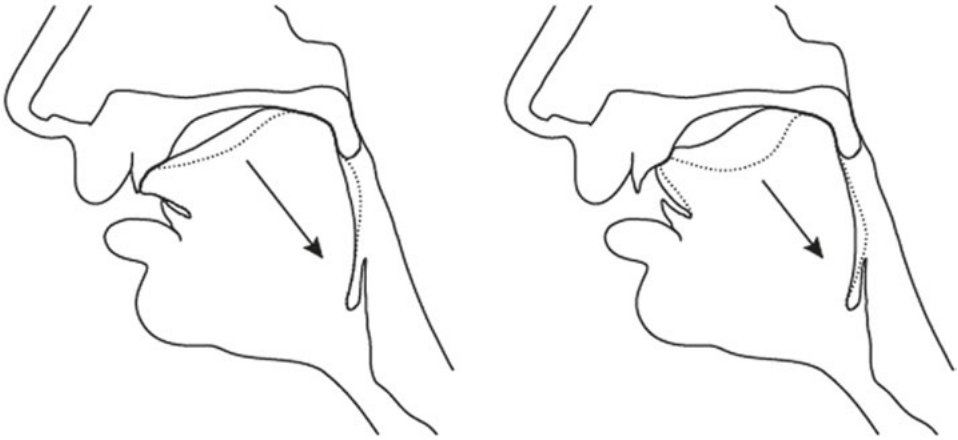

Figure 6: Diagrams of articulatory configurations in dental (left) and alveolar (right) clicks in N|uu from Exter (2009)

retracted back closure locations, this may not be an independent factor of contrast but rather is linked to other aspects of the click type (see Miller et al. 2009 for some discussion). Figure 6 illustrates the articulatory configurations for dental and alveolar clicks in N|uu extrapolated from data in ultrasound studies. Solid lines show tongue position prior to the front release, dotted lines show tongue position prior to back release. The dental click and other clicks in the same group show a smaller intraoral cavity, with less lowering of the middle section of the tongue before back release, compared with the alveolar click, which has a larger intraoral cavity and more lowering of the mid-tongue. But in the dental click the location of the back closure is distinctly further forward than is the case in the alveolar. It remains unclear at this time if the differences in back closure location and the accompanying differences in cavity size can be independent parameters of contrast, but the possibility seems real.

These variations in the manner of release of the front closure and the location of the back closure in clicks pale in comparison to the range of other factors that can distinguish different clicks one from another. These fall into four main areas:

– speed of the back release
– nasal coupling
– laryngeal settings
– relative articulatory timing

Just as the front release can be slow or abrupt, so can the back release. That is, it can be similar to a velar or uvular affricate, such as [kx] or [qχ]. Since the formation of a click takes place entirely in the oral cavity the velum can be either lowered so that the nasal cavity is coupled, or raised so that it is isolated. Thus

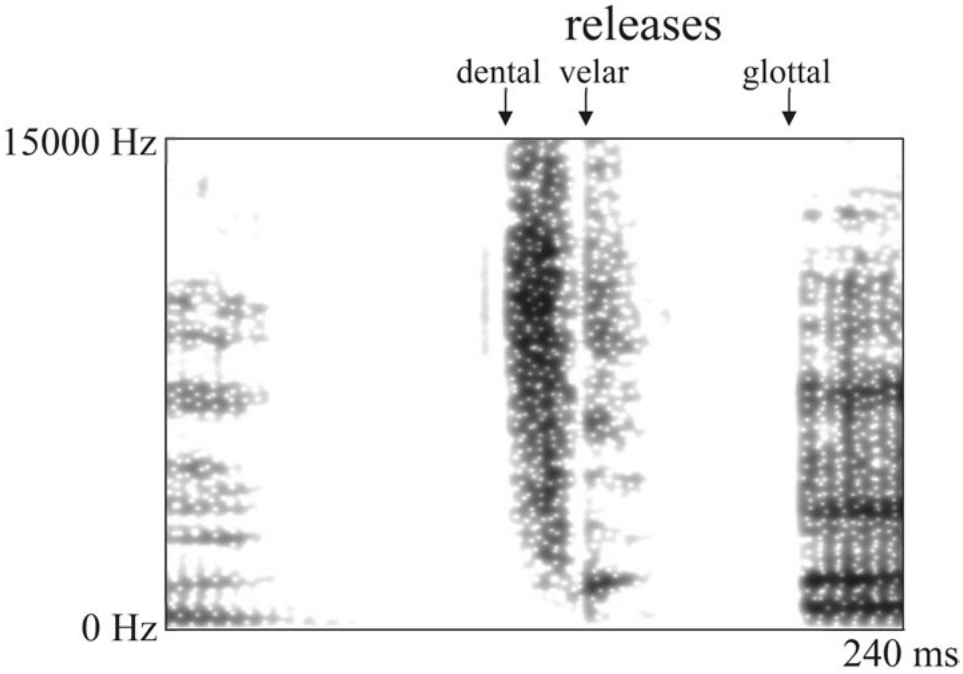

Figure 7: Spectrogram showing click and parts of preceding and following vowels in the Yeyi word /kùk|x'ákásà/ 'to drizzle' (after Fulop et al. 2003).

clicks can be either oral or nasalized, or can change from one to the other within their duration. In some languges, such as Sandawe, it appears that all clicks are non-distinctively nasalized (Elderkin 1992; Wright et al. 1995). Furthermore, because the click mechanism is intraoral, laryngeal settings can vary freely. The larynx can be set for voiceless phonation, for voicing (including breathy voicing; see Jessen and Roux [2002]) or for closure. If the glottis is closed, it can simply be a case of a co-produced glottal stop, or, with larynx raising, of an ejective release of the back closure, including as an affricated ejective such as [kx'] or [qχ']. Figure 7 shows a spectrogram of a voiceless glottalized affricated dental click in Yeyi. Three separate releases can be clearly identified: first, a noisy release of the dental closure of the click; second, a release of the back closure of the click, which itself is also noisy; and third, a release of the glottal closure that co-occurs with this click. There is about a 25 ms interval between the first two releases, and a further 70 ms before the glottal one, so the delay between the first and last of the releases is over 100 milliseconds – longer than the duration of the dental closure. The briefly sustained noise following the velar release is most likely generated by an upward movement of the larynx, so a transcription of this click that represents all of the component gestures would be [k|x']. However, it is worth noting that

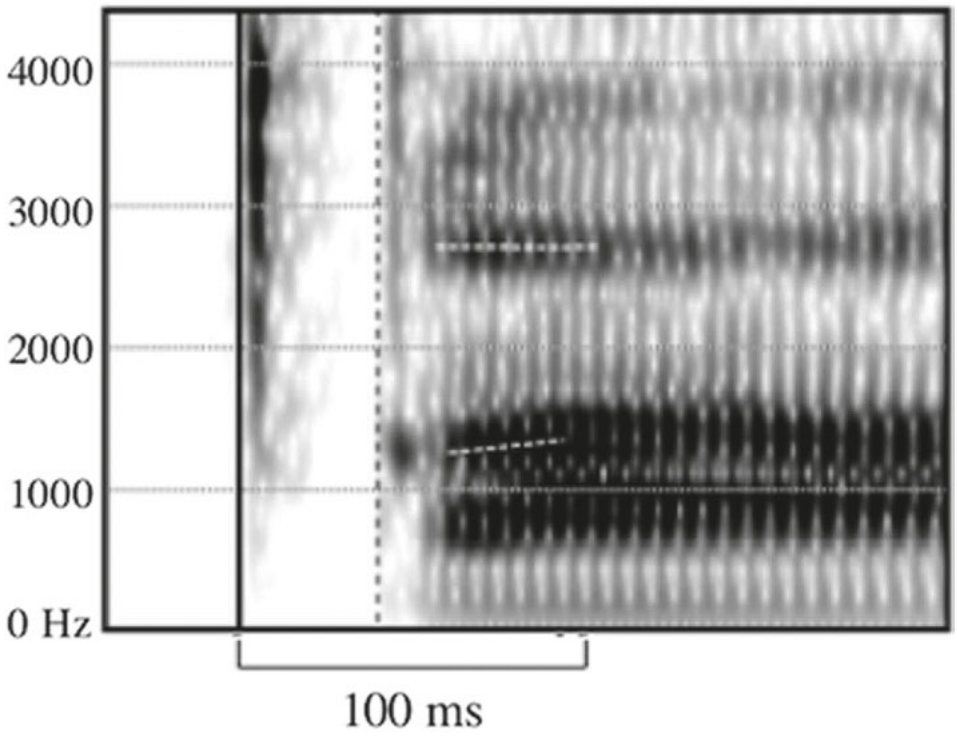

Figure 8: Spectrogram illustrating delayed release of back closure (dotted line) in the word /kǂqáà/ 'silvery' in Gǀui (adapted from Nakagawa 2006)

ejective stops and affricates in most languages do not ordinarily have anything like the long delay between the oral release and the glottal release seen in this case.

The total duration of a click can be extended in other ways, as Miller and her collaborators have pointed out (e. g., Miller et al 2009). In Nǀuu, Gǀui and certain other Southern African "Khoisan" languages, the back release of a click can occur substantially later than the front release. Figure 8 illustrates an example from Gǀui, adapted from Nakagawa (2006). In the "normal" case, the back closure is released around 10–20 milliseconds after the front release and the much louder burst of the click release tends to auditorily mask any separate signal from the quieter burst associated with the release of the back constriction. However, when the back release is delayed it can be clearly perceptible as a separate event from the front release. In the example in Figure 8, there is about a 35 ms delay between the two releases, similar to values reported for Nǀuu in Miller et al. (2009).

This timing pattern stimulates a valuable debate about issues of segmenthood. Whereas most analysts treat complex click consonants as unitary segments, others have considered whether at least some of them might be better considered to

be sequences or clusters (e. g., Traill 1985; Nakagawa 2006; Güldemann 2001), or have adopted an intermediate position in which some are considered to be "contour" segments with distinct phases (e. g., Miller et al. 2009). For example, the position of Miller and colleagues is that clicks with delayed release of the back closure exemplify sequencing of airstream mechanisms, namely velaric followed by pulmonic (Miller uses the term 'lingual' rather than the traditional 'velaric'). Since pulmonic pressure is omnipresent during speech, and the back release of clicks – except when the vocal folds are closed – always releases an outflow of air from the lungs, the notion of a sequencing rather than an overlapping of these mechanisms does not seem appropriate. Nasalized clicks always involve pulmonic airflow simultaneously with the click mechanism, so clicks with a delayed release of the back closure do not differ from others in airstream mechanism.

Before leaving the topic of clicks it might be noted, first, that this class of consonants fills a gap in the distribution of double articulations. The three most basic articulatory zones – labial, coronal, dorsal – generate three possible combinatory pairs: labial-coronal, labial-dorsal and coronal-dorsal. Labial-coronal segments are rare but occur in Yélî Dnye (aka Yele), a Papuan language, and in Wari' and Oro Win in Amazonia. They are not known to occur in Africa except as allophonic variants of /kp/; claimed labial-coronal double articulations in Bura and Margi are in fact sequential articulations of labial and coronal segments (Maddieson 1983, 1987). labial-dorsal segments include the common labial-velar segments discussed earlier in this chapter as well as bilabial clicks and the very common segment /w/. The only coronal-dorsal segments known at this time are clicks. All clicks except bilabial ones fall into this category. Other candidates to be considered coronal-dorsal segments, such as "strengthened" velarized segments like [tk] in Shona, can be shown to be sequential in their production (Maddieson 1990) and in this case show straightforward bisegmental derivation /tu-/ > /tw-/ > /tk/.

Secondly, we might note that sometimes in sequences containing coronal and dorsal consonants involving a closure (stops or nasals) there is partial overlap of the two closures, and if the articulatory movements are appropriate there may be rarefaction of the air enclosed between the two closures and a somewhat click-like implosion may be audible when the first closure is released. An example from Kinyarwanda is shown in Figure 9, based on material in Demolin (2014). Orthographic <ngw> in *ingwaro* is pronounced in this token as a voiced alveolar nasal followed by a largely voiceless velar nasal with an aspirated labialized offset. The velar closure is formed before the alveolar closure is released. When the alveolar closure is released a sharp transient burst occurs, which is interpreted by Demolin as being due to negative intraoral pressure. The accompanying aerodynamic traces are somewhat ambiguous; recorded intraoral pressure is actually positive at this moment, while the traces for oral air flow and nasal airflow (actually sensed by pressure changes in masks covering the mouth and nose) are negative and positive respectively.

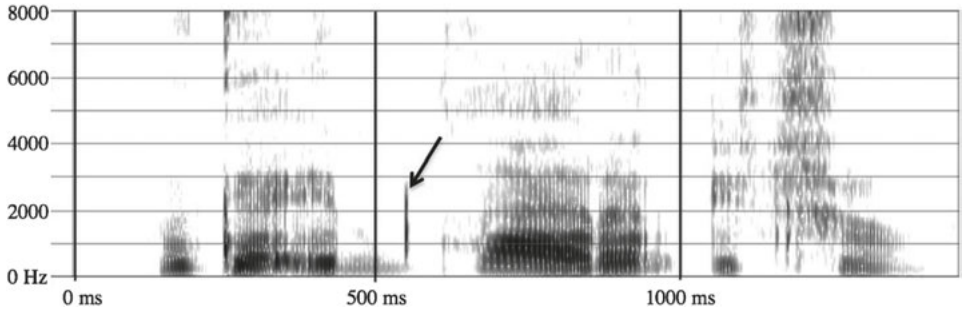

Figure 9: Spectrogram of the Kinyarwanda sentence *vuga ingwaro ichumi* ('say weapons ten times'). The arrow marks the salient release burst between alveolar [n] *a*nd devoiced labialized velar [ŋ̥ʷ]

Several writers from Trombetti (1905) and Stopa (1935) onwards have speculated on the possible origin of clicks, and such overlapping, originally sequential closures with negative intraoral pressure would be a potential source of this category of sounds. However, there is as yet (and may never be) any actual comparative/historical data to support this scenario. Moreover, documented cases of overlapping closures creating negative pressure most often involve *labial* and velar constrictions, which might produce bilabial clicks. Yet bilabial clicks are the rarest click type both cross-linguistically in inventories and in the lexicons of individual languages.

4.2.2 Ejectives and implosives

Ejective and implosive consonants involve the superposition of vertical movements of the larynx on the ongoing flow of pulmonic air, together with a constriction formed by the vocal folds. The moving larynx functions as a piston acting on the air in the oro-pharyngeal cavity, either compressing or rarefying it, provided that there is also a constriction within the mouth to enclose the air volume. These mechanisms have been understood since at least the late nineteenth century, but the most detailed early experimental studies are largely due to researchers working on African languages. As with clicks and labial-velar stops, the relative timing of movements is critical. Unless the glottal constriction is maintained until after the oral one has been released, the special acoustic characteristics of these sounds will not be produced.

Globally speaking, ejective stops and affricates are a relatively common class of sounds. In Africa, they occur in languages in the Chadic, Omotic and Semitic branches of Afro-Asiatic, as well as in "Khoisan" languages and the Bantu languages in contact with them and also in a few Nilo-Saharan languages, again probably as a consequence of language contact. Ejective fricatives, on the other

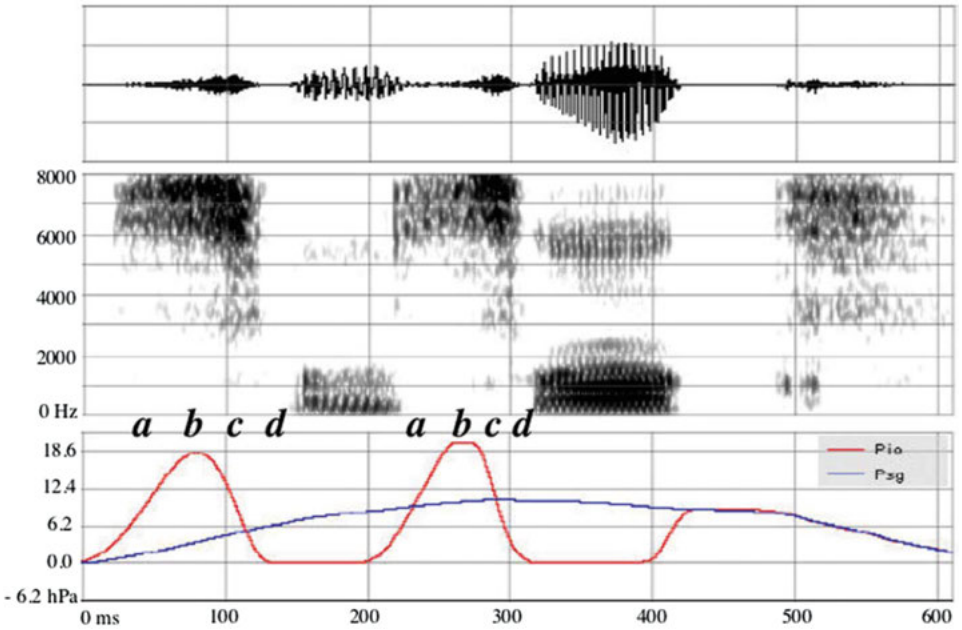

Figure 10: Ejective fricatives in Amharic /s'is'it/ 'regret' showing waveform (top), spectrogram (center), and intraoral (red line) and subglottal (blue line) air pressure records (bottom). Note that the second peak is clipped in the intraoral pressure records. Figure adapted from material provided by Didier Demolin, cf Demolin (2002: 465–473)

hand, are quite rare sounds, for good reason. Generating a sufficiently sustained volume-flow of air to create frication using the limited power of the ejective mechanism is not easy (Maddieson 1998a; Demolin 2002). In Africa, the occurrence of /s'/ is reported in Amharic, Hausa, Tigrinya, Berta and Komo (or Koman). It makes sense that the sole ejective fricative is a sibilant, as this type has a more constricted airflow channel than most other fricatives and hence optimizes the "work" done by the available air volume. In Hausa, /s'/ (orthographic <ts>) varies with an affricate [ts'] (Ladefoged 1968; Lindsey et al. 1992), and the same is reported for Tigrinya (Shosted and Rose 2011). The presence of a closure phase also reduces air volume depletion.

Aerodynamic and acoustic records of a word containing two ejective fricatives in Amharic are shown in Figure 10 above, courtesy of Didier Demolin. This shows several interesting details of their production. The acoustic pattern reveals a marked increase in frication amplitude toward the end of the fricative (time-points labeled *c*), followed by a silent interval (*d*) indicating that the glottis remains closed. The aerodynamic record shows that the intraoral pressure build-up and decay is asymmetric, with the increase slower (*a*) than the decay (*c*). Peak pressure (*b*) occurs more than half-way through the frication duration. Dynamic

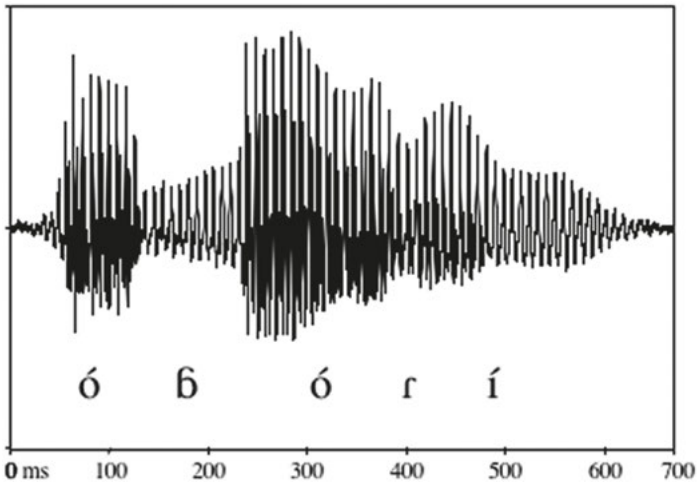

Figure 11: Waveform of the Kalabari /óɓóɾí/ 'goat' (male speaker)

palatography from the same subject shows an apparent full closure in the post-dental area during ejective fricatives, but the ongoing frication shows that this must be misleading. A very narrow channel to allow outward airflow must exist (or there would be no frication noise), but it is obviously highly constricted and is considerably narrower than the channel seen in pulmonic /s/. These data suggest that the problem of generating a fricative of full segmental duration using only the small volume of enclosed air in the oro-pharygeal cavity can be solved by delaying the pressure build-up – the relatively slow larynx-raising resulting in a low volume of outward airflow and low amplitude of frication – and by constricting the escape channel more narrowly than in a normal pulmonic fricative. The impounded compressed air is then allowed to flow out more freely toward the end of the fricative, producing the higher-amplitude noise portion (***c***). The intraoral pressure curve has a skewed parabolic shape quite unlike that seen in pulmonic fricatives, which tend to show a sustained plateau toward the middle of the fricative duration, with symmetrical increase and decrease. This pressure contour indicates that the ejective mechanism is not capable of generating more than a single segment at a time.

Implosives are stops during the closure of which the larynx is lowered, thus reducing the intraoral air pressure above the glottis. If the vocal folds are tightly enough closed and the downward movement is extensive enough, the air flow at release will be inward. The most typical implosive has close approximation of the vocal folds, rather than full closure, so that as the larynx moves down, strong air flow between the folds occurs, generating high-amplitude voicing that often increases in amplitude during the closure (see e. g., Nihalani; 1986 Cun 2009). An example of this pattern from Kalabari is shown in Figure 11. By contrast, in a voiced plosive voicing amplitude usually diminishes during the closure and may

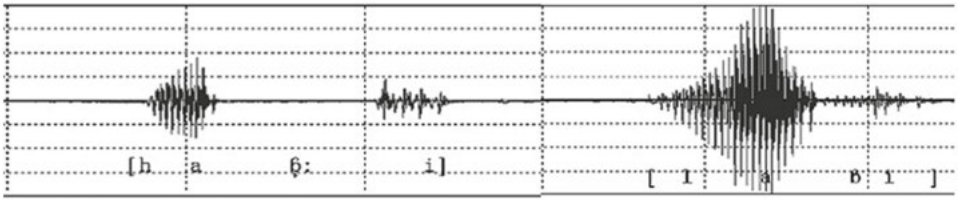

Figure 12: Waveforms of geminate and singleton intervocalic implosives in Malian Fulfulde (after Cissé, Demolin, and Vallée 2011) in the words /haɓɓi/ 'has tied' and /labi/ 'knife'. Dashed vertical lines are at 200 ms intervals

be extinguished before the release occurs. From the perceptual point of view, in many of the relevant languages the resulting difference in voicing amplitude at the burst may well be the most important cue to the distinction between pairs such as, for example, /ɓ/ and /b/. However, implosives tend to vary as to whether the vocal folds are sufficiently closed to prevent voicing during part or most of their duration prior to the release. Several studies of Hausa have shown that speakers of this language often have little to no voicing during the closure (Carnochan 1952; Lindau 1984; Lindsey et al. 1992) although the release is usually voiced. Examples in Cissé, Demolin, and Vallée (2011) from a Fulfulde variety from Mali show, illustrated in Figure 12, no voicing in geminate [ɓɓ] but the familiar crescendo voicing in a singleton [ɓ].

There has been considerable discussion as to whether it is possible for a language to have two series of implosives, one fully or mainly voiced, and the other perhaps with full glottal closure. Implosives of the second type have sometimes been termed "voiceless", but it should be made clear that this term would not have its usual meaning of "produced with open vocal folds" in this context. The 1989 IPA Kiel Convention voted to include the special symbols [ƥ, ƭ, ƈ, ƙ] for unvoiced implosives based on the corresponding voiceless plosive symbols with the right-turning hook used in established symbols like [ɓ, ɗ]. These were later withdrawn for various reasons, and using the voiceless diacritic, e. g., [ɓ̥, ɗ̥], was suggested if needed. Interestingly, Tucker and Bryan (1966: 6) had included a symbol [ƥ] for an "unvoiced" bilabial implosive in their overall consonant chart, but only used this symbol for languages in their "Iraqw group" where the sound seems to be analyzed as an allophone of /ɓ/ since it occurs only in final position. The argument for potential contrast between voiced and unvoiced implosives largely revolves around the Central Sudanic language Lendu (Kutsch Lojenga 1991; Dimmendaal 1986; Demolin 1995; Ladefoged and Maddieson 1996). Lendu has four series of stops, written orthographically <p, b, bb, b'; t, d, dd, d'> for the labial and alveolar series, respectively. In the examples of the so-called voiceless implosives (i. e., orthographic <b', d'>) in Lendu illustrated in Demolin (1995) there is rarefaction behind the closure, and voicing actually commences some time

before the oral release, so in these respects these segments are like the implosives often observed in Hausa or in Lendu's neighbour, Mangbetu, and they fall within the range of variation commonly seen for implosives when they happen to be produced with a tighter glottal constriction. The question is, what is the nature of the distinction between the two contrasting series that have both been described as implosives in Lendu? Recordings of two Lendu speakers in the UCLA Phonetics Lab Archive demonstrate quite disparate auditory and acoustic patterns. For one speaker, both implosive types have substantial prevoicing in three repetitions of the minimal pair <ddì> 'calm' vs <d'ì> 'other', (mean of 164 ms for <dd>, 141 ms for <d'>), against 172 ms for plain <d> in <dì> 'hunt', and 30 ms of voicing lag for <t> in <tì> 'jump'. The most salient audible difference between <ddì> and <d'ì> for this speaker actually lies in the quality of the following vowel, which has a significantly higher first formant in <d'ì> (i. e., is more [e]-like) compared to the other three words and has a strikingly narrower bandwidth of the second formant, giving a "brighter" timbre to the vowel. The other speaker also has a substantial voiced consonantal onset in both <ddì> and <d'ì> (mean duration of 99 ms and 61 ms, respectively, in two repetitions). However, for this speaker there is a strong auditory impression of nasality during this consonantal interval, and this is consistent with the well-defined formant pattern seen at this time. The onset to one repetition of <d'ì> has a strong glottal release, so that the segment appears to be a preglottalized nasal. For this speaker there is also a lower vowel in <d'ì> than in <ddì>, as well as in one repetition of <tì>. Whatever the basis for the contrast between these segments in Lendu is, it is not a distinction between voiced and voiceless implosives – at least for these two speakers. Somewhat better support for the idea that distinctive unvoiced implosives may exist comes from the data on Serer-Sine (Atlantic, Senegal) presented in McLaughlin (2005). A fuller description description of these sounds is awaited.

4.2.3. Prenasalized segments

Complex consonants also include those in which oral and nasal components are sequenced. Prenasalized consonants – plosives, affricates and less commonly fricatives – are found in many African languages but their phonetic realization has probably been more closely examined in Austronesian (Cohn and Riehl 2012). There are primarily phonological issues around the interpretation of NC elements as either units or sequences/clusters. However, studies of the timing of these elements can provide useful insights into their phonological role. This issue will be briefly returned to in the discussion of prosodic matters in section 4.

4.2.4. Pharyngeals and pharyngealization

Consonants with a secondary articulation of pharyngealization or a primary pharyngeal or epiglottal place of articulation are relatively rare in the world's languages. Their production and acoustic properties have been studied in a number of Arabic varieties which conserve them, including North African lects (e. g., Ghazali 1977; Norlin 1987; Metoui 1989), as well as in several Berber languages (e. g., Louali and Puech 1989; Naumann 2012) and the Cushitic language Dahalo (Maddieson et al. 1993). Pharyngeals and pharyngealized consonants have major coarticulatory effects on adjacent vowels and these affects can extend over quite a long temporal interval (e. g., Zawaydeh 1999; Naumann 2012). Figure 13 shows the difference between articulatory configurations for /t/ and /tˤ/ for a male speaker of Tamazight averaged over several unrounded vowel contexts. Measured points on the tongue for plain /t/ are shown by crosses and for /tˤ/ by circles. Interpolated lines are drawn connecting these points to make it easier to visualize the approximate tongue contour. The position of the epiglottis, hyoid bone and upper edge of the larynx for pharyngealized /tˤ/ are shown by bold lines. There is substantial narrowing of the pharynx, together with a slightly higher position of the hyoid and larynx in /tˤ/ than in plain /t/. The position of the tongue tip is very similar in both cases, but the forward part of the tongue behind the tip is markedly lower in /tˤ/ than in /t/ – presumably simply because so much of the tongue's mass is moved toward the back wall of the pharynx. Reaching or departing from this position is what creates the large coarticulatory effects.

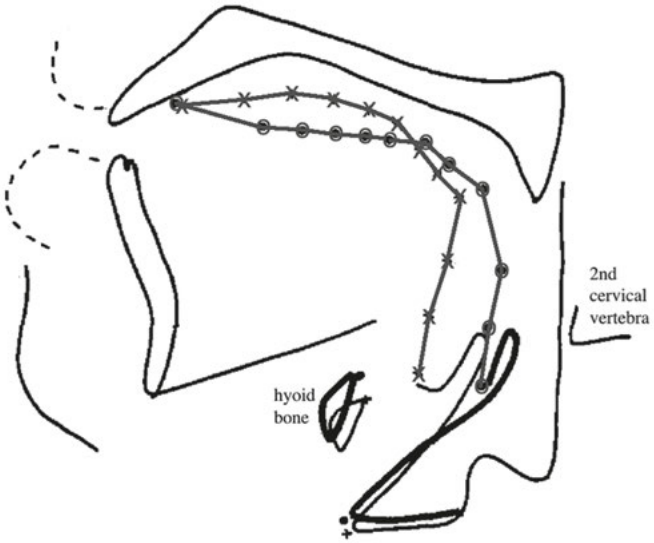

Figure 13: Average articulatory position for Tamazight /t/ (crosses) and /tˤ/ (circles) after Louali and Puech (1989). Lines connect measured points on cineradiographic traces

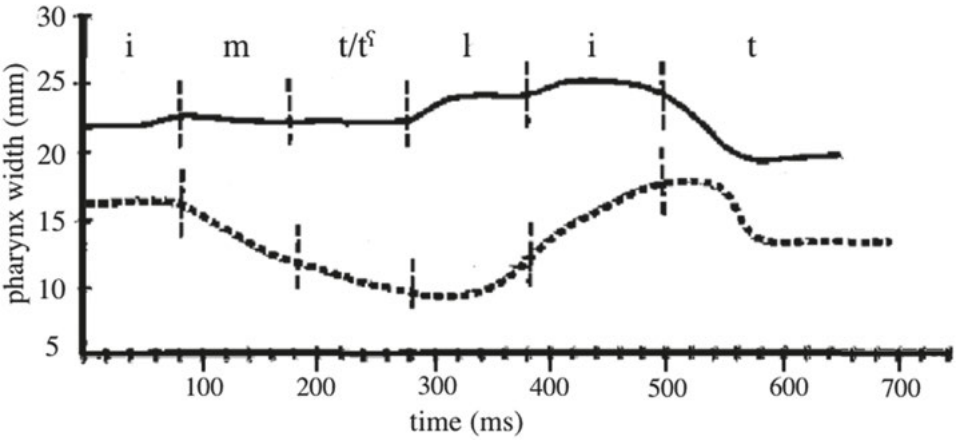

Figure 14: Mid-pharynx width over time in the Tamazight utterances /imtlit/ 'he shielded him' and /imtˤlit/ 'he has buried him'. The upper trace is the form with plain /t/,the lower (dashed) trace the form with /tˤ/. Segment boundaries are based on spectrographic analysis. Figure based on Louali and Puech (1989).

Although the contrast is lexically present only on coronals in Arabic and Berber languages, pharyngealization is both anticipated in preceding segments and perseverated into following ones (up to at least a word boundary and sometimes beyond). This is illustrated for Tamazight in Figure 14. Pharynx width is consistently narrower in all segments in the utterance /imtˤlit/ (dashed line) than in /imtlit/, resulting in perceptually lower and backer vowels and modifications to all the consonants. This pattern is considerably different from the pharyngeal width differences involved in vowel harmony discussed in section 3.1 below.

Some of the acoustic effects of the time-distributed differences in pharynx width and tongue body posture are illustrated in Figure 15, which shows first and second formant frequencies for sampled vowels of one male speaker of Siwi immediately following plain and pharyngealized coronal consonants. The most salient difference is the significantly lower second formant value in the pharyngealized context (i. e., perceptually a backer vowel). This effect is particularly noticeable with the low vowel /a/ and most especially the "neutral" vowel /ə/. The first formant is also affected, in general being higher (i. e., perceptually a lower vowel) in the pharyngealized context for unrounded vowels. In section 3 below this pattern will be compared with the effects on formant frequencies of the tongue root distinctions in vowel harmony systems.

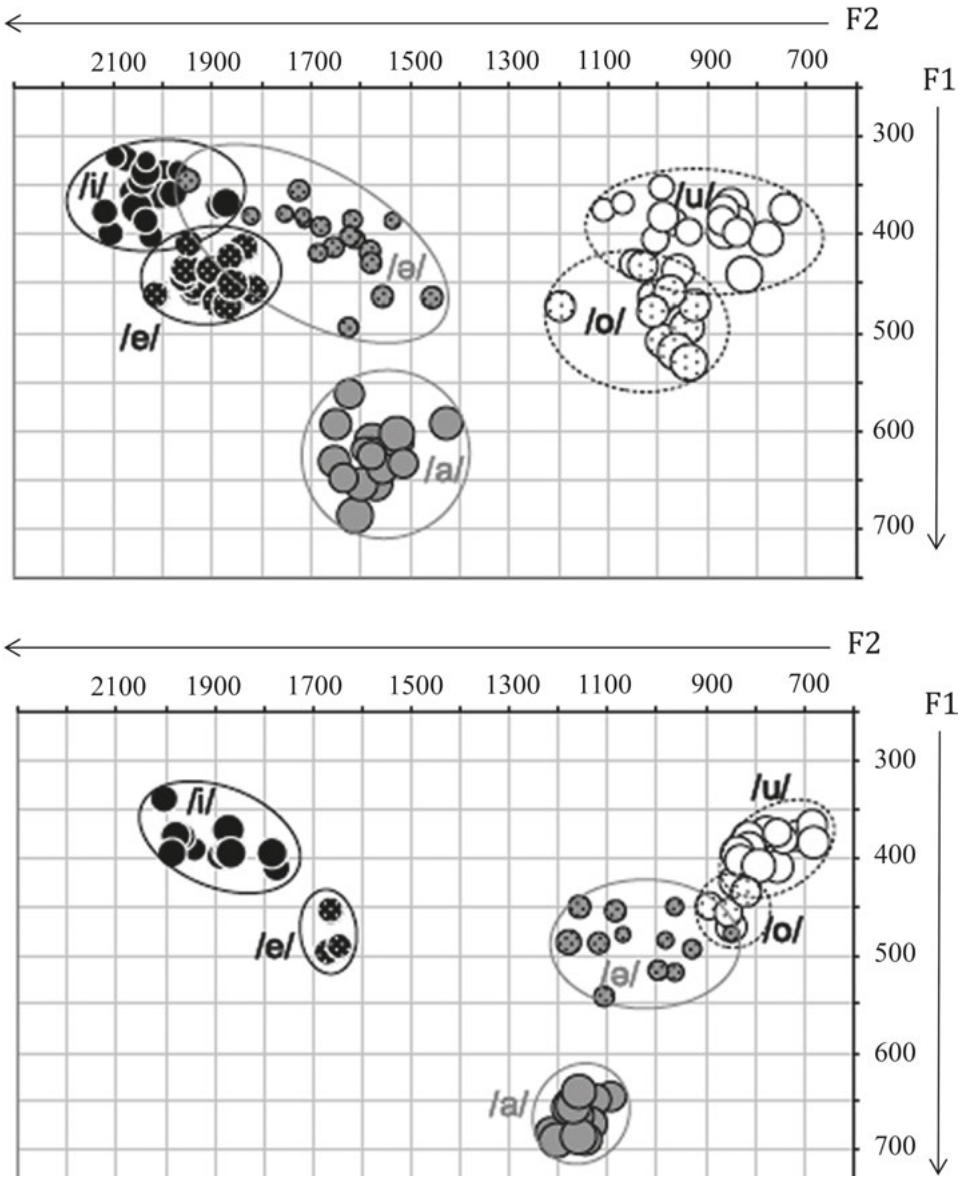

Figure 15: First and second formant frequencies of the six vowels in Siwi following plain (upper panel) and pharyngealized (lower panel) coronal consonants for one male speaker, after Naumann (2012). Scales are in linear Hz with origin in the upper right; distances on the F2 scale are half those for F1

4.2.5. Labial flap

At the conclusion of this section on consonants it is perhaps worth noting that the most recent revision of the International Phonetic Alphabet, made in 2005, involved the addition of a symbol for a labial flap, [v], based mainly on the data presented by Olson and Hajek (1999, 2003). Detailed description of the use of a bilabial flap segment in Mambay is given in Anonby (2007). Figure 16 shows the lip configuration during the middle phase of production of this segment, with the lower lip drawn back before its rapid forward movement. In other languages, such as Mangbetu, the labial flap is labio-dental rather than bilabial.

Figure 16: Lower lip retraction during production of the bilabial flap in the Mambay word /vínà/ 'male', from Anonby (2007)

4.3. Vowels

Languages in Africa, especially those in the large Niger-Congo and Nilo-Saharan families, tend to have a larger number of basic vowel qualities than languages in other continental-level groupings. The mean number is nearly seven for all African languages in a sample of 700 globally distributed languages, compared to a world-wide modal number of five. It is tempting to link the larger number of vowels to the prevalence of vowel harmony in Africa. There is presumably a higher cognitive load in distinguishing a larger number of vowels, but limiting their co-occurrence by a harmony constraint reduces the functional load of the contrasts.

4.3.1. Vowel harmony

Restrictions on the co-occurrence of vowels within roots and/or between roots and affixes or clitics are found in languages from all regions of the world, but vowel harmony is especially frequent in the languages of Africa. The most familiar kind of vowel harmony remains one in which vowels are divided into binary sets bisect-

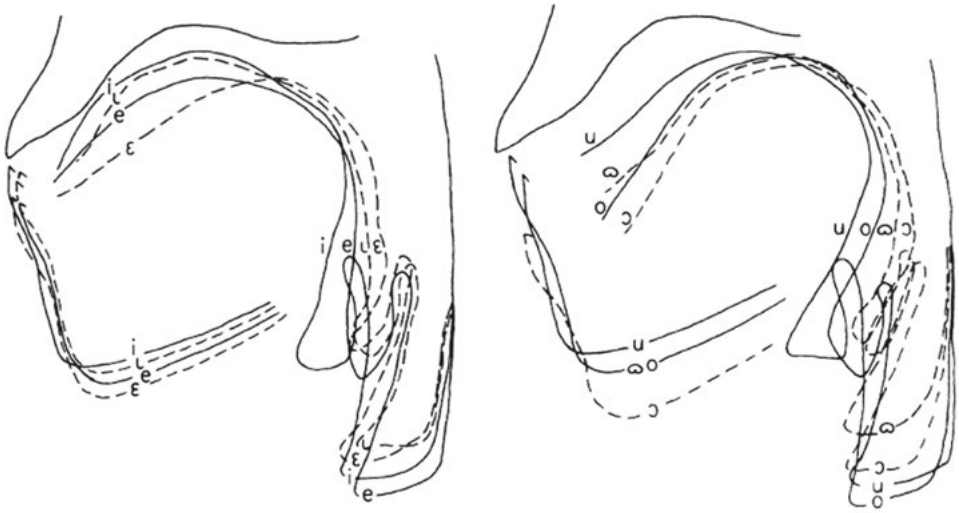

Figure 17: X-ray tracings of midline articulatory configurations in +ATR (solid lines) and -ATR (dotted lines) vowels in Akan (from Lindau 1979). Front vowels are in the left panel, back vowels in the right

ing one or more of the three main parameters of vowel contrast – height, backness and rounding. This is the typical case that is presented in linguistics textbooks and in many general discussions of vowel harmony (e. g., Vago 1980). Examples of this type of pattern are to be found in Turkish, Finnish and Hungarian, as well as in a number of Bantu languages. However, this is far from the most common type of vowel harmony.

In a very large number of African languages vowel harmony assigns vowels to two sets that, at least from a perceptual point of view, appear not to bisect the height scale, but group some high, mid and low vowels together as opposed to other high, mid and low vowels. Stewart (1967) aptly dubbed this pattern "cross-height vowel harmony", which remains a good term to describe it. Stewart also was among the first to recognize that an important factor in systems of this kind, at least for some languages, is the size of the pharyngeal cavity, which can vary relatively independently of the frontness and height of the forward body of the tongue. As a number of detailed studies have shown, particularly those of Lindau (1975, 1978, 1979) on Akan and Igbo, and Jacobson (1978) on Dholuo, in one harmonizing set the root of the tongue has a more forward position in a given vowel relative to its position in the corresponding member of the other set. In addition, the epiglottis may be pulled forward and the larynx lowered, thus creating a considerably larger cavity at the back of the mouth in each ATR vowel compared to its RTR counterpart. This is illustrated in Figure 17 from Lindau (1979). In this figure the configuration of the tongue, jaw, epiglottis and upper edge of the larynx

are drawn relative to the fixed locations of the hard palate and the back wall of the pharynx. The drawings are based on mid-saggital x-rays of one speaker of the Akyem variety of Akan taken while a sustained vowel token was produced. Although more than the tongue configuration differs it has become conventional to refer to "Set 1" vowels as Advanced Tongue Root (+ATR) vowels, and to "Set 2" as Retracted Tongue Root (+RTR or, more commonly, -ATR) vowels.

In figure 17 the "Set 1" vowels are transcribed as /i, e, o, u/ and "Set 2" as /ɪ, ɛ, ɔ, ʊ/ (< ɪ > and < ʊ > are former IPA symbols now replaced by < ɪ > and < ʊ >, respectively). Comparing, say, the pair /i, ɪ/ it can be seen that /i/ has a considerably fronter position of the root of the tongue compared to /ɪ/ although the front of the tongue is in a fairly similar position for these two vowels. The epiglottis is also pulled toward the root of the tongue and the larynx is lower in /i/ than in /ɪ/.

Studies using still or cine X-rays to examine articulatory configurations in vowels have been conducted on a number of African languages with vowel harmony of the cross-height type. These have demonstrated that variations in pharyngeal volume are the main production difference between vowel harmony sets in languages from different regions and families. Specifically this has been shown for Ndut from Atlantic, Dagbani from Gur, Akan, Anyi and Igbo from Benue-Kwa, Kirike Ijo from Ijoid, and Dholuo and Teso from Nilotic. The documentation for Ndut (Gueye 1986) is particularly interesting, based as it is on relatively high-speed cineradiography (50 fps), allowing for more natural speech and for selection of an appropriate mid-vowel frame for each vowel. Figure 18 shows tracings of frames representing two pairs of vowels, the mid front pair /e, ɛ/ on the left and the back rounded pair transcribed by Gueye as /u, ʊ/ on the right. The Set 1 vowels, /i, u/ are shown by solid lines, Set 2 vowels /ɛ, ʊ/ by dotted lines. The retracted tongue and epiglottis, the raised larynx and a small advancement of the back pharyngeal wall all contribute to a smaller pharyngeal cavity size in Set 2 vowels compared to their Set 1 counterparts. The main body of the tongue is in an extremely similar position relative to the palate for the vowels in the different sets, although the jaw is lower in Set 2.

These data are among the clearest demonstration that articulatory adjustments in the pharyngeal region of the vocal tract can be independent of tongue body position, especially tongue height. However, in the majority of the world's languages this potential independence is not exploited: tongue root position can be predicted from the position of the tongue body. This is so not only for languages with simpler vowel systems, such as Spanish or Russian, but also for languages like English (Nix et al. 1996; Whalen et al. 1999) and Swedish (Jackson and McGowan 2008) with contrasts between vowel pairs such as /i, ɪ/, /e, ɛ/, /o, ɔ/ and /u, ʊ/ that have sometimes been equated with the ± ATR distinctions in languages like Akan. Tiede (1993) explicitly showed the non-equivalence of the English and Akan vowels, albeit with data limited to a single speaker of each language.

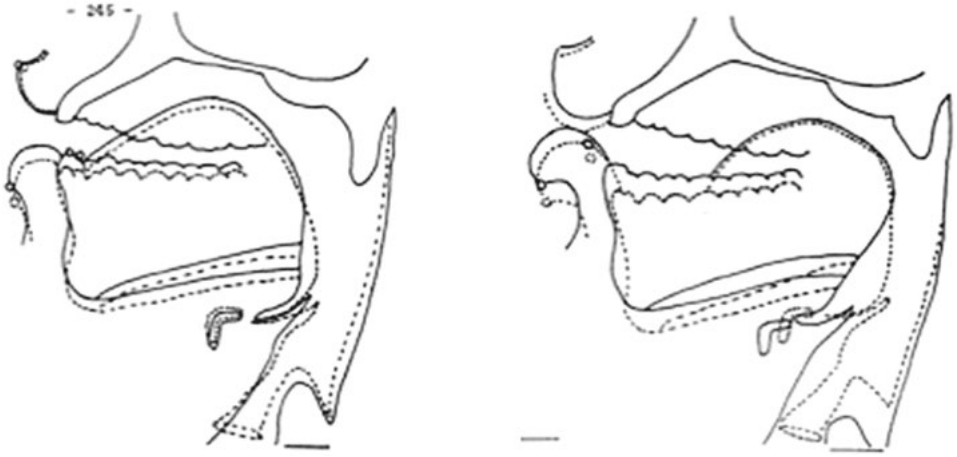

Figure 18: Tracings from cineradiography of midline articulatory configurations of vowels /e, ɛ/ in the words /pel, pɛl/ (left panel) and /puk, pɔk/ (right panel)

As researchers have justifiably become more cautious about using x-ray technology for non-medical purposes the number of languages for which we definitively know that tongue root position/pharyngeal cavity size is the factor involved in vowel harmony distinctions has barely grown. Well-known modern techniques for visualizing articulatory configurations such as ultrasound and electromagnetic articulography are ill-adapted to seeing the pharynx (but see Gick et al. 2006; Hudu 2014), and MRI has not yet been much applied to this problem. Hence considerable effort has been devoted to looking for an acoustic diagnostic for the ± ATR distinction. A rough rule of thumb can be proposed. An increase of the size of the back cavity tends to lower the frequency of the first formant (F1) of a vowel, other things being equal (cf. Stevens 1988: 151). Advancing the tongue root and other movements expanding the pharyngeal volume have this effect, so that vowel pairs that differ significantly in first formant frequency but little in other formant values have a high probability of involving the ATR parameter. This is because the ATR mechanism disrupts the "normal" pattern in which displacement of the mass of the tongue in the forward–backward plane causes "a narrowing in one part of the vocal tract [to be] automatically … accompanied by a widening in other parts" (Stevens 1998: 261).

Figure 19 plots the mean F1 and F2 frequencies in Hz of the eight paired vowels of Ndut from values published in Gueye (1986) for the short vowels. The origin of the axes is in the upper right of the figure to mirror a traditional vowel chart, and the scale is logarithmic to approximate perceived auditory distances. As is also the case for Akan, the "mid" +ATR vowel /e/ is higher (i. e., has a lower F1), than the "high" -ATR vowel /ɪ/. This is not always the pattern with ±ATR contrasts

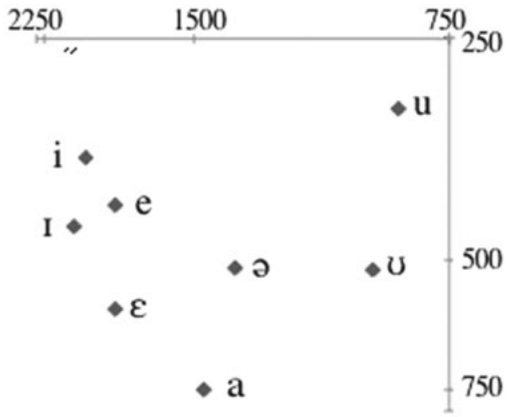

Figure 19: Mean positions of Ndut short vowels in F1/F2 space

(see Ladefoged and Maddieson 1996: 305), but a lower F1 is a useful preliminary diagnostic. This has been used to suggest that ±ATR is an active contrast parameter both in languages from Africa, such as Avatime (Maddieson 1998) and Nande (Maddieson 2003), and from elsewhere, such as Khalkha Mongolian (Svantesson 1985) and Even (Aralova, Grawunder, and Winter 2011).

On the other hand, the absence of this pattern in other languages suggests that ±ATR contrast is not actively involved in the vowel system, although it may have been at an earlier stage, since a cross-height harmony system is still apparent or can be reconstructed on comparative grounds. Examples include Standard Yoruba (Disner 1983) and Sele (Maddieson and Gordon 1996). In the case of Defaka, Shryock, Ladefoged, and Williamson (1996/97) suggest that the front vowels /e, ɛ/ do not differ in ATR, but that the back vowels /o, ɔ/ might. This conclusion is based on other properties that often accompany ±ATR concerning the relative amplitude and bandwidth of formants, commonly perceived as a difference in voice quality. These effects are independent of, and usually more subtle than, the phonation type differences discussed in section 3.2, but related methods can be used to investigate them.

One of the more careful studies to use formant bandwidth data to study ATR differences is Higgins's (2012) study of the Tanzanian Bantu language Ikoma. Inspired by a methodology used by Hess (1992) for Akan, Higgins compared the expected bandwidth of the first formant in Ikoma vowels based on a formula provided in Fant (1972), also employed by Hess. This formula is based on data from languages, such as Russian and Swedish, that do not employ independent adjustment of tongue root position and hence display a predictable relationship between the frequency of the first formant and its bandwidth. Figure 20 plots the mean F1 frequency versus bandwidth values for the seven vowels of Ikoma as produced by Higgins's primary consultant and contrasts these with the bandwidth values pre-

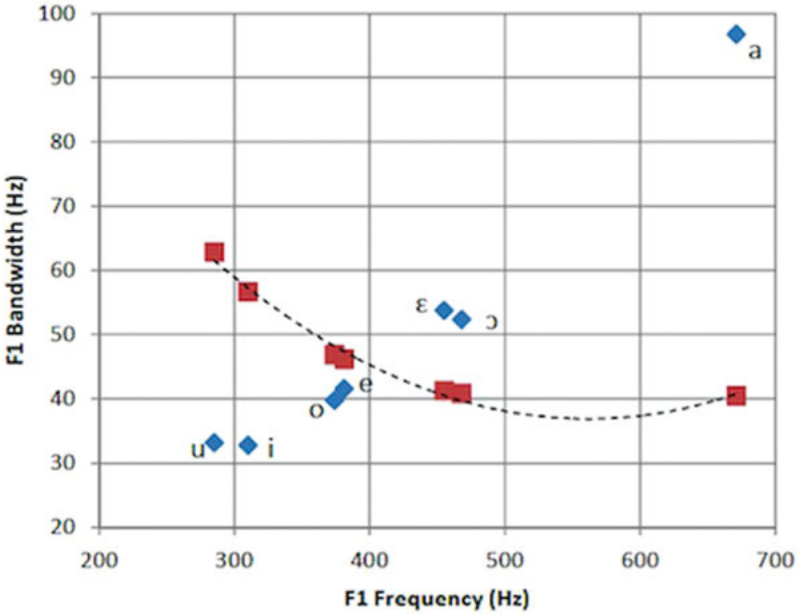

Figure 20: Mean measured first formant frequency vs. bandwidth for one speaker's vowels in Ikoma (blue diamonds) compared with predicted bandwidths after Fant (1972) (red squares). Speaker is a 45-year-old male

dicted by Fant's formula based on F1 frequency. The four vowels transcribed as [i, e, o, u] fall below the curve of predicted values, while [ɛ, a, ɔ] fall above it. This provides *prima facie* evidence that the first four vowels can be considered [+ATR] and the latter three [-ATR]. Higgins is careful to note that measurements on individual tokens are quite scattered and the result seen in Figure 20 only appears when the data are aggregated. Hence, in this, as in many other cases, examining single tokens cannot serve as a diagnostic.

It is also quite common to find studies simply assuming that ±ATR is active which then examine what acoustic distinctions underlie this assumed distinction (e. g., Fulop, Kari, and Ladefoged 1998 for Degema; Guion, Post, and Payne 2004 for Maasai; Local and Lodge 2004 for Tugen; and Remijsen, Ayoker, and Mills 2011 for Shilluk). Smith (2007) even suggests that Sumerian may have had vowel harmony based on ± ATR although, of course, in this case regrettably neither acoustic nor articulatory evidence can be brought to bear.

The assumption that ±ATR is the relevant distinction may account for the rather unclear results reported by Starwalt (2008) in her comparison of vowel systems from 11 diverse languages, all of which have a vowel harmony system presumed to be based on tongue root position. These languages include a quite diverse sample of languages from several groups: Guang (Foodo), Ghana-Togo-Mountain (Ikposo,

Tuwuli), Defoid (Ekiti Yorùbá, Ifè) and Bantu subgroups A (Mbonge [aka Oroku], Londo), C (Dibole, Mbosi) and J (Nande, Talinga-Bwisi). Starwalt measured F1 and F2 frequencies, F1 bandwidth and an index of spectral tilt (the rate at which the amplitude of harmonics declines as their frequency increases), in this case the difference between the amplitude of the strongest harmonic close to the frequency of F1 and that of the strongest harmonic close to the frequency of F2, normalized to account for formant frequency differences in the vowels compared. None of these measures reliably correlates with the suggested +/– ATR distinction across this set of languages as a whole.

Although pharynx width is involved both in pharyngealization (see section 2.4 above) and in ±ATR contrasts, there are two striking differences. In articulatory terms, pharyngealization involves making the pharynx narrower than "normal", whereas the advanced tongue root configuration makes it wider. The widening movements often involve active advancement of the epiglottis, which is pressed against the base of the tongue. The forward displacement of the mass of the tongue may also be accommodated by lowering of the jaw so that the tongue sits on a lower foundation; hence the height of the front portion of the tongue is not displaced upward. Pharyngealization, however, involves backward displacement of the body of the tongue, which consequently is lower in the front of the mouth. Perceptually, ±ATR contrasts in vowels usually have no noticeable effects on adjacent consonants, whereas pharyngealization markedly affects contiguous segments both perceptually and in their production. It would seem like a mistake to treat pharyngealization and ATR contrasts as manifestations of the same phenomenon.

4.3.2. Phonation type

In common with certain languages in other parts of the world, particularly Meso-America and South East Asia, some African languages have distinctions between sets of vowels based on phonation type. These cases have played a major role in the development of metrics that capture, in particular, the acoustic characteristics of voice quality differences, and this work has in turn informed the search for appropriate clinical measures of voice characteristics to distinguish normal and potentially pathological conditions (Kreiman and Sidtis 2011). Two languages have been especially prominent in this discussion, Dinka (Malou 1988; Denning 1989; Remijsen and Manyang 2009) and the East !Xoon dialect of the Taa language complex (Traill 1986; Ladefoged at al. 1988). The techniques developed examine properties in both the temporal and spectral domains. Relative amplitude differences in spectral prominences, especially the amplitudes of the first and second harmonics or those of the harmonics closest to the first two formant resonances, capture differences in the overall spectral slope, which is steeper for a more breathy voice quality than for a tenser phonation (see Stevens 1988, chapter 2 for discussion). Illustrative examples from Luanyjang Dinka (Remijsen and Manyang 2009)

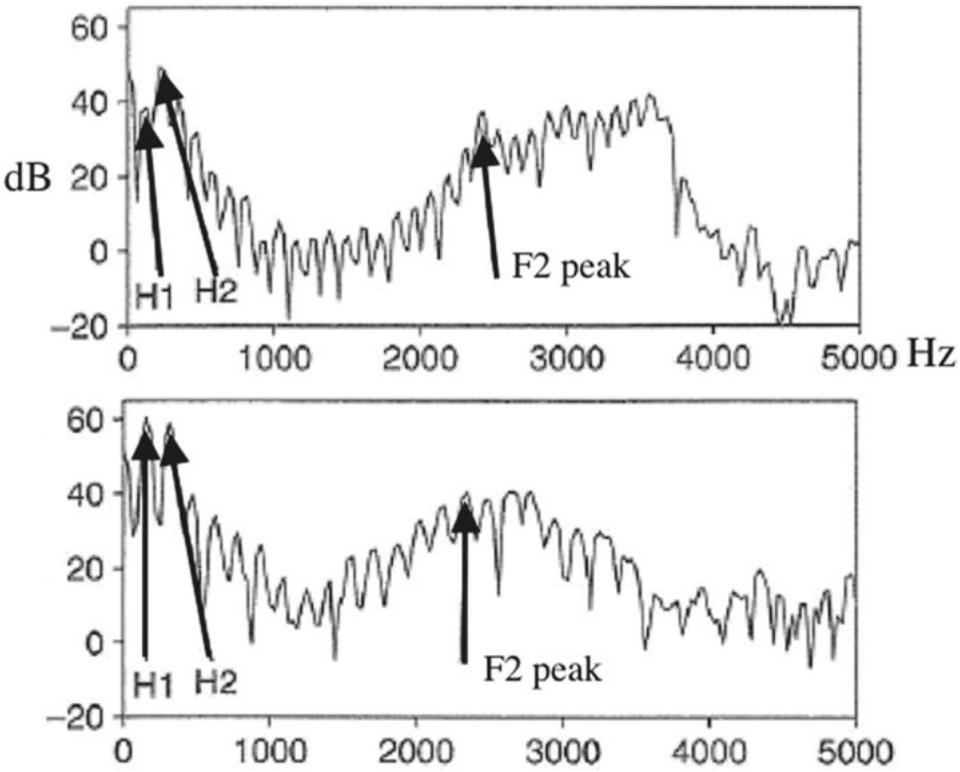

Figure 21: Spectra (0–5000 Hz) of modal and breathy voice [i] vowels in Luanyjang Dinka (after Remijsen and Manyang 2009: 118)

are shown in Figure 21. In the tense voice example (top panel) the amplitude of the first harmonic is substantially lower than that of the second, whereas in the breathy voice example (lower panel), these amplitudes are close to equal. Such measures cannot be used to classify individual tokens as they are highly dependent on personal and stylistic factors as well as on a range of linguistic features, such as vowel height and fundamental frequency. However, comparisons between matched pairs in contrast do provide a diagnostic test for differences in phonation. Similar measures can also be applied in comparing consonants that differ in voice quality, either by examining the consonants themselves, as in the nasals of Tsonga (Traill and Jackson 1988), or the properties of immediately abutting portions of vowels.

4.3.3. Vowel-to-vowel coarticulation

The articulatory configuration for a given vowel is to some degree carried over to a following syllable and anticipated in the preceding one. The main evidence for this observation comes from acoustic measurements. In a highly influential

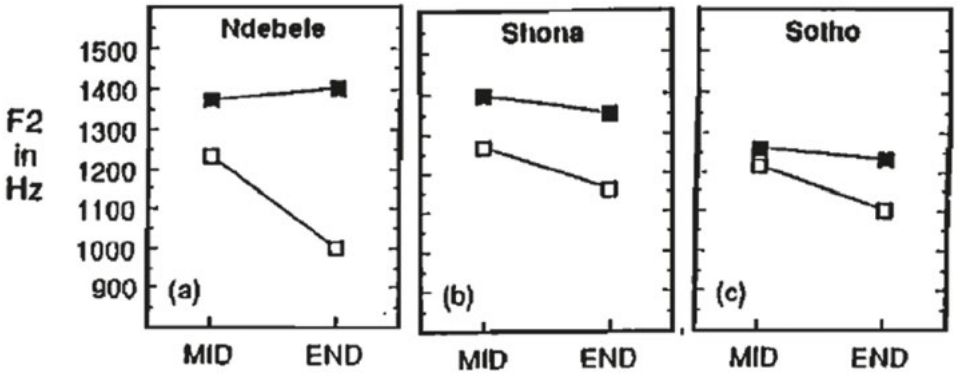

Figure 22: F2 in /a/ followed by transconsonantal /i/ (black squares) and /u/ at mid- and end-points of the vowel in three Bantu languages. Means of measurements from three male speakers in each language (from Manuel 1990)

paper Öhman (1966) came close to suggesting that vowels and consonants are produced in independent parallel streams. In other words, Öhman suggests vowel-to-vowel coarticulatory effects are so strong because vowels are on a separate "tier". Later work indicated that such vowel-on-vowel influence might be reduced when intervening consonants are specified for vowel-like features such as labialization or palatalization (Purcell 1979) or when there is a larger vowel inventory (Manuel and Krakow 1984). The most detailed investigation of the influence of vowel inventory size remains Manuel (1990), who compared vowel coarticulation in three Southern Bantu languages, Ndebele, Shona and Sotho. Ndebele and Shona have five-vowel systems, Sotho contrasts seven vowels. The prediction that modification of vowels due to a neighboring vowel will be less in a language with a larger number of distinct vowels is borne out in Manuel's study, but there are also substantial differences between the two five-vowel languages, as indicated in Figure 22, so that Shona seems intermediate between Ndebele and Sotho. While interesting, the idea of limited coarticulation dependent on vowel inventory needs much further investigation before being accepted. A particularly valuable study would be one comparing vowel-to-vowel coarticulation in languages with varying vowel inventory sizes and presence or absence of vowel harmony restrictions. Ohala (1990, 1994) hypothesizes that vowel harmony originates in such vowel-to-vowel coarticulation. While plausible, this hypothesis at present lacks overall support from diachronic studies and overlooks the widely documented interactions between properties of consonants and vowels. Like "register" distinctions in East Asian languages, African vowel harmony patterns might well originate in the transfer of consonantal traits to adjacent vowels. Local and Lodge's (2004) study of Tugen does find durational and spectral differences in consonants abutting vowels belonging to the two harmony classes in this language, which suggests this hypothesis bears further consideration.

4.4. Prosodic Features

All languages have characteristic structure in their usage of fundamental frequency (pitch) and amplitude variations, in their timing patterns and in their organization of sound sequences into syllables or other distributional units. These various patterns are often grouped together under the label of prosodic features and are amenable to detailed phonetic analysis. The development of frameworks within which to do so is one of the most active areas of research within the paradigm of laboratory phonology (see, e. g., Cohn, Fougeron, and Huffman 2011).

4.4.1. Tone

Apart from languages in the northern tier of the continent and occasional languages such as Swahili, Wolof and Fulani that have lost tone, the majority of African languages are tonal. Analysis of tone in African languages has generally received more attention from phonologists than from phoneticians (see Hyman + Lionnet this volume). This is perhaps because many of the languages have relatively simple binary contrasts of tone but have complex syntagmatic perturbations involving these two levels with important morphosyntactic functions. Nonetheless, a few African languages have quite elaborate tonal inventories with four or five levels and sometimes also contour tones. Such inventories are particularly found in a cluster around the Côte D'Ivoire/Liberia border including both Mande (e. g., Toura [Béarth 1968], Gban [Le Saout 1976] and Dan [Flik 1977]) and Kru languages (e. g., Wobe [Béarth and Link 1980; Singler 1984] and Bete [Werle and Gbalehi 1976]) as well as in Mambila dialects along the Nigeria–Cameroon border (Connell 1999) and in the Omotic language Bench in Ethiopia (Wedekind 1983; Rapold 2006). The reported measurements of pitch differences between tone levels in these languages lend support to the notion that an increase in tone distinctions is accommodated by expanding the pitch range, rather than by compressing the distance between adjacent tones (Maddieson 1991). This fact provides a corrective to the once-popular notion that phonetic contrast is based on a principle of maximal dispersion (Liljencrants and Lindblom 1972).

4.4.1.1. F0 declination

One topic where research on African languages has been particularly influential is in the examination of declination of fundamental frequency. It is generally agreed that there is a natural tendency for F0 to drop over the course of an utterance in all languages: how this is implemented and the extent to which it is actively countered vary greatly across languages. Ladd (1984), Hombert (1974) and Connell (2001) all provide some overall phonetically-informed discussion. In general, a sequence of syllables bearing the same phonological tone level will exhibit a progressive

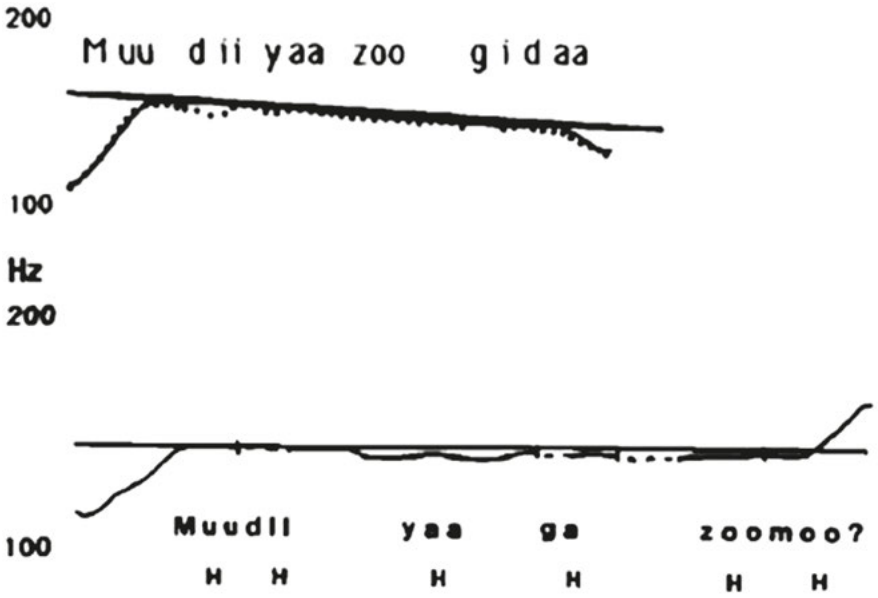

Figure 23: Declination of high tones in Hausa in a declarative (upper trace), compared to its absence in a question (lower trace) after Lindau (1986). A straight-line approximation is superimposed on measured F0 results

slight lowering of F0, although this may be canceled or supplemented by other features to mark question versus statement (see, e. g., Rialland 2007). Utterances in which higher and lower tones alternate generally show a more rapid lowering of successive tones belonging to the same category when they are separated by a contrasting tone level. This effect is usually more marked for high than for low tones. Deleted or floating low tones often markedly lower the pitch of a following higher tone, as if the alternating tone pattern had been present – the effect known as downstep. The literature on these phenomena is extensive and only a very brief discussion will be included here, focusing on attempts to model the effects in some detail.

Lindau (1986) created an explicit, though limited, model of F0 realization in Hausa based on data from nine speakers from Kano. Lindau found that tonal structure, utterance length and sentence type all have significant effects on declination patterns. Declination is steeper with alternating than with like-tone sequences, is steeper in shorter than in longer utterances, and is suppressed in yes/no questions. Figure 23 illustrates F0 contours in the statement meaning 'Mudi came home' compared with the question meaning 'Did Mudi see a hare?'. In the declarative statement successive high tones drop at a rate of about 14 % of the initial high per second. When highs and lows alternate the declination rate is about doubled. Declination rates are about half these rates in the longer utterances in the experiment

in both like-tone and alternating tone examples. In the yes/no question declination is suspended. Local utterance-final effects lower the end of the statement, and raise the end of the question. Interestingly, questions with the question-word /wàa/ 'who' have final lowering, not raising. A series of high tones does not decline in these questions, but alternating tones do, although not as sharply as in statements.

Lindau describes her work as "a model of intonation in a tone language", emphasizing that the F0 parameter jointly encodes both tone contrasts and any overlay of intonation due to sentence type, information structure and other factors (see also Miller and Tench 1980, 1982). Models of this kind have not been developed for many of the languages of Africa, but Laniran's (1992) study of Yorùbá, complemented by Laniran and Clements (2003), as well as Connell and Ladd (1990), Fajobi (2005), Ajíbóyè et al. (2011), and other research presents a fairly detailed picture of many aspects of the tonal and intonational patterns of this major language. Laniran's extensive experimental data shows that, as in Hausa, declination rate in Yoruba is dependent on utterance length, interpreted as showing that this is a preplanned aspect of speech production, not an automatic consequence of, say, reduction of lung air volume over the course of an utterance. Yorùbá and Hausa show several interesting differences, which may in part be due to Yorùbá having three rather than two tone levels. Yorùbá low tones decline more than mid or high tones, contrary to Hausa; in fact, high tone declination is negligible in all-high utterances (compare the absence of high tone declination in Mambila [Connell 1999]), and there is little difference in declination rates dependent on utterance length, as illustrated in Figure 24.

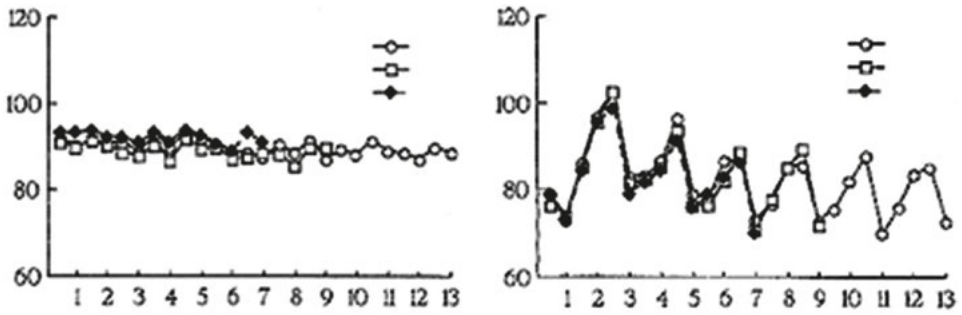

Figure 24: F0 measurements in all high-tone (left panel) and alternating low-high sentences in Yorùbá of three lengths of 7 (open circles), 9 (open squares) and 13 (closed diamonds) syllables, after Laniran (1992: 166). Two data points are shown for each syllable; one male speaker; vertical scale is Hz.

Declination patterns interact with more local effects, such as a tendency to raise (the last of a series of) high tones before lows (noted, inter alia in Bambara [aka Bamanankan] [Mountford 1983], Hausa [Lindau 1986] and Yorùbá [Laniran

1992]). Laniran even suggests that the declination of high tones alternating with lows in Yorùbá might be accounted for as a local anticipatory raising of the high tones. This proposition posits an even heavier reliance on preplanning an utterance, as the starting height of the first high would be dependent on how many alternating highs will follow.

4.4.1.2. Tone alignment

Tonal alignment refers to the temporal coordination between elements in the segmental string and targets and transitions in the tone string. Lexical and grammatical tones in many African languages can have realizations that are displaced some distance from their origin, and this is a major concern of phonological analysis of these languages, especially in the Bantu subgroup of the Niger-Congo family. However, even beyond such phonological considerations, surface tones must be locally co-produced with the segments in the utterance with a specific timing pattern. Lindau (1986) notes that tonal inflection points in Hausa tend to align with syllable boundaries, not with syllable centers. Thus, she argues: "The turning points in the fundamental frequency curve can be considered to be at least part of the phonetic correlates of syllable boundaries in Hausa."

Myers has studied aspects of tone alignment in several Bantu languages, including Chewa (Myers 1999) and Kinyarwanda (Myers 2003). Myers shows how careful use of phonetic data can distinguish between what are primarily phonetic implementation patterns versus phonological processes which modify the input to the phonetics. For example, in Chewa the impression that a high tone on pre-antepenultimate or earlier syllables spreads over a following syllable is probably a matter of the late alignment of the high tone peak – there is no extended high F0 plateau – rather than a phonological process. On the other hand, the retraction of a phrase-final high tone is best modeled as a categorical change of where that tone is anchored (with speaker-specific preferences as to whether it anchors to the first or the second mora of the lengthened penultimate vowel). Alignment between tones and segments has so far been more widely studied in Asian languages than in African ones; this therefore remains an important research opportunity.

Remijsen (2013) addresses a rather different aspect of tone alignment in Dinka namely, whether tones with similar contours can differ in alignment, as suggested for this language by Andersen (1987) but denied on general principles by, inter alia, Yip (2002). What have been labeled low and falling tones in varieties of Dinka are both realized as high-low falls after a non-low tone in Bor South Dinka (aka Southwestern Dinka), as illustrated in Figure 25 (where the preceding tone is mid). The obvious phonetic difference between the contours lies in the alignment of the high point of the fall in the nominally low tone near vowel onset, compared to its much later occurrence – in the middle of the vowel – with the fall tone. The notable rise from the preceding mid level to the onset of the nominal low argues

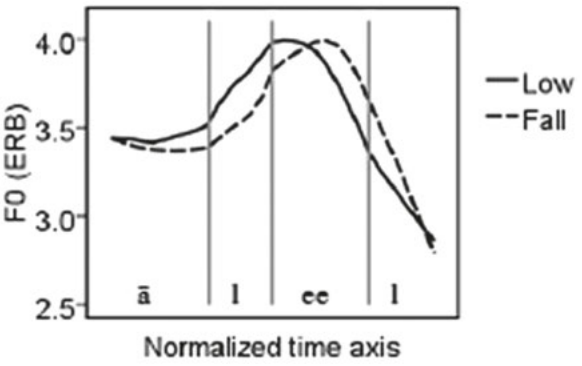

Figure 25: Mean F0 traces of minimal contrast between nominal low and fall tones in Bor South Dinka (averaged data from 4 speakers) after Remijsen (2013)

for a high element in the composition of the low, at least in this context. Remijsen argues that this data, together with evidence for the perceptibility of the difference, shows that early vs late alignment can be a distinctive feature of tone systems. As other mentions of Dinka in this chapter demonstrate, this language continues to open linguists' minds to the potential complexity of an individual language's prosodic system.

4.4.1.3. Depression

Research on Asian languages first revealed the importance of the interaction between consonants and fundamental frequency, particularly in historical perspective (e. g., Maspéro 1912; Haudricourt 1954, 1961). It was only later that general phonetic patterns linking laryngeal settings in consonants and fundamental frequency in adjacent vowels were established. The most pervasive finding is that voiceless consonants, especially obstruents, raise the onset fundamental frequency of a following vowel whereas voiced consonants, again especially obstruents, lower it. Several studies (e. g., Haggard, Ambler, and Callow 1970) have shown that this pitch difference is a significant perceptual cue to the (phonological) voicing distinction in languages such as English. An investigation of the effect of consonants on fundamental frequency in Yorùbá (Hombert 1977; Hombert, Ohala, and Ewan 1979) confirmed that similar raising and lowering is also found in tonal languages, but with an important difference. Comparing the data in Figure 26 with results from English and other non-tonal languages, Hombert (1977: 178) suggests that "there is a tendency in tone languages … to actively minimize the intrinsic effect of prevocalic consonants, probably in order to keep the different tones maximally different perceptually". This conclusion is reached since the effect is limited in its temporal extent (generally around 60 ms) even though the F0 differences at vowel onset are substantial.

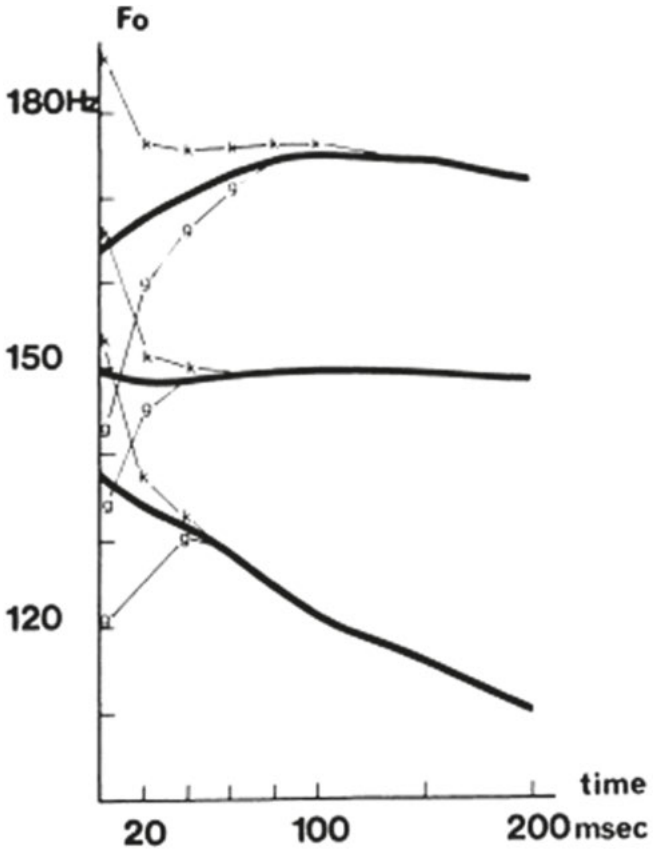

Figure 26: Fundamental frequency curves for high, mid and low tones in Yoruba monosyllables beginning with /k/ and /g/, after Hombert (1977). Bold lines are the mean of measurements across seven vowel environments. Thin lines show the initial differences due to the specific consonant context before the contour converges to the mean. Tokens were spoken in a carrier phrase with a mid tone preceding

Although there are rather few well-understood cases of tonogenesis or tone-splitting in Africa compared to the Asian situation, the obstruent voicing distinction is actively involved in tonal development in certain Chadic languages, such as Kera and Masana (Hyman 2013). Pearce (2009, 2011) reports an interesting sociolinguistic difference in Kera between predominantly urban male speakers, for whom the distribution of mid and low tones can be predicted from voicing and obstruency, and village speakers, for whom the voicing distinction in obstruents is neutralized and the mid/low tone contrast must be treated as lexical. This may represent an instance where language contact, in this case with French in the urban setting, has "undone" a diachronic change that has run to fruition in the village context.

Pearce adopts the term "depressor consonants" to refer to the (proto-)voiced

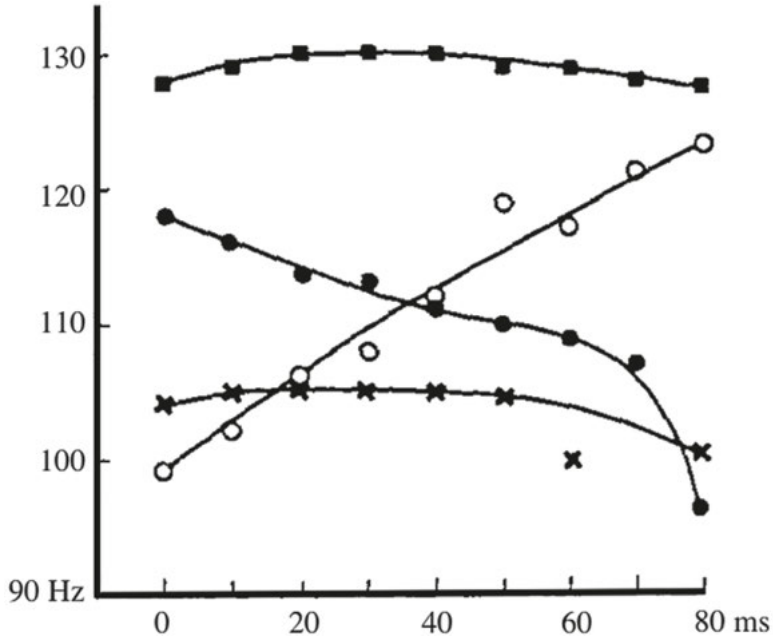

Figure 27: Pitch traces of tone contours from a male Zulu speaker, after Traill, Khumalo, and Fridjhon (1987). Black squares = high tone after non-depressor consonant; White circles = high tone after depressor consonant; Black circles = low tone after non-depressor consonant; Black crosses = low tone after depressor consonant. Lines approximate a curve through measured F0 values at 10 ms intervals

obstruents of Kera, and this usage is relatively common elsewhere. However, there is a quite distinct type of depressor, that is, pitch-lowering, consonant found in southern Bantu languages. These have sometimes been treated as breathy-voiced (e. g., Rycroft 1980) but as others have noted they are not necessarily voiced at all, and in some cases "depressors" occur in contrast with a voiced counterpart that is a non-depressor, so the correlation between voicing and depression is imperfect. Traill, Khumalo, and Fridjhon (1987) investigated "depression" in Zulu and found a very substantial onset lowering effect of the depressor consonants on both high and low tones. Data from one speaker is shown in Figure 27. Moreover, this lowering is far greater than the lowering effect that is observed after /b, g/. This pattern rules out the idea that depression can be simply described as a low tone realized on a consonant, as the low post-depressor onset is considerably lower than the onset of a non-depressed low tone.

Traill, Khumalo, and Fridjhon find no reliable measureable breathiness on vowels adjacent to depressor consonants, and further note that breathiness may also occur on some vowels after non-depressors. They conclude that "extreme lowering of F0 is the primary and only reliable manifestation of depression in

Zulu". There is some evidence for a special laryngeal configuration being responsible for this extreme lowering, but more work is still needed to clarify this.

4.4.2. Timing

Studies of timing in phonetics include concern with issues such as inherent durational differences among segments, the realization of quantity contrasts in both consonants and vowels, and contributions of duration to percepts of rhythm and stress. Some aspects of segmental timing have been discussed in connection with complex consonants above. This section will focus on quantity and rhythm.

4.4.2.1. Quantity

Geminate consonants occur widely in languages of the Afro-Asiatic family and in a number of Nilo-Saharan languages as well as in some of the Niger-Congo languages, such as Fulani, Wolof, Noon, Ganda and Jomang (aki Talodi). Geminate consonants can easily have twice the (acoustic) duration of singletons. For example, Ouakrim (1995: 57) reports the mean duration of word-medial intervocalic consonants in Tachelhit Berber (encompassing a balanced set of stops, fricatives and sonorants) as 78.5 ms for singletons and 164.9 ms for geminates. Cross-linguistically, vowels in closed syllables are frequently shorter in duration than in open syllables (Maddieson 1985). While not a foolproof guide, this phonetic pattern can serve as a diagnostic for syllabification. Thus Ouakrim (1995: 84) finds vowels to be about 16 ms shorter before the geminate than before singleton consonants (85.3 ms vs 101.4 ms) in the same wordlist, suggesting that word-medial geminates are heterosyllabic. Ridouane (2007: 130) finds a similar mean vowel duration difference in Tachelhit of 65 ms before geminate obstruents and 85.75 ms before singletons (mean of means before voiced and voiceless stops and fricatives), but argues that since a difference is found both word-medially and before consonants in coda position this cannot be attributed to syllabification. However, production patterns learned in one context, such as utterance-medial, can be preserved in another context, such as utterance-final. In fact, Ridouane's electropalatographic data shows that utterance-initial geminate voiceless dental stops – which provide no acoustic cue to the onset of closure in this position– have a mean closure duration more than twice that of singletons (215 ms vs 76 ms, mean of 10 repetitions each by two speakers). This observation confirms that duration patterns are conserved in positions where acoustic cues are absent.

Quantitative contrasts among vowels are also common in African languages. Vowel length distinctions are normally binary, but a three-way length distinction is well-attested in Dinka (Andersen 1987; Remijsen and Gilley 2008; Remijsen et al. 2009; Remijsen 2013) as well as in closely related Atuot (Reid 2010) and in Shilluk (Remijsen, Ayoker, and Mills 2011). Means of measurements from three

different studies are shown in Table 2. The origin of this three-way distinction is diachronically straightforward (Andersen 1990; Remijsen and Gilley 2008). Comparative evidence indicates that at an earlier stage there was a "normal" binary length contrast. Most final vowels were lost, producing the overwhelming predominance of closed syllable roots found in the modern languages, but in this process the pre-final vowel underwent a compensatory lengthening. Today's long vowel category is the reflex of both original long vowels in closed syllables and compensatorily lengthened short vowels. The super-long vowels are lengthened original long vowels. The three-way vowel quantity distinction in Dinka is orthogonal to both the voice quality (section 3.2) and tone distinctions in the language, resulting in a very complex prosodic pattern.

Table 2: Durations of vowels of three different quantities in Dinka and Atuot (in ms rounded to nearest integer)

	short vowel	long vowel	super-long vowel
Bor Dinka	71	113	194
Luanyjang Dinka	76	111	175
Atuot (Thok Reel)	77	123	205

4.4.2.2. Rhythm

Timing is also referenced in discussions of speech rhythm. Phoneticians have been particularly interested in whether measureable correlates can be found for the established impressionistic typology of stress-, syllable- and mora-timed languages. Few African languages have featured in these debates about rhythmic typology, with the notable exception of Arabic varieties from North Africa. Hamdi, Ghazali, and Barkat-Defradas (2005) show that Maghrebin (i. e., Moroccan and Algerian) dialects differ from more easterly North African dialects, which in turn differ from Levantine varieties. Figure 28 illustrates that consonantal intervals are more variable in Maghrebin varieties and they also have the lowest percentage of vowel-like sounds in running speech. This places Maghrebin Arabic closer to "stress-timed" languages (classic examples: English, Dutch), whereas Levantine Arabic is closer to "syllable-timed" languages (classic examples: Spanish, French), while other North African Arabic varieties are intermediate. The characteristics of Maghrebin Arabic that lead to this pattern are generally attributed to influence from Northern varieties of Berber (cf. Dell and Elmedlaoui 2002). Although the traditional rhythm classes and the relation of the proposed metrics to them are open to dispute (e. g., Arvaniti 2012) such data demonstrates real global timing differences across Arabic varieties.

The third major rhythm class proposed, mora-timed languages, exemplified elsewhere in the world by Japanese and Tagalog (Murty, Otake and Cutler 2007),

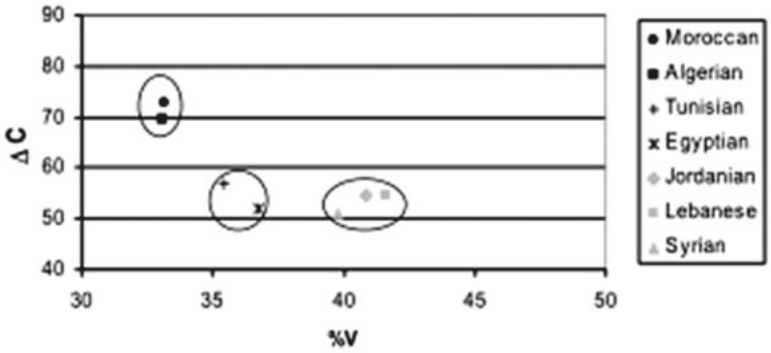

Figure 28: Distribution of Arabic dialects on the rhythmic metric parameters proposed by Ramus, Nespor, and Mehler (1999), ΔC (variability of consonantal intervals) and %V (proportion of vocalic duration)

has been little discussed in an African context. However, Hubbard (1995) and Nagano-Madsen (1992) relate total word duration to mora count in their studies of Nyambo and Ganda and of Yoruba respectively. Comparative data on Japanese, the protoype of a mora-timed language, is taken from Warner and Arai (2001). Figure 29 provides plots of word length in moras vs word duration in ms. In all four languages, there is a very high correlation between the total duration of the word and the number of moras, with R^2 values above .95; correlation with the number of syllables is substantially lower (except for Yoruba, where moras and syllables are co-terminous, and moreover where it is questionable if words of up to six moras/syllables in length actually exist). Mean duration of a mora is fairly similar across the four languages, being 99 ms in Nyambo, 101 ms in Ganda, 126 ms in Yoruba, and 109 ms in Japanese.

4.4.3. Syllabification

The final prosodic property to be discussed is syllabification. This issue interacts with questions of segmental complexity, timing and accentuation, among others. In the African context, phonetic data has been especially brought to bear on the syllabic affiliation of prenasalized consonants. In a number of Bantu languages vowels are lengthened before medial prenasalized consonants. Interestingly, the degree of such lengthening is variable. In Sukuma and Nyambo, for example, pre-nasal vowel length is intermediate between a short vowel and a long vowel, leading to suggestions that it is sesquimoraic, sharing a mora with the following nasal element (Maddieson and Ladefoged 1993; Hubbard 1995). In other languages, such as Ganda and Kinyarwanda (Myers 2005), the pre-nasal vowel is almost as long as a phonologically long vowel with a different origin. In both cases the diachronic explanation relies on a form of compensatory lengthening: a nasal originally in the

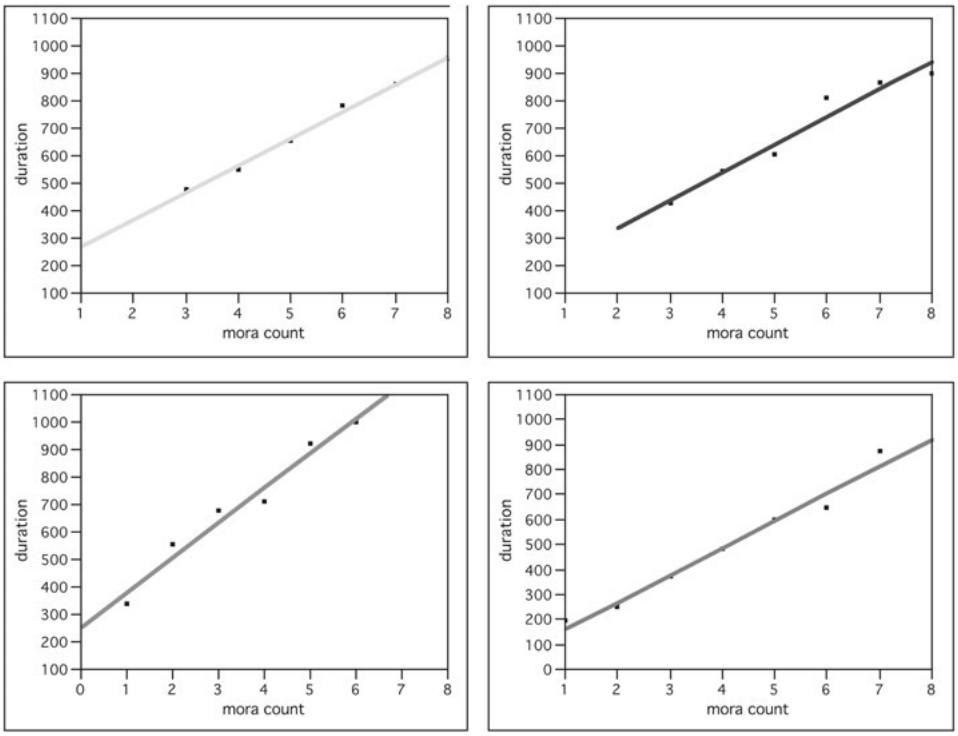

Figure 29: Word durations in ms as a function of mora count in Nyambo (upper left), Ganda (upper right) and Yoruba (lower left), compared to Japanese (lower right). Lines show linear fit

coda of the syllable is reassigned to the following syllable's onset as part of a prenasalized unit, and the timing slot – or part of it – that it occupied is assigned to the vowel. The shared-mora account represents the resyllabification process as incomplete. As Myers (2005) notes, the fact that prenasal vowels in Ganda and Kinyarwanda are not quite as long as other long vowels requires an explanation, even though such vowels function as bimoraic in allowing contour tones. His suggestion is that this is another instance of vowel shortening in closed syllables (Maddieson 1985). In other words, the nasal is still in coda position. Another view might be that syllable boundaries are themselves somewhat gradient in nature. In either case, the phonetic investigation opens avenues to rethinking standard opinions.

Standard views on syllabification are also challenged in spectacular fashion by Tachelhit Berber. Although syllabic consonants occur in a good many languages, they are most often sonorants, as in the syllabic nasals of Yorùbá, Igbo, Ngas, Bariba (aka Baatonum), N|uu and many other languages in Africa. Dell and Elmedlaoui (1985, 1988, 2002) and elsewhere (cf. also Soutsane 2008) argue that consonants of any category, including voiceless plosives, can be syllabic in Tachelhit.

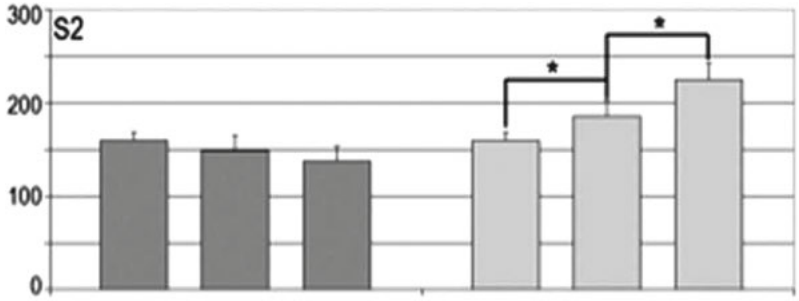

Figure 30: Mean latency (in ms) between (a) peak displacement for /f/ (left three bars) and target for /n/, and (b) estimated C-center and target for /n/ (right three bars) in /f**n**k/, /k.f**n**k/ and /tk.f**n**k/ for speaker 2 of 3 speakers studied (after Hermes et al. 2011, syllabification as assumed by the authors. Asterisks mark statistically significant differences)

As a consequence of this analysis, strings of adjacent consonants are parsed such that no clusters occur in either syllable onset or coda position. Their evidence is of various kinds, including native speaker intuition and poetic tradition. This analysis has triggered a very productive series of studies that address how syllabic structure might be instantiated in phonetic detail. One line of discussion concerns the occurrence of brief vowel-like intervals between (generally voiced) consonants. Are these co-produced vowels, which are therefore the syllabic nuclei (Coleman 1996, 2001), or are these transitional elements that are incidentally produced in moving from one consonantal target to another (Ridouane and Fougeron 2011)? Another line of enquiry focuses more on timing. In languages with relatively uncontroversial instances of consonant clusters in onset position, such as English and Italian, the duration of individual segments in the onset is shorter the more segments the onset contains. For example /s/ duration is shorter in "split" than in "spit", which is in turn shorter than in "sit". This observation leads to the C-center hypothesis, under which an onset of whatever length is phased relatively constantly to the vowel target with respect to a midpoint of the consonant string (Browman and Goldstein 1988; Hermes et al. 2012). Consequently a test can be designed to examine whether consonant strings in Tachelhit behave more like onset clusters in, for example, English, or more like CV structures. Kinematic data from Tachelhit (Hermes et al. 2011; Ridouane, Hermes, and Hallé 2014) confirm that consonant sequences in this case do behave more as if there are indeed consonantal syllabic nuclei. The examples used contained strings with velar, alveolar and labial consonants, so that a distinct articulatory target (displacement maximum) can be identified for each. Consonantal strings are compared to ones with a syllabic vowel nucleus. Figure 30 presents a part of the data. The delay between the target for /f/ and that for /n/ remains relatively constant in this data (left side of the figure), whereas treating /kf-/ and /tkf-/ as complex onsets and calculating their C-centers shows a significant increase in the latency to the peak for /n/ (right side of the

figure) – the opposite of what is expected if these are in fact complex onsets. Importantly, the pattern illustrated in Figure 30 is mirrored in the matching words containing syllabic vowels that were also examined. Similar studies have been carried out on Moroccan Arabic (Shaw et al. 2009, 2011), much influenced by Northern Berber varieties. Shaw et al. (2011) present possibly the currently most refined model of how phonetic data can be interpreted in relation to syllabification issues.

4.5. Summary and future directions

As the foregoing sections illustrate, African languages present a large variety of areas of interest for phonetic research and indeed include certain features that are uniquely found in Africa. The researchers who have concerned themselves with languages of this part of the world have applied a wide range of techniques to both the collection of data and its analysis. The phonetic study of African languages is in a healthy state. That said, there is still a very large number of languages on the continent that have had no serious examination of their phonetic patterns. It is to be hoped that this number will diminish and, in particular, that African scholars and institutions will play a major role in ensuring that this happens. Although Africa has many thriving indigenous languages it is not immune from the worldwide loss of linguistic diversity (Brenzinger 1988; Mous 2003; Batibo 2005). International (Arabic, English, French, Portuguese) and regionally dominant languages (Akan, Amharic, Bambara, Hausa, Swahili, Wolof, etc) are expanding their zones of use, at the same time as political instability disrupts many smaller linguistic communities. Potentially unique features of human languages may be lost before being recorded. Even if the languages themselves do not go out of use, their specific properties may be lost. Roger Blench puts it this way:

> Some languages have very unusual and complex phonologies, including exotic sounds. These are often being simplified as speakers come into contact with dominant lingua francas. Even where a language is not threatened, its more remarkable features may be in danger of disappearing.
>
> (http://www.rogerblench.info/Language/EL/ELOP.htm)

As in other parts of the world, language loss requires a sense of urgency for descriptive studies. And yet also even the relatively well-known languages deserve much greater depth of study of their productive and perceptual phonetics.

Apart from broadening the number of languages whose phonetic properties are examined, and deepening the analysis of individual languages, there are other aspects of phonetic investigation that are so far rather underdeveloped in the African context. Two areas seem particularly worth mentioning.

A great deal of recent research, much of it centering on English, has demonstrated that phonetic detail encodes all kinds of subtle social and personal informa-

tion, as well as reflecting factors such as frequency of usage of individual words and phrases and their predictability in context, and that listeners are finely responsive to this information as well as to background knowledge and expectations such as inferences from co-presented visual information (for some general background see, e. g., Foulkes and Docherty [2006]; Drager [2010]; and references cited therein). We have relatively little information on how these variables affect speech production and perception even in other major languages, and this seems to be essentially a virgin field of investigation in the languages of Africa.

Another area where we can look forward to much greater activity in the future concerns compilation and exploitation of phonetically annotated databases of recorded speech. These are fundamental prerequisites to the development of many speech technology applications, such as spoken language translation, text-to-speech processing and vice-versa, automated voice query agents and voice-control systems for devices. Such databases are very sparsely available in Africa, even for major languages. A salient exception concerns the 11 official languages of South Africa. Here, databases of spoken language material are being developed in more than one program (Niesler, Louw, and Roux 2005; Allwood et al. 2010). Colloquial Arabic varieties from Morocco, Tunisia and Egypt are included in the Euopean-based OrienTel project (Zitouni et al. 2002). Although the compilation of such databases often finds its motivation in the possibility of commercial application, databases including multiple speakers and varied speech styles can also be exploited to discover aspects of spoken language variation that may have been overlooked in more formal studies. This has strikingly been the case for languages such as English and German, and as more than basic contrastive information is logged for African languages we can hope that such resources will also form a research tool in these instances as well.

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5. Current issues in African phonology

Florian Lionnet and Larry M. Hyman

5.1. Introduction

The historical relation between African and general phonology has been a mutually beneficial one: the languages of the African continent provide some of the most interesting and, at times, unusual phonological phenomena, which have contributed to the development of phonology in quite central ways. This has been made possible by the careful descriptive work that has been done on African languages, by linguists and non-linguists, and by Africanists and non-Africanists who have peeked in from time to time. Except for the click consonants of the Khoisan languages (which spill over onto some neighboring Bantu languages that have "borrowed" them), the phonological phenomena found in African languages are usually duplicated elsewhere on the globe, though not always in as concentrated a fashion. The vast majority of African languages are tonal, and many also have vowel harmony (especially vowel height harmony and advanced tongue root [ATR] harmony). Not surprisingly, then, African languages have figured disproportionately in theoretical treatments of these two phenomena. On the other hand, if there is a phonological property where African languages are underrepresented, it would have to be stress systems – which rarely, if ever, achieve the complexity found in other (mostly non-tonal) languages. However, it should be noted that the languages of Africa have contributed significantly to virtually every other aspect of general phonology, and that the various developments of phonological theory have in turn often greatly contributed to a better understanding of the phonologies of African languages.

Given the considerable diversity of the properties found in different parts of the continent, as well as in different genetic groups or areas, it will not be possible to provide a complete account of the phonological phenomena typically found in African languages, overviews of which are available in such works as Creissels (1994) and Clements (2000). More recently, Clements and Rialland (2008) treat African phonology from an areal perspective. Drawing from a database of 150 African languages, they address a range of phonological properties that have significant African distributions as compared with a non-African database of 345 languages.

Rather than surveying the phonological properties of African languages, we will focus in this chapter on issues that have been important both to Africanists and to phonologists in general, following the traditional order of presentation: segmental phonology (section 2: nasals; complex segments), suprasegmental phonology (section 3: tone; harmony systems; prosodies), segment organization and

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word structure (section 4: syllable structure, slots, and moras; reduplication; prominence, accent, and metrical structure), and phonology and its interfaces (section 5: interactions between phonology and syntax; tonal morphology; dependent and construct states; phonologically conditioned mobile affixation). Whenever relevant we will include considerations on the historical origin of the phonological phenomena discussed, and show how African languages have contributed and may still contribute to our understanding of the origin of some of the most intriguing of these phenomena. The concluding section argues for a comparative approach to theoretical, descriptive, and historical work in Africa as a strategy for addressing the most important issues that are yet to be resolved.

5.2. Segmental phonology: Complex segments

In terms of segmental phonology, Africa has mostly contributed to our understanding of complex segments, which are frequently attested in many languages of the continent, from prenasalized consonants to labial-velars and clicks, the latter two being almost exclusively African. Our understanding of nasal segments has also been improved by African languages, which we will see with prenasalized consonants (section 2.1 below), and the complementary distribution of nasal and oral consonants, best analyzed as resulting from a word-level nasal prosody (section 3.4).

Whether some sequences of segments constitute unitary segments or clusters has been a recurring fundamental issue in phonology, with nontrivial consequences for the theory and representation of segments. Three types of complex segments characteristic of Africa have figured prominently in that debate: prenasalized consonants, labial-velars, and clicks (cf. Maddieson, this volume, section 2 for details on the phonetics of these complex segments).

5.2.1. Prenasalized consonants

Numerous Africanists have worked on the problem of homorganic NC sequences. African languages figure prominently in Herbert's (1986) seminal work on prenasalization and N+C sequencing. Many if not most African languages allow NC segments or clusters of some type, and it is not surprising to see African cases contributing to their analysis: Are they one or two segments? If one, what is their feature geometry? If two, is the nasal moraic or not?

This seems to be a purely phonological problem: phonetics has been shown to be of little help in the analysis of NC sequences, since there does not seem to be any phonetic distinction between ^{N}C and N+C (cf. Downing 2005: 183, and references therein). Furthermore, only two languages are said to contrast ^{N}C and N+C intervocalically: Sinhala and Fula, and that contrast is, according to Maddieson

and Ladefoged (1993) best analyzed as one between a singleton and a geminate ^{N}C rather than between a unit segment and a consonant cluster. The unit versus cluster analyses can thus only be based on phonological evidence.

Herbert (1986) uses the fact that prenasalized consonants may, depending on the language, pattern either with nasals or with oral consonants to argue that they should not be added to the universal phonological inventory, but rather be analyzed as underlying clusters. Surface prenasalized consonants arise later through "consonant unification" triggered by syllabification constraints (cf. Maddieson, this volume, section 4.3).

At about the same time, Walli-Sagey (1986) argued in favor of the opposite view based on Kinyarwanda data. She showed that in this language with an otherwise strict CV(V) syllable structure, NC sequences are best analyzed as single complex segments. This in turn served as a compelling argument in favor of a radically new feature-geometric representation of distinctive features (Clements 1985; Walli-Sagey 1986): rather than representing the features for a segment as a single matrix (as in Chomsky and Halle (1968) or Steriade's (1982) "melodic core" hypothesis), Walli-Sagey proposes to organize them in separate tiers corresponding to each articulator. This representation captures the fact that features referring to different articulators often behave independently, while features referring to the same articulator are interdependent. This elaboration on autosegmental representations would prove extremely powerful in accounting for blocking and transparency effects in vowel harmony and other feature spreading phenomena.

The debate on the analysis of homorganic NC clusters in specific languages and language families is not closed, as we will see in section 4.1.1 below.

5.2.2. Labial-velars

Labial-velar stops are very common in West and Central Africa, while they are nearly absent elsewhere (with very few exceptions, mainly in Papua New Guinea): they are one of the features proposed by both Clements and Rialland (2008) and Güldemann (2008) for their (Macro-)Sudan(ic) linguistic area. These complex consonants, produced with nearly simultaneous bilabial and velar closure, have figured prominently in debates about complex segments and their representations. Sagey (1990) was the first to propose a feature-geometric treatment of labial-velars. Cahill (1999) gives a comprehensive overview of the various phonological patterns of labial-velars in a sample of over 80 languages, showing how different they are from both velar and labial consonants, and how to best account for them in phonology.

The first major characteristic of labial-velars is that they behave as single segments, not a K+P cluster. This can be seen, for instance, in the formation of the gerund in Ewe, whereby the first consonant of a verb stem is reduplicated, as illustrated in (1). When the verb stem starts with a cluster, only the first consonant is

reduplicated (1b), but when it starts with a labial-velar, it is the whole labial-velar that reduplicates, as shown in (1c).

(1) Ewe

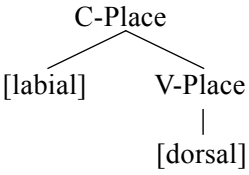
a.	fo	'to beat'	fo-fo	'beating'
	bia	'to ask'	ba-biam	'asking'
b.	fle	'to buy'	fe-fle	'buying'
	kplo	'to lead'	kpo-kplo	'leading'
c.	g͡bla	'to extert oneself'	g͡ba-g͡blam	'exerting oneself'

(Ansre 1963, cited in Cahill 1999: 157)

The phonological behavior of labial-velars, which Cahill shows differs somewhat from language to language, also makes their featural definition potentially problematic: are they primarily either labial (with velarization) or velar (with labialization), as in Chomsky and Halle's (1968) feature system, or coequally labial and velar, as in Ohala and Lorentz's (1977) approach? Cahill shows that either of these approaches may be appropriate depending on the language, and that both can be implemented using the representations of feature geometry.

A representation of labial-velars as primarily labial as in (2), for example, accounts for the fact that in many languages labial-velars form a natural class with labials and not velars. It is the case in Nawuri, for example, where labial-velars behave on a par with labials in blocking rounding harmony from the stem vowel to the high vowel of the prefix /gI-/, as shown in (3c).[1]

(2)



(3) Nawuri

a.	gɨ-ɲi	'tooth'	b.	gu-jo	'yam'
	gɨ-keːliː	'kapok tree'		gu-kuː	'digging'
	gɪ-baː	'hand'		gʊ-sʊ	'ear'
	gɪ-sɪbɪta	'sandal'		gʊ-lɔ	'illness'
c.	gɨ-mu	'heat'			
	gɨ-boːtoː	'leprosy'			
	gɨ-k͡poː	(type of dance)			

(Casali 1995: 651–2)

[1] The prefix vowels in (3c) are phonetically rounded in casual speech, but even in that case always have an "intermediate" degree of rounding which makes them "phonetically distinct from the fully round prefix vowels" in (3b) (Casali 1995: 652).

5.2.3. Clicks

Click consonants are only attested in about two dozen languages in the world, all but one spoken in eastern and southern Africa.[2] They are particularly prominent in the so-called "Khoisan" group of languages, which comprises three families (Khoe-Kwadi, Tuu, Kx'a) and the two Tanzanian isolates Sandawe and Hadza (Güldemann and Voßen 2000; Güldemann 2014).[3] They are further attested, albeit to a lesser extent, in a few Southern Bantu languages, which borrowed them from neighboring "Khoisan" languages, and in the Cushitic language Dahalo.

Clicks are among the most articulatorily complex segments (cf. Maddieson, this volume, section 2.1.2). As Exter (2008: 137) notes, this very "complexity, combined with their rareness, is surely the main reason why clicks have received so little attention in the [phonological] literature … [however] it is just this complexity that makes clicks potentially ideal candidates for testing the descriptive adequacy of any given phonological framework".

5.2.3.1. Clicks are consonants

Five basic click types are attested ("influxes" in Beach's (1938) terminology): bilabial /ʘ/, dental /ǀ/, (post)alveolar /ǃ/, (alveo)palatal /ǂ/, and lateral /ǁ/. A sixth click type called (alveo)retroflex /ǃǃ/ has been described in a few !Xuun dialects (Snyman 1997; Scott et al. 2010), and reconstructed in Proto-Ju (Miller-Ockhuizen and Sands 1999; Sands and Miller Ockhuizen 2000; Sands 2010).

Traill (1997: 103) pointed out that before his work on Taa aka !Xóõ, "existing analyses of clicks and non-clicks [were] seldom integrated into a single coherent phonological system". Nakagawa (2006: 283–291), drawing on Traill (1985, 1997) and on his own work on Gǀui (Kalahari Khoe), shows that clicks can easily be integrated with all other consonants into a single set of features. Regular place- and manner-of-articulation features are sufficient to distinguish clicks among themselves. One single additional feature referring to airstream mechanism and its perceptual correlate is needed to distinguish clicks from non-click consonants, such as Chomsky and Halle's (1968: 309) [suction], adopted by Traill (1985), or Ladefoged's (1995) feature [click]. Traill (1997: 115) proposes to interpret clicks as perceptually salient, "enhanced versions" of non-click stops "exploit[ing] all the features of non-click stops but utilis[ing] a novel source for the production of these features, namely the noise bursts generated by the velaric suction". Building on this intuition, Nakagawa (2006: 287) proposes the binary feature [±enhanced]

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[2] Outside of Africa only Damin, a now-extinct ceremonial form of the Lardil language of Australia, is reported to have used contrastive click consonants (Hale and Nash 1997).

[3] The nomenclature used here for Khoisan languages is the one proposed by Güldemann (2014).

to account for the difference in airstream mechanism. Table 1 below illustrates his featural analysis of the G|ui consonant system (see Exter (2008) for a summary of other proposals).

Table 1: Partial featural analysis of G|ui click and non-click consonants (after Nakagawa 2006: 290)

	labial		**coronal**							**velar**	**uvular**		**glottal**
			[-apical]					**[+apical]**					
			[-palatal]			**[+palatal]**							
[affricated]	–	+	–	+	+	+/–	–	–	+	–	–	+	–
[lateral]	–	–	–	–	–	–	–	–	+	–	–	–	–
[grave]	–	+	–	–	–	–	–	+	+	+	+	+	–
[enhanced]	–	–	–	–	+	–	+	+	+	–	–	–	–
Example	p	Θ	t	ts	ǀ	tʃ/c	ǂ	ǃ	ǁ	k	q	qχ’	ʔ

Interestingly, this analysis makes use of the acoustic feature [grave], first proposed by Jakobson et al. (1952), but excluded from the set of (mostly articulatory) features proposed by Chomsky and Halle (1968) and from most feature systems adopted by phonologists to this day. This feature distinguishes in particular the [-grave] laminal [ǀ, ǂ] from the [+grave] apical [ǃ, ǁ] and labial [Θ] clicks. Traill (1995, 1997) justifies the use of this feature on the basis of its role in explaining two processes affecting click consonants: click replacement and click-vowel assimilation.

Click replacement is a type of sound change whereby clicks become non-click consonants. The regularly attested cases in Khoe languages show that the target non-click consonant may have a different place of articulation from that of the original click, but always has identical acoustic gravity, for example, [+grave] /ǃ/ → /k/ in G‖ana, or [-grave] /ǂ/ → /c/ in Eastern Khoe (Traill 1980; Traill and Vossen 1997, cited in Nakagawa 2006: 285).

A widespread assimilatory process in South-African Khoisan languages also shows evidence for the role of acoustic gravity: in Taa and G|ui (and most probably in other Khoisan languages awaiting phonetic and phonological description), the back vowel /a/ fully assimilates to an immediately following front vowel /i, e/ only if it is preceded by a coronal egressive consonant, dental /ǀ/ or palatal /ǂ/. Interestingly, the equally coronal /ǃ/ patterns with non-coronal consonants, lateral /ǁ/ and bilabial /Θ/, in preventing this assimilation (cf. Nakagawa 2006: 288; Naumann forth.). The assimilation summarized in [ExGuia] thus appears to be impossible to capture using only articulatory features, but can be very easily stated using the acoustic feature [grave] as shown in (4b):

(4) a. a → {i,e} / {ǀ, ǂ, t, ts …} ___ {i,e}
b. V[+grave] → [-grave] / C[-grave] ___ V[-grave]

Click consonants and the phonological processes that target them can be added to earlier evidence advanced in favor of re-including the acoustic feature [grave] in phonological theory (cf. Hyman 1973; Vago 1976; Odden 1978).

5.2.3.2. Clicks and their "accompaniments": Unit vs. cluster analysis

The six click types mentioned above combine with what has traditionally been termed "effluxes" or "accompaniments" (cf. Maddieson, this volume, section 2.1.2). Whether all attested accompaniments form one complex segment with the click type they are coarticulated with or constitute a separate segment is subject to debate. Traill (1985: 208), later followed by Güldemann (2001), Nakagawa (2006), and Naumann (forth.), was the first to depart from a "unit" analysis of all click consonants as single segments, suggesting instead that some of the complex click consonants might be better analyzed as consonant clusters. Table 2 below illustrates the cluster analysis proposed by Naumann (forth.) for the West !Xoon dialect of Taa (using IPA symbols): this extremely rich inventory of 165 consonant sounds (the largest known) is here reduced to 88 distinctive consonantal segments and 77 clusters.

As can be seen, a very interesting and rare distinction is made in Taa between complex clicks and clusters involving a glottal articulation: ejective (!') and aspirated (!ʰ) clicks are distinct from clusters involving a glottal stop (!ʔ) and glottal fricative (!h) respectively, as illustrated in (5).

(5)

	Complex click	*Click cluster*
a.	/!'/ = ejective	/!ʔ/ [n̥!ʔ] = plain + /ʔ/
b.	/!ʰ/ = aspirated	/!h/ [n̥!h] = plain + /h/ (known as "delayed aspiration")

Nakagawa (2006) first identified the phonemic distinction between /!'/ and /!ʔ/ in G|ui, in great part thanks to the predictions made by his cluster analysis of complex click consonants. Basing his analysis of Taa on Nakagawa's findings, Naumann discovered that this distinction also existed in Taa, where it had gone unnoticed despite the thorough phonetic and phonological analysis of its eastern dialect by Traill (1985): "the presence of ejected clicks in Taa (in contrast to sequences of clicks and glottal stop) was only discovered due to phonological expectations of the present analysis" (Naumann forth.).

Opposing the cluster analysis, Miller et al (2009) argue that complex click consonants in N|uu should be analyzed as airstream contours (cf. Snyman's (1983) "multigressive" clicks) rather than consonant clusters, that is, "unary" complex segments involving a rapid change from lingual (i. e., velaric) to pulmonic air-

Table 2: Consonants of West !Xoon (Taa), including clusters (after Naumann forth.)

	Egressive			**Ingressive**					**Egressive**			
	labial	alveolar	alv. affr. /palatal	labial	dental	alveolar	palatal	lateral	velar	uvular	uvular-aricate	glottal
Oral stops												
Plain	p	t	t͡s	ʘ	ǀ	ǃ	ǂ	ǁ	k	q		(ʔ)
Voiced	b	d	d͡z	ʘ̬	ǀ̬	ǃ̬	ǂ̬	ǁ̬	g	ɢ		
Vl. aspirated	pʰ	tʰ	t͡sʰ	ʘʰ	ǀʰ	ǃʰ	ǂʰ	ǁʰ	kʰ	qʰ		
Vd. aspirated	bʰ	dʰ	d͡zʰ	ʘ̬ʰ	ǀ̬ʰ	ǃ̬ʰ	ǂ̬ʰ	ǁ̬ʰ	gʰ	ɢʰ		
Vl. ejective	p’	t’	t͡s’	ʘ’	ǀ’	ǃ’	ǂ’	ǁ’	k’	q’	q͡χ’	
Vd. ejective			d͡z’		ǀ̬’	ǃ̬’	ǂ̬’	ǁ̬’	g’	ɢ’	ɢ͡ʁ’	
Nasal stops												
Plain (vd.)	m	n	ɲ	ʘ̃	ǀ̃	ǃ̃	ǂ̃	ǁ̃	ŋ			
Voiceless					ǀ̥̃	ǃ̥̃	ǂ̥̃	ǁ̥̃				
Glottalized	ˀm	ˀn		ʔʘ	ʔǀ	ʔǃ	ʔǂ	ʔǁ				
Fricatives	f	s								χ		h
Sonorants	w	l, r	y									
Obstruent clusters												
Plain+ q				ʘq	ǀq	ǃq	ǂq	ǁq				
+voice				ʘ̬q	ǀ̬q	ǃ̬q	ǂ̬q	ǁ̬q				
Plain+ qʰ				ʘqʰ	ǀqʰ	ǃqʰ	ǂqʰ	ǁqʰ				
+voice					ǀ̬qʰ	ǃ̬qʰ	ǂ̬qʰ	ǁ̬qʰ				
Plain+ q’				ʘq’	ǀq’	ǃq’	ǂq’	ǁq’				
+voice					ǀ̬q’	ǃ̬q’	ǂ̬q’	ǁ̬q’				
Plain+ χ		t͡χ	ts͡χ	ʘχ	ǀχ	ǃχ	ǂχ	ǁχ				
+voice		d͡χ	dz͡χ									
Plain+ q͡χ’	pq͡χ’	tq͡χ’	ts͡q͡χ’	ʘq͡χ’	ǀq͡χ’	ǃq͡χ’	ǂq͡χ’	ǁq͡χ’				
+voice		dzχ’	d͡zq͡χ’	ʘ̬q͡χ’	ǀ̬q͡χ’	ǃ̬q͡χ’	ǂ̬q͡χ’	ǁ̬q͡χ’				
Plain+ ʔ				ʘʔ	ǀʔ	ǃʔ	ǂʔ	ǁʔ				
+voice				ʘ̬ʔ	ǀ̬ʔ	ǃ̬ʔ	ǂ̬ʔ	ǁ̬ʔ				
Plain+ h				ʘh	ǀh	ǃh	ǂh	ǁh				
+voice				ʘ̬h	ǀ̬h	ǃ̬h	ǂ̬h	ǁ̬h				

stream before the release of the consonant (cf. Maddieson, this volume, p.557 text before fig.7).

Güldemann and Nakagawa (2013) provide an overview of both analyses and conclude, on the basis of phonetic, phonological, and typological arguments, in favor of the cluster analysis, criticizing in particular the lack of descriptive and explanatory power of the notion of airstream contour. The stimulating debate about the correct analysis of click consonant systems is not settled yet, and current and planned work on other South African Khoisan languages is likely to shed light on this very interesting issue, and refine our understanding of complex consonant systems.

5.3. Suprasegmental phonology

5.3.1. Tone and the autosegmental revolution

Of all of the phonological properties discussed in this chapter, Africa has contributed the most to our understanding of tone, and the understanding of African tone has in turn considerably influenced the shaping of modern theoretical phonology.

The main contribution of African tone to modern phonological theory is undoubtedly the development of autosegmental phonology. Drawing disproportionately from African tone systems, Leben (1973), Goldsmith (1976), Williams (1976), and others showed up the inadequacies of classical segmental generative phonology, as encoded in Chomsky and Halle (1968), *The Sound Pattern of English*. The resulting autosegmental "revolution" then spread from tone to other aspects of non-linear phonology, including vowel harmony (cf. 3.2), nasal harmony (cf. 3.4), and feature geometry. In fact, Goldsmith's tier metaphor, based originally on African tone, also spread from phonology to morphology (e. g., McCarthy 1981; Marantz 1982), and ultimately to syntax and semantics, such as Sadock (1991) and Yip et al. (1987), among others.

5.3.1.1. The autosegmental revolution

The dominant view within structuralist and early generative phonology was that phonological strings could be subdivided into a succession of discrete segments. Each segment, in turn, consisted of a matrix of simultaneous "distinctive features", generally claimed to be binary, in the Jakobson–Halle tradition. These features had both a classificatory and phonetic function, being designed to capture the phonological oppositions found in languages as well as their output realizations. While not yet receiving very much attention, the assumption in the 1960s was that tone could be characterized with additional features on vowels, as in (6).

(6) Segmental representation of H and HL falling tone

a. [á] = $\begin{bmatrix} \text{+syll} \\ \text{-cons} \\ \text{-high} \\ \text{+low} \\ \text{+back} \\ \text{-round} \\ \text{+HIGH} \end{bmatrix}$ b. [â] = $\begin{bmatrix} \text{+syll} \\ \text{-cons} \\ \text{-high} \\ \text{+low} \\ \text{+back} \\ \text{-round} \\ \text{+FALLING} \end{bmatrix}$

In feature systems such as Wang (1967), based largely on Chinese dialects, high (H) tone could be indicated as [+HIGH], as in (6a), while a high-to-low (HL) falling tone would be [+FALLING], as in (6b). Pike (1948) had split tone systems into what we can refer to as a Chinese- vs. African-type: whereas Chinese dialects have an abundance of contour tones, which Sinologists generally view as indivisible units, contours seem quite secondary in African tone languages, where they are typically analyzed as combinations of the level tones independently attested in the respective language.

The early autosegmentalists showed that tonal representations such as the above run into a number of problems (cf. Hyman 2011a for an update). The first major problem is the existence of extensive evidence against the idea that tones are inseparable features on segments, in particular suprasegmental tone melodies, which are semi-independent from the tone-bearing units (TBU) on which they are realized.

The second problem comes from the representation and analysis of contour tones. In two-height tone systems, for instance, rising and falling tones typically act as sequences of L+H and H+L, respectively, realized on a single TBU. In many African languages, a falling tone shows "edge effects": it appears to be an H tone from the point of view of what precedes it, but an L tone from the point of view of what follows. Thus, if an L tone is raised to a mid (M) tone before an H tone, we expect also that it will be raised before an HL falling tone. Additionally, contour tones may be broken into two separate level tones in certain conditions, as can be seen from the Mende noun forms in (7), which are arranged according to the five tonal melodies attested in this language.

(7) Mende

		Base noun		+=hu 'in'	+=ma 'on'
a.	/H/	kɔ́	'war'	kɔ́=hú	kɔ́=má
b.	/L/	bɛ̀lɛ̀	'trousers'	bɛ̀lɛ̀=hù	bɛ̀lɛ̀=mà
c.	/HL/	mbû	'owl'	mbú=hù	mbú=mà
d.	/LH/	mbǎ	'rice'	mbà=hú	mbà=má
e.	/LHL/	nyàhâ	'woman'	nyàhá=hù	nyàhá=mà

(Leben 1978: 195)

As seen in (7c–e), when the toneless locative enclitics =*hu* 'in' and =*ma* 'on' provide an extra available syllable, falling and rising tones map as H-L and L-H sequences, respectively. The feature specifications [+FALLING] and [+RISING] do not capture these facts, and any attempt to represent the fall and rise as a sequencing of [+HIGH][-HIGH] or [-HIGH][+HIGH] squeezed into a single matrix below the segmental features would be incoherent in a formal framework which otherwise views segments (here, vowels) as a single vertical array of distinctive features.

In establishing autosegmental phonology, Goldsmith's (1976) proposal was thus that an /a/ with high or falling tone should be represented roughly as in (8).

(8) Autosegmental representation of H and HL falling tone

a. [á] = [+syll, -cons, -high, +low, +back, -round] — H

b. [â] = [+syll, -cons, -high, +low, +back, -round] — H L

As seen, Goldsmith proposed a distinction between a segmental tier vs. a tonal tier, which are semi-autonomous in the sense that they are separate, but linked by association lines. This relative autonomy of the two tiers forms the basic premise of autosegmental tonology, which can be stated as follows: tones (Ts) must be represented as semi-autonomous from the tone-bearing units (TBUs) on which they are realized. Among the familiar arguments for a two-tier representation are the three listed below:

non-isomorphism: features of one tier do not line up/synchronize with features of the other tier (i. e., overlapping of segmental versus tonal features)

stability: features of one tier may be deleted without affecting (deleting) features of the other tier

zero representation: features may be specified on one tier but partially/totally lacking on the other tier

5.3.1.1.1. Non-isomorphism

By *non-isomorphism* is meant that associations of tones to tone-bearing units (TBUs) are often not one-to-one. Two tones may link to a single TBU, as in (8b) above. Alternatively, a single tone may link to two TBUs. As a result, a potential contrast may arise as in (9):

(9) Teke-Kukuya

	Medial	Pre-pausal
a.	má-bá	má-ba̅
	| |	| |
	H H	H M
b.	wátá	wāta̅
	⋁	⋁
	H	M

(Paulian 1975; Hyman 1987)

Both *má-bá* 'they are oil palms' and *wátá* 'bell' are pronounced H-H in medial position. Before pause, however, there is a rule that lowers an H to M. As seen in (9b), the H → M rule affects the last H feature, not just the last TBU. The contrasting representations in (9a), which had no equivalent in pre-autosegmental tonology, provide the structural difference that results in the surface opposition of H-M versus M-M before pause. These and other facts from Teke-Kukuya showed that at least in some cases we must be able to talk about tones in terms of abstract melodies, rather than concrete features on syllables, moras, or vowels.

Rather than viewing tone as a segmental property, Paulian (1975) recognizes five *schèmes tonals* (tonal melodies) in Teke-Kukuya (H, L, HL, LH, LHL), which can be predictably mapped onto stems of five different shapes (CV, CVV, CVCV, CVVCV, CVCVCV), as shown in (10).

(10) Teke-Kukuya

	Tone melody	Mapping	Example	
a.	/H/	H	-bá	'oil palms'
		HH	-báá	'cheeks'
		H.H	-bágá	'show knives'
		HH.H	-báámá	'liana'
		H.H.H	-bálágá	'fence'
b.	/L/	L	-bà	'grasshopper-killer'
		LL	-bàà	'jealousy'
		L.L	-bàlà	'to build'
		LL.L	-bààlà	'to cleave'
		L.L.L.	-bàlàgà	'to change route'
c.	/HL/	HL	-kâ	'to pick'
		HL	-káà	'to grill'
		H.L	-kárà	'paralytic'
		HL.L	-káàrà	'to be just right'
		H.L.L	-káràgà	'to be entangled'

d.	/LH/	LH	-sǎ	‘weaving knot’
		LH	-sàá	‘seed necklace’
		L.H	-sàmí	‘conversation’
		LL.H	sààbí	‘roofing’
		L.L.H	ŋʷàrə̀gí	‘younger brother’
e.	/LHL/	LHL	(ndɛ́-) bvĩ	‘(he) falls’
		LHL	(ndɛ́-) kàây	‘(he) loses weight’
		L.HL	(ndɛ́-) pàlî	‘(he) goes out’
		LH.L	(ndɛ́-) bàámì	‘(he) wakes up’
		L.H.L	(ndɛ́-) kàlə́gì	‘(he) turns around’

(Paulian 1975: 130–131)

As can be seen from the data in (10), the five tone melodies are assigned to stems regardless of their shape, clearly showing the (semi-)independence of the tonal and segmental tiers. Leben (1973) had proposed exactly the same for Mende, although not without complications and challenges (Leben 1978; Dwyer 1978; Conteh et al. 1983).

While the suprasegmental analysis of tone melodies was first developed by Leben (1973) and Goldsmith (1976), as well as Paulian’s (1975) independent and converging research on Teke-Kukuya, one can go back at least as far as Welmers (1962: 85) to find the same insight, this time concerning Kpelle: “Tonemes must be analyzed in terms of segments between two open transitions”. Welmers describes “the five types of forms” in Kpelle as follows (presented with his transcriptions):

(11) Kpelle

a. High throughout
   pá ‘come’ ɓóa ‘knife’
   láa ‘lie down’ píli ‘jump’

b. Low throughout
   kpòo ‘padlock’ kpàki ‘loom’
   tɔ̀nɔ ‘chisel’ tòloŋ ‘dove’

c. High followed by low (low begins on the next vowel if there is one)
   yɛ̂ ‘for you’ tôa ‘pygmy antelope’
   kpôŋ ‘door’ kâli ‘hoe’

d. Mid throughout
   kpɔŋ ‘help’ sua ‘animal’
   see ‘sit down’ kali ‘snake’

e. Mid with first vowel, then high followed by low
   tɛɛ̂ ‘black duiker’ konâ ‘mortar’
   yuɔ̂ ‘axe’ kpanâŋ ‘village’
   (Welmers 1962: 86)

Note, first, that Welmers uses only one tone mark per word. He thus writes /kâli/ for what is pronounced [kálì] 'hoe', that is, H-L. Second, there is no difficulty reducing Kpelle to an underlying two-level system: the M that occurs in the MHL melody in (11d) can be analyzed as an L which is raised before H, and the "M throughout" melody in (11b) is underlyingly /L-H/, as is seen when two "mid throughout" words occur in sequence:

> In mid-mid, for the dialect being described here, the first mid has a slightly rising allotone … In some areas, the first mid is level, but the second mid begins a little higher and drops quickly to the level of the first. In still other areas, both phenomena occur: the first mid ends a little higher, and the second begins a little higher. In all cases, the conjunction of two mids is accompanied by an upward pressure (Welmers 1962: 87, note 2).

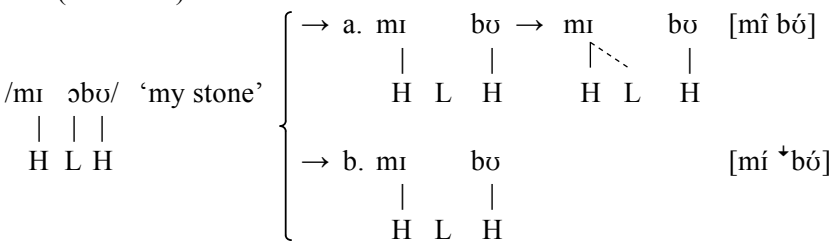
Welmers goes to considerable trouble to justify his suprasegmental analysis, with one tonal melody per word, or, in his terminology "one toneme between two open transitions" (1962: 86). What is clear is that he had the same insight as Leben, Goldsmith, and Paulian concerning the semi-autonomy of the five tonal patterns. However, he did not have an adequate framework such as autosegmental phonology to express this insight.

The formal recognition of tonal melodies then expanded beyond tone and even beyond phonology, inspiring analogous non-linear analyses of Semitic templatic morphology (McCarthy 1981) and partial reduplication (Marantz 1982).

5.3.1.1.2. Stability effects

Another argument for a separate tonal tier is what is known as *stability effects*: a tone may survive even when its TBU is deleted, giving rise to so-called "floating" tones, as the following two examples show. In Twi (aka Akan), two dialectal realizations of /mé + ɔ̀bó/ 'my stone' are attested, as shown in (12).

(12) Twi (aka Akan)



(Stewart 1965; Schachter and Fromkin 1968)

As seen in the first step of the derivation, when the vowel of the noun prefix /ɔ-/ is deleted, its L appears unlinked on its tier. In (12a) it reassociates to the preceding vowel, creating a HL falling tone. In (12b) it remains unlinked and conditions a

following downstep (ꜜ). Compare the following examples from Laal, where the segmental content of the connective (used here as a relative marker) may be completely deleted without affecting its H tone, which is then realized on the preceding TBU, making tone the only mark of the connective construction (cf. [13c] with [13a]).

(13) Laal

a.	sū nīīr		‘the water is hot’			(water be.hot)	
b.	sū	yí nīīr	‘hot water’			(water which be.hot)	
c.	sū	yí nīīr	>	*sū*	*nīīr*	>	*sū́* *nīīr*
	|	| ⋁		|	⋁		⌈ ⋁
	M	H M		M H	M		M H M

(Lionnet, field notes; Boyeldieu 1982: 13)

This stability of tone is also widely attested in diachrony: tones very often survive the historical reduction and deletion of their TBU. Deletion of segmental material is actually the main origin of floating tones, as we will see in the next paragraph.

5.3.1.1.3. Zero representation

The Laal example above also illustrates the third argument in favor of autosegmental tiers: the possibility of a *zero representation* on one or the other tier. On the one hand, there are toneless morphemes such as the enclitic postpositions =hu ‘in’ and =ma ‘on’ in Mende already presented in (7) above, which are unspecified on the tonal tier. Such toneless morphemes are often assigned the tone of a neighboring TBU, which is the case for the Mende postpositions, as shown in (14) for =hu ‘in’.

(14) Mende

a.	/kɔ́=hu/	>	kɔ́=hú
	|		⌊
	H		H
b.	/mbû=hu/	>	mbú=hù
	⋀		| ⋮
	H L		H L
c.	/mbă=hu/	>	mbà=hú
	⋀		| ⋮
	L H		L H

(Leben 1978: 195)

On the other hand, there are tonal morphemes (such as the H floating tone in the Laal example in [13] above), that is, morphemes that are specified on the tonal tier

but not on the segmental tier. Such morphemes are extremely frequent in African tone languages. The historical deletion of a morpheme's segmental content may lead it to become purely tonal. Such tonal morphemes may have exactly the same properties as segmental morphemes, as Van de Velde shows for Eton:

> Floating tones arise from concatenative segmental morphology and can therefore best be analyzed as morphemes (affixes, clitics, words) that combine with stems in a certain linear order (Van de Velde 2009: 42–43).

Van de Velde identifies tonal prefixes, clitics, and words in Eton by analyzing the various properties of H tone copying and spreading in the language. In Eton, a structurally linked H tone followed by a boundary (word #, clitic =, or affix –) is copied and attaches to the following low-toned syllable with different consequences depending on the type of boundary it crosses, as schematized in (15) below. When crossing an affix boundary, a floating H tone spreads to the following L-toned syllable, replacing its L tone. This H-tone may further spread to the next L-toned syllable, forming a HL contour (15b).[4] When crossing a clitic boundary, the floating H tone replaces the L tone of the following syllable, but may not spread to a subsequent L-toned syllable (15c). Finally, when a floating H crosses a word boundary, it does not replace the L of the following syllable to which it attaches, but only delinks it. The presence of the floating L tone thus created is evidenced by the downstep it causes on a following H, as in (15d).

(15) Eton

a.	H-tone copy:	cv́ {#, =, –}	>	cv́H {#, =, –}
b.	Affix boundary:	cv́H-cv̀(cv̀)	>	cv́-cv́(cv̂)
c.	Clitic boundary:	cv́H=cv̀(cv̀)	>	cv́=cv́(cv̀)
d.	Word boundary:	cv́H # cv̀(cv́)	>	cv́ # cv́(↓cv́)

(Van de Velde 2009: 44–46)

Crucially, the same rules apply to purely tonal morphemes, as illustrated by the segmental/non-segmental allomorph pairs in the following examples (floating tones are underlined and deleted tones crossed out in the autosegmental representations):

(16) Eton

Eton augment (prefix): segmental í- *vs. non-segmental allomorph* H-

a.	í- bì-lɔ̀lì	#	*bí*	>	/í – bílwâlì bí/
	AU-8-duck		VIII.DEM		⌊‾‾‾‾⌉
	'these ducks'				H ~~L~~ L
b.	H-è-dʒɔ̀ŋ	#	*dí*		/Ø – édʒɔ̂ŋ dí/
	AU-5-clan		V.DEM		‾‾‾‾⌉
	'this clan'				H ~~L~~ L

(Van de Velde 2009: 44–46)

[4] This H tone spreading rule is a regular process in Eton (Van de Velde 2009: 45).

(17) Eton
Eton connective (clitic): segmental cv́= *vs. non-segmental allomoroph* H̲=

a.	mə̀-vùl	#	má=ì-lɔ̀lì	>	/məvùl	m[á]=ílwàlì/ (V deletion)
	6-feather		VI.CON=7-duck			
	'the feathers of a duck'					H H
b.	mə̀-vùl	#	H̲=bì-lɔ̀lì	>	/məvùl	Ø=bílwàlì/
	6-feather		VI.CON=7-duck			
	'the feathers of a duck'					H̲ H

(Van de Velde 2009: 44–46)

(18) Eton
Eton locative preposition (word), segmental á *vs.* non-segmental allomorph H̲

a.	á	#	mə̀-dʒɔ́ŋ	>	/á #	má↓dʒɔ́ŋ/
	LOC		6-hole			
	'in the holes'				H̲	L ↓H
b.	H̲	#	è-dʒɔ́ŋ	>	/Ø #	é↓dʒɔ́ŋ/
	LOC		5-hole			
	'in the hole'				H̲	L ↓H

(Van de Velde 2009: 44–46)

Van de Velde further shows that the same three processes are attested with tonal morphemes that do not have any segmental allomorphs: all tonal morphemes in Eton can thus be affixes, clitics or independent words, thus preserving the morphological category of their segmental "ancestor".

The importance of tonal morphology cannot be underestimated: the grammar of many African languages crucially relies on tonal morphemes. Many northwest Bantu languages, for example, mark tense-aspect-mood (TAM) distinctions on verbs almost exclusively with tonal affixes as shown in the Abo (aka Bankon) verb paradigms presented in (19–21).

(19) Abo (aka Bankon)

a.	present:		L̲-	Verb	-H̲[5]	
b.	past:		H̲-	Verb	-H	
c.	perfect:	má	L̲-	Verb	-H̲	
d.	future:	káà		Verb	-L̲	
e.	stative:			Verb	-H̲L̲	(+umlaut)
f.	imperative:			Verb	-H̲L̲	
g.	subjunctive:		H̲-	Verb	-H̲L̲	

(Hyman and Lionnet 2012)

[5] Additionally, L-toned clitic pronouns are realized with a LH contour when followed by a verb in the present tense, e. g., *à* → *ǎ* '(s)he'.

(20) Abo
Low-toned verb *pòŋɔ̀* 'make'

TAM	underlying	pre-pausal	+ object (*bìtámbé* 'shoes')	
present	/ă L-pɔ̀ŋɔ̀-H/	ă pɔ̀ŋɔ̀	ă pɔ̀ŋɔ́ bítámbé	'he is making shoes'
past	/à H-pɔ̀ŋɔ̀-H/	à pɔ̂ŋɔ̀	à pɔ́ˈŋɔ́ bítámbé	'he made shoes'
perfect	/à má L-pɔ̀ŋɔ̀-H/	à má pɔ̀ŋɔ̀	à má pɔ̀ŋɔ́ bítámbé	'he has made shoes'
future	/à káà pɔ̀ŋɔ̀-L/	à káà pɔ̀ŋɔ̀	à káà pɔ̀ŋɔ̀ bìtámbé	'he will make shoes'
stative	/à pɔ̀ŋɔ̀-HL/	à pɔ̀ŋɔ́	à pɔ̀ŋɔ́ bìtámbé	'he has made shoes'
imperative	/pɔ̀ŋɔ̀-HL/	pɔ̀ŋɔ́	pɔ̀ŋɔ́ bìtámbé	'make shoes!'
subjunctive	/sá H-pɔ̀ŋɔ̀-HL/	sá pɔ́ˈŋɔ́	sá pɔ́ˈŋɔ́ bìtámbé	'let's make shoes!'

(Hyman and Lionnet 2012)

(21) Abo
High-toned verb *sálá* 'use'

TAM	underlying	pre-pausal	+ object (*bìtámbé* 'shoes')	
present	/ă L-sálá-H/	ă ˈsálá	ă ˈsálá bítámbé	'he is using shoes'
past	/à H-sálá-H/	à sálá	à sálá bítámbé	'he used shoes'
perfect	/à má L-sálá-H/	à má ˈsálá	à má ˈsálá bítámbé	'he has used shoes'
future	/à káà sálá-L/	à káà sálá	à káà sálá bìtámbé	'he will use shoes'
stative	/à sélé-HL/	à sélé	à sélé bìtámbé	'he has used shoes'
imperative	/sálá-HL/	sálá	sálá bìtámbé	'use shoes!'
subjunctive	/sá H-sálá-HL/	sá sálá	sá sálá bìtámbé	'let's use shoes!'

(Hyman and Lionnet 2012)

These paradigms are a clear illustration of the analytical power of autosegmental tonology, whose simple tools — here floating tones — elegantly account for very complex tonal phenomena. Two tonal prefixes account for the tonal alternations observed at the left edge of the verb. An H- prefix accounts for the extra H tone coming in from the left in the past and subjunctive forms of L-toned verbs, while

an L- prefix in present and perfect forms explains the initial downstep on H-toned verbs after an H or LH subject pronoun (cf. Pulleyblank 1985, 1986 for more on tonal cyclicity).

Additionally, three tonal suffixes account for the tonal alternations taking place at the right edge of the verb. The -H suffix on the present, past and perfect, realized only when not pre-pausal, accounts for an alternation resembling what Meeussen (1967: 111) and subsequent authors have labeled "metatony" in other Bantu languages: the final H tone of past, present and perfect verb forms attaches to the last syllable of the verb only when not pre-pausal, and additionally spreads onto the class prefix of a following noun, as shown in (22).[6]

(22) ă pɔ̀ŋɔ́ bí-támbé 'He is making shoes' (present)

L H H H

The -L suffix posited for the future tense is never realized as such, but prevents the final H of H-toned verbs from spreading onto the initial syllable of the following word, which is what one would expect a final H to do in Abo (cf. the metatonic -H). Finally the -HL suffix on stative, imperative and subjunctive forms accounts for the extra H tone realized on the final syllable of the verb, and for the fact that this H tone does not spread onto the next word, as shown in (23).

(23) à pòŋó bì-támbé 'He has made shoes' (stative)

L H L L H

We will see in section 5.3 below cases of non-concatenative tonal morphology that do not lend themselves to the same type of analysis and thus still constitute analytical challenges.

While there had been early descriptions of tonal grammatical morphemes, studies in the 1970s showed that floating tones could also be lexical. A particularly persuasive case comes from Aghem. Although the two nouns *kɨ́-fú* 'rat' and *kɨ́-wó* 'hand' are both pronounced H-H in isolation, the phrases in (24) show that they exhibit quite different tonal behaviors in the following contexts (where the noun class prefix *kɨ́-* deletes in the presence of the following modifiers):

[6] This is the analysis proposed by Hyman and Lionnet (2012) for Abo. The term "metatony" corresponds to different phenomena in different languages.

(24) Aghem

	+ *kɨ̀à* 'your (sg.)'			+*kɨ́n* 'this'			Underlying
a.	fú	kɨ́à	'your (sg) rat'	fú	kɨ́n	'this rat'	/fú/
	H	L		H	H		
b.	wó	kɨà	'your (sg) hand'	wó	ˈkɨ́n		
	H L	L		H	L H	'this hand'	/wó ˋ/

(Hyman 1979)

In the forms on the left, each noun is followed by the L tone second-person-singular possessive pronoun /kìà/. As seen in (24a), the H of *-fú* 'rat' spreads onto the pronoun to derive an HL falling tone realization. H tone spreading does not occur after *wó* 'hand' in (24b). The reason is that the root /-wó ˋ/ carries a lexical floating L tone which is absent on the root/-fú/. That the floating tone is not simply an ad hoc device added for the sole purpose of blocking H tone spreading is seen from the forms on the right, where each root is followed by the H demonstrative /kɨ́n/ 'this'. As seen, the floating L tone conditions a downstep on the demonstrative in (24b), but not in (24a), where the floating L tone is absent.

Medumba illustrates a complex case of interaction between grammatical and lexical floating tones. The H-toned nouns in (25) behave very differently when surrounded by other H-toned nouns, as in the associative constructions in (26).

(25) Medumba

	Isolation		Underlying	
a.	sáŋ	'bird'	/sáŋ/	(noun class 1a, no prefix)
b.	mɛ́n	'child'	/ˋmɛ́n/	(noun class 1, L prefix)
c.	yú	'thing'	/ˋyúˋ/	(noun class 7, L prefix + lexical floating L)

(Voorhoeve 1971; Hyman 2003a)

(26) Medumba

	Isolation			/Possessee + H + Possessor/
a.	tɨ́ sáŋ	[˥ ˥]	'tree of bird'	/tɨ́ ˊ sáŋ/
b.	tɨ́ ˈmɛ́n	[˥ ˦]	'tree of child'	/tɨ́ ˊ ˋmɛ́n/
c.	yú ˈsáŋ	[˥ ˦]	'thing of bird'	/ˋyúˋ ˊ sáŋ/
d.	yú ˈˈmɛ́n	[˥ ˩]	'thing of child'	/ˋyú ˋ ˊ ˋmɛ́n/

(Voorhoeve 1971; Hyman 2003a)

The downstep in (26b) is caused by a floating L-tone prefix (which is present in all but noun class 1a). The downstep in (26c) cannot be due to a floating L prefix, which class 1a /sáŋ/ 'bird' lacks, as evidenced by the absence of downstep in (26a), and is hence to be ascribed to the effect of a floating L stem tone following the

H stem /ˋyúˋ/. Finally, the double downstep in (26d) results from a floating LHL sequence between two linked H tones. Each floating L causes downstep of the following H. The floating H of the connective fails to be realized but its downstep remains, adding up to a double downstep on the H of *mén*, as illustrated in (27).

(27) Medumba

Proto-Bantu:	*kì-júmà	kí-á	mù-jánà
Medumba:	yú		mɛ́n
	|		|
	L H L	H	L H L
	> H	ꜜH	ꜜH
	> H	Ø	ꜜꜜH

(Voorhoeve 1971, Hyman 2003a)

In all the above examples, the posited "abstract" floating H and L tones do exactly what we expect H and L tones to do: H tones are expected to spread onto a following L under certain conditions; L tones are expected to (i) block an H from spreading onto a following L and (ii) condition a downstep when wedged between two H tones. As discussed in some detail in Hyman (2003b, 2011a), the floating tone hypothesis provides an analytic framework that both accounts for the observed facts as well as accounting in a direct way for the insight that roots such as /-wó `/ in Aghem act "as if" they have an L tone following them. The effects of the floating L are "natural" in the sense of phonetically plausible. In contrast, a diacritic approach, which might set up the arbitrary tone classes H_1 versus H_2 for /-fú/ 'rat' and /-wó ˋ/ 'hand', respectively, is not only uninteresting, but makes the prediction that the properties could have aligned in an unattested way, e. g., with H_1 triggering both H tone spreading AND downstep and H_2 conditioning neither. It would be hard to express such a distinction in a floating tone analysis. Since such an alignment of properties is unknown, this is a good result and hence a strong argument for floating tones, if not ultimately for autosegmental representations.

One could argue that the properties of Aghem H tones are not explainable in synchrony, but rather are due to historical changes. We know that floating L tones in Aghem are due to the loss of an L-toned syllable (cf. Proto-Bantu **-bókò* > Aghem /-wóˋ/ 'hand'). One could thus argue that from a purely synchronic point of view, floating L tones are just another kind of diacritic. In other words, there's really no difference between the two approaches.

Clements and Ford (1977, 1979), however, show that there might be a good reason not to equate floating tones with diacritics. They first demonstrate that non-automatic, phonological downstep canonically occurs when a floating L tone is wedged between two linked H tones. Their argument is based on the phonological consequences in modern Kikuyu of a historical process of tone shift affecting words of all classes, whereby each original tone shifted one TBU to the right across the word, delinking final L tones. This is illustrated in (28) by lexical cor-

respondences between Proto-Bantu, Kikuyu and closely related Tharaka in which this tone shift did not take place (Clements and Ford 1979: 187).

(28)

		Proto-Bantu	*Tharaka*	*Kikuyu*
a.	'belonging to sb. else'	*-yéné	-éné	-ènέ
b.	'way of releasing oneself quickly'	(*-dèk- 'to leave')	moěrè-káŋgériɛ́	moèrέ-kàŋgériɛ́
c.	'tree'	*-tí	mò-té	mò-tě
d.	'bush land'	*-càká	kè-ðàká	ɣèðàkă
e.	'bamboo'	*-dàŋgí	mò-ràŋgí	mò-ràŋgĭ
f.	'charcoal'	*-kádà	è-kárà	ì-kàrá↓
g.	'big'	*-nénè	-néné	-nènέ↓
h.	'teardrop'	*-yíɟòdì	rĕːðɔ́rì	reìðɔ́rì↓
i.	'firewood'	*-kúnì	rò-kó	rò-kŏ↓

(Clements and Ford 1979: 187)

Clements and Ford then proceed to show that words that used to end with a L tone still have a lowering effect on a following H (represented by the final downstep sign ↓ in (28f–i). Clements and Ford analyze this downstep as the effect of a floating L tone: the final L in those forms was historically delinked, but not deleted, much like in Aghem, as illustrated in (29).

(29)

*i	ka	ra	>	i	ka ra	> i ka ra 'charcoal'
|	|	|		⌒	⌒	⋁ |
L	H	L		L	H L	L H L̲

Their main argument against a diacritic analysis and in favor of the floating L tone hypothesis is the existence of phonological rules in Kikuyu that manipulate those floating tones, such as the two rules illustrated in (30).

(30) Kikuyu

a.	ndɔ́ːnìrέ↓	mɔ̀ɣèràniá	nà	ɲjòɣóná↓	'I saw the examiner and Njũgũna'
b.	ndɔ́ːnìrέ	mɔ̀ɣèrà**niá**↓	nà	ɲjòɣóná↓	(rule 1)
c.	ndɔ́ːnìrέ	mɔ̀ɣèràniá	**ná**	**ɲjó↓ɣó**ná↓	(rule 2)
d.	ndɔ́ːnìrέ	mɔ́ɣèràniá	ná	ɲjó↓ɣóná↓	(other rules)

(Clements and Ford 1979: 204)

Rule 1 in (30b) applies when a downstep-inducing verb is in an "assertive" tense and is followed by a phrasal constituent: in that case, the verb-final downstep is not realized on the following constituent but shifted to the end of this constituent. Rule 2 in (30c) causes a downstep preceding an L-toned TBU to be realized on the next H tone, while all the intermediate L tones are raised to H. A diacritic analysis of downstep similar to the one we imagined (and rejected) for Aghem earlier would fail to account for such facts.

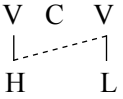
The above and other arguments thereby justify the basic premise of autosegmental tonology that tones are semi-autonomous from their TBUs.

5.3.1.2. Analyses of tonal systems and processes

The conceptualization of tone as "semi-autonomous" from other vowel features was the traditional view that pre-autosegmental phonologists were hard-put to formalize. The autosegmental revolution, by providing the adequate analytical and descriptive tools, helped phonologists better understand the often complex tonal processes at work in many African languages.

Consider, for example, the question of how tone spreading, such as that illustrated in (24a) above, should be represented. In pre-autosegmental phonology, Hyman and Schuh (1974) expressed such a rule roughly as in (31). Goldsmith's (1976) autosegmental representation, on the other hand, is shown in (32).

(31) H-L > H-H͡L

(32)


Whereas Goldsmith's representation clearly indicates that there is a single H feature involved in tone spreading, Hyman and Schuh's formulation implies that an H feature is being copied onto the following vowel, consistent with the conception of assimilation given in *The Sound Pattern of English*.[7] However, consider Hyman and Schuh's prose statement about what they feel is going on:

> "Spreading is an assimilatory process of the progressive or perseverative type, rather than of the regressive or anticipatory type. That is, the earlier tone appears to last too long, rather than the later tone starting too early. This in fact is the way that we should like to view this phenomenon. There is no process of tone copying or tone addition in the second syllable. Rather, the earlier tone simply enlarges its domain" (Hyman and Schuh 1974: 88).

Clearly Hyman and Schuh had something in mind that they could not formalize, but which is conceptually identical to the autosegmental representation of tone spreading in (32).

Goldsmith's representation, on the other hand, makes it very easy to account for complex cases of tone spreading, such as the systematic H- and L-spreading

[7] Actually, Hyman and Schuh's formulations are even worse, since they use F and R instead of H͡L and L͡H. Their formulation /ábà/ → [ábâ] is at best ambiguous between the two interpretations. It should be clear, however, that marking tone words via accents on vowels cannot distinguish between the two types of Teke-Kukuya H-H word in (9).

attested in Yoruba: as shown in (33), both H and L systematically spread on the syllable to the right, thus creating contour tones.

(33) Yoruba partial HTS and LTS
/má yọ̀ mí rà wé/ [máyộmǐ râ wě] 'Mayomi bought books'
H L H L H
(Laniran and Clements 2003: 207)

High tone spreading may also cause delinking of the following L tone, as in Dagbani, where the delinked L causes downstep of the following H. This, again, is easily represented in autosegmental terms, as seen in (34) (see also the Twi example in (12b)).

(34) Dagbani
págá + kòdú > pág(á) kó↓dú 'woman's banana'
H L H H L H
(Hyman 1993)

Tone spreading may also be unbounded, as shown in the Ndebele examples in (35). In this H-marked language, i. e., with an H versus Ø tone inventory (cf. Hyman 2001, and last paragraph of this section), a lexical H spreads to all the following toneless TBUs across the word up to the antepenultimate TBU, as illustrated in (35) below, where underlying H tones are underlined. (The stem-initial H is downstepped by a subsequent rule.)

(35) Ndebele
a. ú-kú-lima 'to cultivate'
b. ú-kú-lím-is-a 'to cause to cultivate' (output: ú-kú-↓lím-is-a)
c. ú-kú-lím-ís-el-a 'to cause to cultivate for' (output: ú-kú-↓lím-ís-el-a)
H
(Sibanda 2004)

Such unbounded tone spreading may be accompanied by tone deletion in languages that allow only one tone per word. Such a tone shift is illustrated in the Zulu example in (36): The underlying H tone of each of the three verb forms is systematically realized only on the antepenultimate TBU, a process which can be analyzed as the same spreading rule as in Ndebele, simply followed by delinking of the H from all its TBUs except the antepenult, as illustrated in (37).

(36) Zulu

a.	u-kú-hleka	'to laugh'
b.	u-ku-hlék-is-a	'to amuse'
c.	u-ku-hlek-ís-an-a	'to amuse each other'

(Downing 1990: 265)

(37) Zulu

'to amuse each other'

u-ku-hlek-is-an-a > u-ku-hlek-ís-an-a [ù-kù-hlèk-ís-àn-à]

H H

(Downing 1990: 265)

The autosegmental revolution has also made possible a better analysis and understanding of how African (as well as other) tone systems are structured. Once the possibility of underspecifying autosegments is added to the autosegmental principle of semi-independence of the tonal and segmental tiers, two-height systems may be analyzed in at least four ways. As explained in detail in Hyman (2001), in addition to the straightforward equipollent /H, L/ analysis that is illustrated, among others, by Aghem, Medumba and Abo above, one may propose a privative analysis by underspecifying either H or L, or having a third zero value /Ø/ in addition to underlying H and L: /H, L/ versus /H, Ø/ versus /L, Ø/ versus /H, L, Ø/.

As we have shown, the complex tonal alternations and processes presented in this paragraph would be extremely difficult to account for in a purely segmental approach. The semi-autonomy of the segmental and tonal tiers proposed by autosegmental tonology, on the other hand, not only offers an elegant account of both the historical stability of tones and the complex rules that govern their realization on TBUs, but has also provided Africanists with analytical tools of unprecedented efficiency that caused a tremendous leap forward in our understanding of tone systems, both in Africa and outside.[8]

It would be interesting to speculate on the form the subsequent autosegmental revolution might have taken without the impetus of African tone. Would present-day phonologists such as Yip (1980, 1989, 2002), Chen (2000), Bao (1999), Duanmu (1994), and others be talking as readily about autosegmentalized H(igh) and L(ow) features for Chinese tonal contours if it were not for the input from Hausa, Igbo and Mende? Would Pierrehumbert (1980) have developed an analogous approach to intonational systems such as in English (subsequently applied to Japanese by Beckman and Pierrehumbert [1986])? And what would our view be of other phonological phenomena to be discussed below, which also have autosegmental properties?

[8] See Odden (1995) for an overview of African tone systems. See, among others, Hyman (2010) for an Africanist analysis of a non-African tone system.

5.3.2. Harmony systems

5.3.2.1. Vowel harmony

5.3.2.1.1. The autosegmental account

African languages are well known for providing vast numbers of phonological systems with vowel harmony, particularly of the advanced tongue root (ATR) and height varieties (cf. Maddieson, this volume, section 3.1). Stewart (1967), cited in Chomsky and Halle (1968), and Schachter and Fromkin (1968) educated early generations of generative phonologists as to the intricacies of Akan ATR harmony, illustrated in (38), where the vowels of the verbal prefixes /wU-/ 'he' and /bE-/ (future) take the [ATR] value of the vowel of the verb stem they are added to.

(38) Akan

	Vowel inventory:		[+ATR]:	i, e, ɜ, o, u
			[-ATR]:	ɪ, ɛ, a, ɔ, ʊ
a.	/wU-bE-núḿ/	→	wú-bé-núḿ	'he will suck it' (*núḿ* 'suck')
b.	/wU-bE-nóḿ/	→	wó-bé-nóḿ	'he will drink' (*nóḿ* 'drink')

(Stewart 1967)

However, it was Clements (1977a, 1981) who applied the new autosegmental framework both to Akan and to vowel harmony in general. Although the existence of transparent neutral vowels had been known from Finnish and Hungarian, Clements provided an autosegmental account of opaque neutral vowels, based on Akan. Since this language has both prefixal and suffixal harmony, as seen in (39), he also was able to establish the general property of "root-control", illustrated in (39) (/O, I/ = non-specified for [ATR]).

(39) Akan

O +fItI + I [o-fiti-i] 'he punctured (it)'

[+ATR]

(Clements 1977: 114)

For Clements this meant that the directionality of assimilation in vowel harmony need not be stipulated, but rather followed from convention: the root features [+ATR] and [ATR] spread left and/or right, as needed, so that no vowel would lack a specification and, hence, be ill-formed.

5.3.2.1.2. ATR harmony

Since Clements, Niger-Congo and Nilo-Saharan ATR harmony systems have figured prominently in the theoretical study of vowel harmony. At the same time, they have contributed to theories of vowel features and feature geometry. For extensive documentation and typological generalizations concerning such African vowel harmony systems, see Casali's (2003) survey of over 100 Niger-Congo and Nilo-Saharan languages, where he shows in particular that the dominant value of the feature [ATR] in a language depends on the structure of its vowel inventory: [+ATR] tends to be dominant in languages with an [ATR] contrast among high vowels, while [-ATR] is dominant in systems where [ATR] contrasts only for non-high vowels.

Government or dependency theories involving the vowel elements I, U, A were developed by Kaye, Lowenstamm, and Vergnaud (1985) and Rennison (1986) based on Kpokolo (Kru) and Koromfe (Gur) respectively, two languages whose vowel systems make active use of the [±ATR] distinction. African ATR systems also provide the fuel for Archangeli and Pulleyblank's (1994) grounded phonology and a number of subsequent optimality theoretic works, including Bakovic (2000) and Krämer (2003).

As in the case of tone, African ATR harmony has not only contributed to linguistic theory, but also to the way vowel harmony is described in other languages. Hall and Hall (1980), for example, are explicit in applying their Africanist insights to Nez Perce, whose unusual harmony, they suggest, should be analyzed in terms of ATR. There are striking resemblances between the vowel harmony found in the Pacific Northwest and that found on much of the Asian land mass. It is thus not surprising that Advanced/Retracted Tongue Root (ATR/RTR) has also been recognized in Tungusic languages (Li 1996, Zhang 1996) and may very well be implicated in languages extending from Tibetan to Chukchee (Anderson 1980: 34).

5.3.2.1.3. Height harmony

African languages have also provided the world's greatest supply of vowel harmony systems based on vowel height. Best known are those found in Bantu, exemplified below from Ganda in (40).

(40) Ganda

	plain stem	*stem + causative*	*stem + applicative*	
a.	lim-a	lim-is-a	lim-ir-a	'cultivate'
b.	túm-a	túm-is-a	túm-ir-a	'send'
c.	land-a	land-is-a	land-ir-a	'climb'
d.	sek-a	sek-es-a	sek-er-a	'laugh'
e.	kól-a	kól-es-a	kól-er-a	'work'

As seen, the causative and applicative suffixes surface with the vowel [i] when preceded by /i, u, a/, but with [e] when preceded by /e/ or /o/. Sometimes called "mid harmony," variants of height harmony are found in most Bantu languages (Hyman 1999).

The relation to ATR has not been missed by Africanists or theoreticians such as Clements (1991), who provides a geometric model of vowel aperture designed to capture both types of vowel harmony. Vowel height is conceptualized as a uniform phonological dimension corresponding to the feature [±open] and forming an "abstract phonological space which is divided into a series of regions, or *registers*." Each register is characterized by a binary opposition between [+open] and [-open], and there are as many registers as there are contrastive vowel heights in the language. A language with three vowel heights and an [±ATR] distinction among high vowels would thus be represented as in Figure 1.

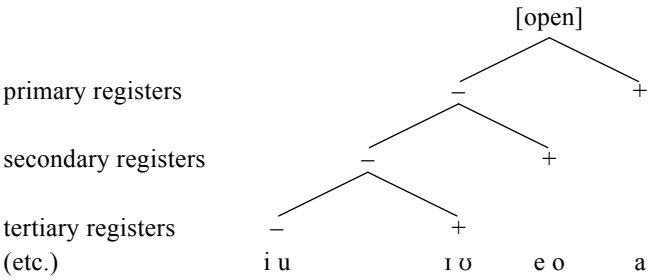


Figure 1. A hierarchical conception of vowel height (after Clements 1991: 27)

Finally, within Optimality Theory, Beckman's (1997) notion of positional faithfulness is based on Shona height harmony, which has the same properties as in Ganda, Swahili, Chewa, Bemba, and so forth (cf. section 4.4.4 below).

Other types of height harmonies are attested in African languages that depart from typical Bantu mid-harmony in many ways and illustrate interesting properties. Kera has a height harmony process very reminiscent of the typical cases of ATR harmony seen above, in that one value of the feature [high] is dominant, as shown in (41): if a [+high] vowel appears in a polymorphemic word, all vowels within this word become [+high]. Height harmony applies across a morphological boundary, and is neither root-controlled nor directional.

(41) Kera

a.	/gus-ɛ/	→	gusi	'to buy'
b.	/sɛːn-u/	→	siːnu	'his brother'

(Pearce 2003: 8)

At least one case of multiple height harmonies is attested. Laal – which also has two types of rounding harmony (cf. 3.2.1.4 below) – has two different height

harmonies that operate in opposite directions: high-harmony, whereby a root-initial [+high] vowel triggers raising of a following mid vowel, is perseverative, as shown in (42), while low-harmony, which enforces agreement in the feature [low] between a non-high vowel and the following vowel, is anticipatory, as shown in (43) (note that low harmony does not apply in (42), since the target vowel is [+high]).[9]

(42) Laal
a. mín ‘ask’ + -ə́r → mín-ír ‘ask me’
b. mín ‘ask’ + -ár → mín-ár ‘ask him’
(Lionnet, field notes, cf. Lionnet 2016: 9)

(43) Laal
a. dāg ‘drag’ + -ə́n → də̀g-ə́n ‘drag me’
b. dāg ‘drag’ + -nŭŋ → də̀g-nŭŋ ‘drag you (pl.)’
c. cə̄r ‘look for’ + -ár → càr-ár ‘look for him me’
(Lionnet, field notes, cf. Lionnet 2016: 9)

Such a complex case, which involves both distinct behaviors for the two height features [high] and [low], and a conflict in directionality, questions the role of positional prominence in accounting for directionality in vowel harmony: high-harmony seems to illustrate both root prominence and stem-intial prominence (the initial CV sequence is phonologically prominent, cf. Lionnet 2016: 7–8), while low-harmony on the other hand targets the prominent vowel, the trigger vowel being in this case reminiscent of Walker’s (2005) “weak triggers”. Laal is thus characterized by a complex harmony system where the prominent vowel triggers one harmony (high), but undergoes two (low, and rounding, cf. next section).

5.3.2.1.4. Rounding harmony

Contrary to ATR and height harmony, rounding harmony in African languages has not figured prominently in the literature: Nawuri (Casali 1990, 1995; cf. section 2.2 above) is the only African language in Kaun’s (1995, 2004) typological survey of rounding harmony systems. This is most probably due to the fact that rounding harmony is far less frequent in African languages (at least in the available documentation) than ATR or height harmony. It is, however, attested in quite a few languages south of the Sahara, for example, the Bantu languages Gunu, Punu, Duala, Wongo, Koyo, Mbosi, Lengola, Maore, and Yao, but also Kera (Chadic), and most probably many more still awaiting description. It appears to often have properties in those languages that differ from the better-known cases of Turkic, Mongolian or Tungusic.

[9] It is difficult to know whether root control is involved in Laal high harmony, since the language does not have any prefixes.

Laal is a perfect case in point, where two morphologically conditioned rounding harmony processes co-exist. The first one is a systematic anticipatory rounding harmony process that applies between noun or verb roots and pronominal (possessive or object) suffixes, as shown in (44).

(44) Laal

a.	/tɨ́r+-òn/	>	túr-ùn	'put her across'	
b.	/də̀g+-òn/	>	dòg-òn	'drag her'	
c.	/léér+-nŭ/	>	lüóór-nŭ	'wrap us (excl.)'	([üoo] = /ø:/)

(Lionnet 2016: 15–16, in press)

The second process is a rare and intriguing doubly triggered rounding harmony, applying within stems and between stems and number-marking suffixes, whereby the first vowel of a stem is rounded in the presence of a round V2 of identical height (high or mid) and backness specification ([-front]), only if the root contains a labial consonant, which acts as a co-trigger with the round V2. The labial consonant may be before (45a) or after (45b) the target (note that most words in Laal are maximally disyllabic). This is illustrated in (45) below, where a check mark indicates that a specific condition (Height, -Front or Lab) is met, while a star indicates that it is not.

(45) Laal

					Height	-Front	Lab
a.	/ɓìr-ú/	→	ɓù̲r-ú	'hook-pl'	✓	✓	✓
b.	/tə̀b-ó/	→	tò̲b-ó	'fish(sp.)-pl'	✓	✓	✓
c.	/mə̀ə̀g-ú/	→	mə̀ə̀g-ú	'tamarind-pl'	*	✓	✓
d.	/bìrú /	→	bìrú	'burn'	✓	*	✓
e.	/gɨ́n-ù/	→	gɨ́n-ù	'net-pl'	✓	✓	*
f.	/mèn-ú/	→	mèn-ú	'road-pl'	*	*	✓
g.	/də̀n-ú/	→	dən-ú	'tree(sp.)-pl'	*	✓	*
h.	/nèn-ù/	→	nèn-ù	'pus-pl'	*	*	*

(Lionnet 2016, in press)

Such cases of cumulative effects, or "subphonemic teamwork" (Lionnet 2016), pose a problem for traditional autosegmental accounts of vowel harmony using binary or privative features, since no part of the theory would explain why spreading of the [round] feature of the second vowel should only occur in such limited circumstances: the constraints on spreading would somehow have to be stipulated, and the theory and its representations would lose much of their explanatory power (cf. Flemming 2002: 77). Lionnet (2016: 163–176) also shows that substance-free, grammar-driven theories such as Nevins's (2010) Search-and-Copy theory of vowel harmony, or cumulative constraint interaction modeled either through Local Constraint Conjunction or Harmonic Grammar, fail to account for the partial effects that drive subphonemic teamwork. Accounting for such effects using only classic binary features is feasible, but at the expense

of explanatory power and grammatical simplicity (Lionnet 2016: 176–180, in press).

Instead, Lionnet (2016: 36–57; in press) proposes an account that involves new, gradient phonological representations called "subfeatures". He shows, on the basis of instrumental measurements, that this alternation involves partial coarticulatory effects: /ɨ/ and /ə/ are realized with partial rounding [ɨᵇ, əᵇ] under the influence of a neighboring labial consonant. Such partial effects are given dedicated "subfeatural" representations: the partially rounded [ɨᵇ, əᵇ] are analyzed as featurally [-round], but subfeaturally [[*x* round]] ($0 < x < 1$). The doubly triggered rounding harmony can thus be analyzed as a case of rounding harmony parasitic on height and backness, targeting only [[*x* round]] vowels. Any theory of parasitic harmony can account for this harmony – and other similar cases of subphonemic teamwork – if it is granted access to subfeatural representations.

5.3.2.2. Consonant harmony

Many African languages are well known for having long-distance consonant harmony: nasal harmony in particular is well represented in Bantu languages, and many East African languages display various kinds of laryngeal harmony. Hyman (1995) presents the dramatic case of consonant nasal harmony in Yaka, illustrated in (46) below, with verb roots combining with the perfective suffix /-idi/, realized [-ele] after mid vowels, through a variant of mid-harmony (cf. 3.2.1.3 and (40) above; note that /d/ and /l/ are in complementary distribution: /di, le, la, lo, lu/).[10]

(46) Yaka

a.	/tsúm̲-/	→	tsúm-i̲ni	'sew'	cf. /tsúb-/ → tsúb-idi 'wander'
	/kún̲-/	→	kún-i̲ni	'plant'	cf. /kúd-/ → kúd-idi 'chase'
b.	/n̲ók-/	→	nók-e̲ne	'rain'	cf. /dók-/ → dók-ele 'bewitch'
	/m̲ák-/	→	mák-i̲ni	'climb'	
	/n̲útúk-/	→	nútúk-i̲ni	'bow'	
c.	/bíímb-/	→	bíímb-idi	'embrace, hug'	
	/kúúnd-/	→	kúúnd-idi	'bury'	
	/ngéng-/	→	ngéng-ele	'glow'	
d.	/m̲wáng-/	→	mwáng-i̲ni	'sow'	
	/m̲ééng-/	→	mééng-e̲ne	'hate'	
	/n̲úúng-/	→	núúng-i̲ni	'be victorious'	

(Hyman 1995)

[10] See Hyman (1998) for an analysis of the Yaka mid-harmony as a plateauing harmony.

As seen from (46a) and (46b), a nasal consonant triggers nasalization of any following voiced consonant within the stem (root + suffixes). Any intervening non-target (vowels and voiceless consonants) are transparent (46c). Interestingly, prenasalized consonants pattern with voiceless consonants in that they neither trigger (46d) nor block the harmony (46c).

In Chaha, coronal and velar oral stops agree in laryngeal features within roots: all stops are thus either voiceless (47a), voiced (47b), or ejectives (47c).

(47) Chaha

a.	jɨ-kətf	'he hashes (meat)'
	jɨ-kəft	'he opens'
b.	jɨ-dəg(ɨ)s	'he gives a feast'
	jɨ-dərg	'he hits, fights'
c.	jɨ-t'ək'ɨr	'he hides'
	jɨ-t'əβk'	'it is tight'

(Rose and Walker 2004, based on Leslau 1979, and Banksira 2000)

Data such as the Yaka and Chaha alternations above prompted Walker (2000a, 2000b) to propose one of the earliest surface correspondence–based analyses of long-distance consonant harmony, which later gave rise to Agreement by Correspondence theory, developed by Hansson (2001) and Rose and Walker (2004) on the basis of a wide range of languages among which Africa occupies a prominent position: all the patterns surveyed are attested in at least some African languages, nasal and laryngeal harmonies being by far the most frequent. African languages have thus played once again an important role in the development of a novel theory, which has since been extended successfully to vowel harmony (Sasa 2009; Rhodes 2012), long-distance consonant dissimilation (Bennett 2013), consonant-tone interaction (Shih 2013), the behavior of contour segments and tones in harmony processes (Inkelas and Shih 2014a, 2014b), as well as local cases of assimilation involving subphonemic threshold effects (Lionnet 2014, 2016, in press; cf. section 3.2.1.4 above).

5.3.3. Prosodies and process morphology

While the properties of tone – crucially its semi-autonomy from the segments on which it is realized – prompted the development of autosegmental phonology, as we have seen, African languages of the Afro-Asiatic phylum in particular have shown that features other than tone, though less "prosodic" at first sight, may also behave in a similar way. Such is the case of the [palatal] and [labial] features, which are usually analyzed as part of the featural definition of segments, but in many Afro-Asiatic languages behave like syllable-, stem- or word-level autosegments with properties very similar to tone melodies and floating tones.

Such "prosodies" in the sense of Firth (1948), first identified at the very begin-

ning of the 1970s in Biu-Mandara (also known as Central Chadic) and Ethio-Semitic languages, pose the same interpretative problems as tone, and, like tone, are crucial for the understanding of the nature and structure of the substance that phonological processes manipulate. As a consequence, prosodies have been particularly relevant for feature theory and feature geometry, and were among the phonological phenomena whose understanding was greatly improved by the development of autosegmental phonology.

5.3.3.1. Palatal and labial prosodies

Most Chadic languages of the Biu-Mandara subgroup have rich surface vowel inventories, but are often analyzed as having only one (/a/ versus Ø) or two (/a/ versus /ə/) underlying vowels, either in synchrony or in diachrony. Mada, for instance, has eight surface vowels,[11] presented in Table 3 using Barreteau and Brunet's (2000) analysis in terms of the three features [±close] (or tense versus lax), [±palatalized], and [±labialized].

Table 3: Mada's eight surface vowels (Barreteau and Brunet 2000: 15)

	+palatalized		*-palatalized*	
	-labialized	*+labialized*	*-labialized*	*+labialized*
+close (lax)	i	ü	ə	u
-close (tense)	e(:)	œ(:)	a(:)	o(:)

Barreteau and Brunet (2000: 16–17) note that vowel aperture is not distinctive: [+close]/lax vowels are either epenthetic vowels used to break certain consonant clusters, or allophones of [-close]/tense vowels derived in unaccented contexts or through assimilation with neighboring consonants. The number of phonemic vowels can thus be reduced to four: /e, œ, a, o/.

However, in addition, Barreteau and Brunet show that palatalization and labialization are word-level prosodies rather than segmental features: words are either neutral (Ø), palatalized (y), labialized (w), or both palatalized and labialized (y/w), as shown in Table 4.

Table 4: Word-level palatal and labial prosodies in Mada (Barreteau and Brunet 2000:15)

Ø	ɗɗə̀ɮ	'standing(?)'	ássa	'fox'	sámallák	'motionless'
y	ɗɗɛ̀ɮ	'exactly'	esse	'vital principle'	sémellék	'thin, meager'
w	ɗɗɔ̀ɮ	'comfortably'	ossó	'bucket'	sómollókw	'big'
y/w	ɗɗœ̀ɮ	'unsuccessful'	œssœɗ	'twig'		

[11] Twelve with the long counterparts of the [-close] series, which we ignore here, since vowel length is derived.

They conclude that Mada has only one underlying vowel /a/ (which could be noted as underspecified /V/), contrasting with its absence. This vowel is then colored by the addition of the word-level palatal and/or labial prosodies, as shown in (48). Finally schwa-epenthesis and vowel reduction and assimilation account for the four [+close]/lax vowels.

(48) Mada

a. /ɗɗàɮ/ → ɗɗàɮ
b. /ɗɗàɮ/^{Y} → ɗɗe̲ɮ
c. /ɗɗàɮ/^{W} → ɗɗo̲ɮ
d. / ɗɗàɮ/$^{Y/W}$ → ɗɗɛ̲̀ɮ
(adapted from Barreteau and Brunet 2000)

Schuh (2002) shows that morpheme-level palatalization is also a frequent feature of West Chadic languages.

5.3.3.2. No underlying vowel contrast?

The reduced underlying vowel inventory of Biu-Mandara languages has been typologically intriguing at least since Mirt's (1969) analysis of the Wandala vowel system as /a, ə/ (reminiscent of Trubetzkoy's (1969: 97 [1939]) "linear" vowel systems). The prosody account of the variety of surface vowels in such two-vowel systems was first developed for Higi (Hoffmann 1965; Mohrlang 1971, 1972; Barreteau 1983) and Gude (Hoskison 1974, 1975), and then applied to Mofu-Gudur (Barreteau 1978a, 1978b, 1988) and Mafa (Barreteau and Le Bléis 1987, 1990). De Colombel (1986) analyzes Waɮam (Ouldémé) as having the four contrastive vowels /a, ə, e, i/, with /e, i/ originating in the recent phonologization of palatalized /a, ə/.

Wolff (1983: 226) goes one step further, stating that he is "convinced that, taking all evidence together, two-vowel systems in Central Chadic, whether contrasting in height or frontness, allow further analysis and can be reduced to a system in which only one "vowel contrasts with its absence, i. e. a system without true vowel contrasts". This is exactly Barreteau and Brunet's (2000) analysis of Mada, sketched above. More recently, Smith (2010) proposes a similar analysis for Muyang – although Gravina (2010), in the same volume, gives arguments in favor of a two-vowel analysis /a, ə/ of closely related Mboku.

It is this system, crucially based on palatal and labial prosodies, that Wolff et al. (1981) and Wolff (1981, 1983) propose to reconstruct for Proto-Wandala-Lamang (a sub-group within Biu-Mandara). Wolff (2008) extends this analysis to the whole Biu-Mandara group, and tentatively proposes to consider it a plausible reconstruction of the Proto-Chadic vowel system (see section 3.3.6). If this hypothesis is correct, the Biu-Mandara languages, either synchronically and/or diachronically, are among the only languages in the world with no real underlying

vowel contrast, thus going against Maddieson's (1997: 636) claim that "no language is known which does not have some distinctions of height" and Hyman's (2008b: 94) vocalic universal #1: "Every phonological system contrasts at least two degrees of aperture."

5.3.3.3. Prosodies as morphemes: non-segmental/non-concatenative morphology

While palatal and labial prosodies regularly mark lexical distinctions in Biu-Mandara languages, as we saw for Mada above, they very often have grammatical functions as well. Like floating tones, they can be morphemes. As early as 1977, Ma Newman showed that the palatal prosody ("Y-prosody") in Ga'anda is used as a morphological device in the nominal and verbal systems. Ga'anda has the surface six-vowel system typical of many Biu-Mandara languages: /i, e, ə, a, u, o/. Noun stems belong to one of two classes, depending on the type of morphological change they undergo when combining with specific suffixes: the T-class, marked with the suffix *-t(ə)-*, and the Y class, marked with the Y-prosody.[12] This Y-prosody applies to Y-stems when they combine with the indefinite suffix *-a* and the genitive marker *-ì*. The effect of this stem-level prosody is to front the central vowels /a, ə/ → [e, i], palatalize /s/ → ʃ and change stem-final /ŋ/ into the glide /y/. This is illustrated with the indefinite suffix *-a* in (49), where the Y-prosody is indicated with a superscript Y following the stem (our notation).

(49) Ga'anda

	Stem+pl. indef. -ca	*+sg. indefinite* -a			
a.	ʔāl-cá	/ʔālᵞ +-a/	→	ʔe̲l-á	'bone'
b.	sàʔ-cá	/sàʔᵞ+-a/	→	ʃe̲ʔ-á	'leaf'
c.	ɓəɓ-cá	/ɓəɓᵞ+-a/	→	ɓīɓ-á	'breast'
d.	kəlàr-cà	/kəlàrᵞ+-a/	→	kìlèr-à	'side'
e.	pəpəf-cá	/pəpəfᵞ+-a/	→	pìpìf-á	'lung'
f.	mbòʔəm-cá	/mbòʔəmᵞ+-a/	→	mbòʔi̲m-á	'flea'
g.	kútər-cá	/kútərᵞ+-a/	→	kútɪ̀r-á	'chief'
h.	ùsən-cá	/ùsənᵞ+-a/	→	ùʃi̲n-á	'type of grass'
i.	pə́rs-cà	/pə́rsᵞ+-a/	→	pə̀ír̲ʃ-à	'salt'
j.	kəlàŋgàr-cà	/kəlàŋgàrᵞ+-a/	→	kìlè̲ŋge̲r-á	'wild boar'

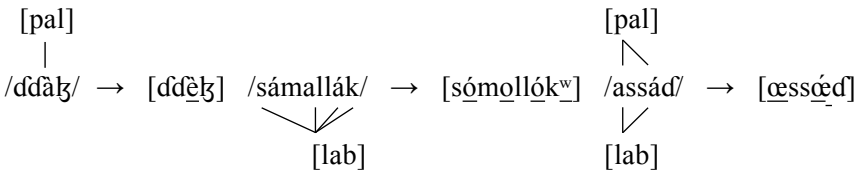
(Ma Newman 1977)

[12] The distinction between T-nouns and Y-nouns corresponds to a former gender distinction which does not exist anymore in synchrony (Ma Newman 1977: 122).

5.3.3.4. Autosegmental representation

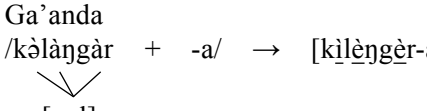
It is obvious to the modern reader how easily the Mada and Ga'anda examples above lend themselves to an autosegmental representation, where the [palatal] and [labial] features, represented on their own autonomous tier, link to the appropriate targets, based on language specific rules, as shown in (50), where [pal] and [lab] target the only underlying vowel /a/, and (51), where the empty morph [pal] targets /a, ə, s, ŋ/.

(50) Mada



(adapted from Barreteau and Brunet 2000)

(51) Ga'anda



(adapted from Ma Newman 1977)

Afro-Asiatic prosodies and featural morphemes were introduced into current phonology by McCarthy (1983), who proposed the first autosegmental analysis of the labial and palatal morphemes found in Chaha. As can be seen in (52), the second-person feminine singular object is marked on a verb by the palatalization of its last palatalizable consonant (i. e., everything but a labial or r/n).[13]

(52) Chaha

2nd m. sg.	*2nd f. sg.*	
gʸækʸət	gʸækʸətʸ	'accompany'
nəmæd	nəmædʸ	'love'
nəqəṭ	nəqətʸ	'kick'
nəkəs	nekesʸ	'bite'
gəræz	gəræzʸ	'be old'
wəṭæq	wəṭæqʸ	'fall'
fəræx	fəræxʸ	'be patient'

(McCarthy 1983: 179)

The examples in (53) show that the third person masculine singular object is marked by a labialization feature that links to the right-most labializable consonant, i. e., a non-coronal.

[13] For more details on Chaha phonology and morphology, see Rose (2007).

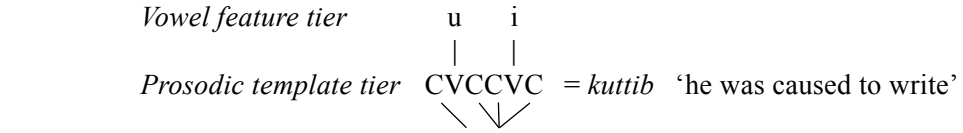
(53) Chaha

	No object	*3rd m.sg. object*	
a.	dænæg	dænæg^{w}	'hit'
b.	nædæf	nædæf^{w}	'sting'
c.	nækæb	nækæb^{w}	'find'
d.	s^{y}æfær	s^{y}æf^{w}ær	'cover'
e.	nækæs	næk^{w}æs	'bite'
f.	kæfæt	kæf^{w}æt	'open'
g.	qætær	q^{w}ætær	'kill'
h.	mæsær	m^{w}æsær	'seem'
i.	mæk^{y}ær	m^{w}æk^{y}ær	'burn'
j.	sædæd	sædæd	'chase'

(McCarthy 1983: 179)

Hetzron (1971), for the first time, described such palatalizations and labializations as morphemes consisting of less than a segment, but, like Welmers (1962) or Hyman and Schuh (1974) for tones, lacked an adequate representation to translate his intuition. McCarthy (1981), in order to account for Semitic templatic morphology, uses autosegmental representations to distinguish a prosodic tier (CV skeleton tier), a vowel feature tier and a consonant feature tier:

(54) Classical Arabic



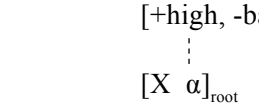
(McCarthy 1983: 177)

Adding a separate tier for floating features, McCarthy can account for the labial and palatal featural morphemes found in Chaha, as shown in (55).

(55) Chaha

a. *Rightmost labialization:*

b. *End palatalization:*



c. *Examples:*

[gʸækʸətʸ]	[dænægʷ]	[kæfʷæt]	[sædæd]
/gʸækʸət/	/dænæg/	/kæfæt/	/sædæd/
| | |	| | |	| | |	| | |
C C C	C C C	C C C	C C C
|	|	|	
[+high, -back]	[+round]	[+round]	[+round]

(McCarthy 1983: 180)

5.3.3.5. Featural affixes versus processes

As Inkelas (2008: 1) points out, there is much in common between realizational morphology and morphologically conditioned phonology. The above Y- and W-prosodies could thus be interpreted either as phonological rules triggered in the context of certain morphosyntactic features or as underlying "featural affixes" (Akinlabi 1996, 2011) which "float" in the string. Like floating tones, floating features are only semi-autonomous from the segmental tier: they need to be realized on segments, which they are in various ways, depending on their nature (e. g., consonantal versus vocalic features) and on feature co-occurrence constraints (either language-specific or due to feature geometry).

Featural morphemes refer most of the time to specific edges of the stem, which Akinlabi (1996, 2011) takes as evidence that they are segmentable affixes. Labialization in Chaha, illustrated in (53) above, is thus a case of suffixation in Akinlabi's (2011: 1949) analysis: the requirement that the featural morpheme [round][14] attach to the rightmost labializable consonant tells us that much. However, the fact that it is a consonantal feature implies that it may only be licensed by a consonant; it thus targets the rightmost consonant root node. Additionally, in Chaha, labialization may not co-occur with the feature [coronal]. The feature [round] may thus only be licensed by the rightmost non-coronal consonantal root node, moving inwards until it finds it, as in (53b) and (53c). This is reminiscent of properties of segmental affixes, such as the *-um-* infix in Tagalog, analyzed as a prefix by McCarthy and Prince (1993: 79), pushed inwards by a phonotactic requirement dispreferring coda consonants. Finally, when there is no labializable consonant in the root, the featural morpheme is simply not realized, as in (53d).

Akinlabi (1996), using data from African and non-African languages, develops an Optimality-theoretic analysis of featural affixation relying on the notion of generalized alignment developed by McCarthy and Prince (1993, 1994), which

[14] Akinlabi (2011) assumes [round], among other features, to be privative.

shows that featural affixes behave like their segmental counterparts: no additional theoretical machinery is needed.[15]

With the exception of Ga'anda, to which we will come back below, the featural affixes we have seen so far consist in one floating feature only. But more complex cases are attested in Africa, in particular featural affixes consisting in more than one feature (Mokilko aka Mukulu), affixes that are both segmental and featural (Ga'anda, North Atlantic languages, Nuer), and finally affixes with a segmental and a featural allomorph (Mafa).

In Mokilko the perfective aspect marker consists in the two features [voice] and [high] (Jungraithmayr 1977, 1990; Roberts 1994): the initial consonant of the perfective is voiced (whenever possible), while its first vowel is raised to high (if not already high), as shown in (56).

(56) Mokilko

	Imperfective	*Perfective*	
a.	kóòbìyó	gúùbé	'laugh'
	súyyìsó	zúyyè	'wash (oneself)'
	kázà	gízè	'count'
b.	dé'ú	dí'é	'seek'
	dòokìdé	dìikìdá	'share'
c.	'ókké	'úkké	'run'
	'òndɛ̃	'ùndɔ̃	'suck'
	'ômɓó	'íìmí	'eat ("boule")'
	'áàɗùmú	'íìdîmá	'eat (something hard)'
	'ûntó	'ìndá	'die'

(Jungraithmayr 1990: 44)

Akinlabi (2011, fn. 3) suggests that the perfective aspect in Mokilko is marked by a bi-featural prefix composed of the two features [voice] and [high], which may only be licensed by a consonant and a vowel respectively. The perfective prefix thus not only consists in two features, but each one of these two features is systematically realized on a different segment. Possible representations of this prefix and its effects on the verb root /káz-/ 'count' are given in (57):

[15] See Zoll (1998) for a different approach within Optimality Theory, and Mc Laughlin (2005) for its application to consonant mutation in Pulaar and Serer-Sine.

(57) Mokilko

a. /[voice, high]- + káz-/
   [high]
   |
b. /káz-/ → gíz- ‘count (imperf.)’
   |
   [voice]

(adapted from Jungraithmayr 1990: 44)

As Mc Laughlin (2000, 2005) notes, once one accepts the idea of featural affixes, it follows that a morphological category may be expressed in one of three ways: as a segmental affix, as a featural affix or as a mixed segmental and featural affix. All of the above are attested in North Atlantic languages, famously characterized by pervasive initial consonant mutation in the nominal and verbal systems. Mc Laughlin (2000, 2005) analyzes consonant mutation in Pulaar, Serer-Sine and Wolof as resulting from the prefixation of a floating feature to the root node of the stem-initial consonant. Serer-Sine initial consonant mutations are illustrated in (58) with nouns with different noun class prefixes (class numbers are indicated in parentheses).

(58) Serer-Sine

		a-grade	*b-grade*	*c-grade*	
a.	*Voicing*	o-gac (10)	a-kac (4)	fo-ŋgac (13)	‘stone’
	mutation	ɟir (5)	a-cir (4)	a-ɲɟir (3b)	‘illness’
b.	*Continuancy*	saytaane (7)	caytaane (9)	a-ɲɟaytaane (3b)	‘devil’
	mutation	xaβ (5)	a-qaβ (4)	a-ɴGaβ (3b)	‘manioc’

(Mc Laughlin 2000: 339–340)

As seen, class prefixation involves the features [+voice], [-continuant] and [+nasal]. The floating feature [+voice] accounts for the a-grade mutation. It affects only [-voice] segments that can be voiced, i. e., all but fricatives. The feature [-continuant], affecting only [+continuant] segments, accounts for the b-grade mutation. Finally [+nasal] accounts for the c-grade mutation. These featural prefixes may occur together with a segmental prefix, as in (59), or on their own, as in (60).

(59) Seereer

a. /o[+voice] + -kac/ → ogac (10)
b. /a[-continuant] + -xaβ/ → aqaβ (4)
c. /fo[+nasal] + -kac/ → foŋgac (13)

(adapted from Mc Laughlin 2000: 339–340)

(60) Seereer

a.	/[+voice]	+	-cir/	→	ɟ̱ir	(5)
b.	/[-continuant]	+	-saytaane/	→	c̱aytaane	(9)

(adapted from Mc Laughlin 2000: 339–340)

The verbal system of Nuer offers the mirror image of Serer-Sine: stem-final consonant mutation caused by suffixes. Akinlabi (2011) analyzes these suffixes as segmental, featural or both. The first person plural suffix -[cont]kɔ below is one such mixed suffix, whereas the past participle suffix -[cont] is purely featural (the vowel changes caused by the former suffix are ignored), as illustrated in (61).

(61) Nuer

a.	*Verb*	*+ 1st pers. pl.*	→		
	/còp	+ [cont]kɔ/	→	còɔf-kɔ̀ jɛ	‘overtake’
	/lo̱t̪	+ [cont]kɔ/	→	lòɔθ-kɔ̀ jɛ	‘suck’
	/paat	+ [cont]kɔ/	→	páaɾ̥-kɔ́ jɛ̀	‘sharpen’
	/jaac	+ [cont]kɔ/	→	jáaç-kɔ́ jɛ̀	‘hit’
	/ɟæk	+ [cont]kɔ/	→	ɟæ̀-kɔ̀- jɛ	‘throw away’
b.	*Verb*	*+ past participle*			
	/còp	+ [cont]/	→	cof	‘overtake’
	/lo̱t̪	+ [cont]/	→	loθ	‘suck’
	/paat	+ [cont]/	→	pàaɾ̥	‘sharpen’
	/jaac	+ [cont]/	→	jaaç	‘hit’
	/ɟæk	+ [cont]/	→	ɟæh	‘throw away’

(Crazzolara 1933: 156–160; cited in Akinlabi 2011)

Fula, if analyzed along the same lines, offers the rare case of mixed featural/segmental circumfixes in its nominal system. Noun classes are indeed marked with suffixes in contemporary Fula, but these suffixes trigger initial consonant mutation, as shown in (62) with examples from the Pulaar dialect.

(62) Pulaar

			a-grade	*b-grade*	*c-grade*
			‘BE (hum. pl)	KO (hum. sg)	KON (dim. pl)
a.	‘woman’	/rew-/	rew-ɓe	ḏebb-o	nḏew-on
b.	‘man’	/wor-/	wor-ɓe	g̱or-ko	ŋg̱or-on

(Mc Laughlin 2005: 115)

As seen, the b-grade and c-grade class suffixes can be analyzed as circumfixes consisting in a featural prefix and a segmental suffix:

(63) Pulaar

a.	-ɓe	:	/		wor-	+	ɓe/	→	wor-ɓe	
b.	[-cont]-…-(k)o	:	/[-cont]-	+	wor-	+	-ko/	→	g̱or-ko	

c. [nas]-…-(k)on : /[nas]- + wor- + -(k)on/ → ŋgor-on (adapted from Mc Laughlin 2005: 115)

Finally, a very interesting type of featural affix is attested in Mafa, which has two allomorphs: one segmental, one featural. As illustrated in (64) below, the imperfective form of the verb in Mafa is indeed marked with a suffix realized as segmental *-y* (IPA [j]) with verb roots ending in a vowel (64a), and as a root-level [palatal] prosody with roots ending in a consonant (64b) and (64c). Likewise, the perfective form is marked with the suffix /-w/ with verbs ending in *-a*, and with a labial prosody with consonant-final verbs. As seen, palatalization affects vowels as well as coronal strident (affricates and fricatives), while labialization affects only vowels and /h/.

(64) Mafa

	Stem	*Imperfective*	*Perfective*	
a.	ndzá	ndzá-y	ndzá-w	‘stay’
	ndá	ndá-y	ndá-w	‘eat’
	gudza	gudza-y	gudza-w	‘tremble’
	sá	sá-y	sá-w	‘drink’
b.	tə́v	tiv	túv	‘scale’
	ngəh	ngih	nguh^{w}	‘hide’
	kərɗ	kirɗ	kurɗ	‘grind’
c.	pán-	pén	pón	‘wash’
	saf	ʃef	sof	‘breathe’
	zám	ʒém	zóm	‘spit out’
	tsák	tʃék	tsók	‘take a little’
	ndzáv	ndʒév	ndzóv	‘raise’

(Barreteau and le Bléis 1987, 1990; Ettlinger 2004)

Ettlinger’s (2004) analysis of the Mafa imperfective suffix integrates the main autosegmental insight of the separation between the segmental and autosegmental tiers into an otherwise purely output-oriented, constraint-based analysis, couched in Optimality Theory (Prince and Smolensky 1993). Ettlinger divides the suffix -y into a segment and a [palatal] feature, semi-autonomous from each other. The separation of the parse of the feature from the parse of its segment through two distinct parse constraints is what accounts for the allomorphy: with the segmental allomorph *-y* [j] both the segmental and the featural parts are parsed, satisfying both constraints. A phonotactic constraint against consonants followed by *-y* prevents the realization of the segment with consonant-final verbs, violating the constraint that the segment should be parsed, but the palatal feature may still be realized on palatalizable segments within the roots, satisfying the second constraint.

But the most insightful theoretical contribution of Ettlinger’s analysis is his

account of how the [palatal] featural allomorph is realized on stems. What phonological mechanism accounts for the autosegmental descriptive statement "the palatal feature attaches to vowels and strident coronals"? What consequences does this have for phonological theory, in particular the theory of agreement? There are two main accounts of agreement: feature spreading, as in Akinlabi's (1996) account of featural affixes, and Agreement by Correspondence (Hansson 2001, 2010; Rose and Walker 2004) (cf. section 3.2.2). Ettlinger shows that neither of them is appropriate for Mafa.

Note, first, that two phonotactic constraints in Mafa complicate the process of palatalization in the imperfective: a constraint against velar consonants adjacent to the vowel /ü/ (IPA /y/) (*Kü, [65a]), and one against the derivation of palatalized consonants that are not attested in the consonant inventory (*Cy, [65b]). The combined effect of these two constraints is that only coronal stridents may palatalize, as shown by the unaffected forms in (65c).

(65) Mafa

a. *Effects of *Kü:*

wurts	→	wurtʃ	'engrave with fire'
guts	→	gutʃ	'squirt'

b. *Effects of *Cy*

ðaðay	→	ðeðey	'light (v.)'
təkəd	→	tikid	'grind millet'
kədah	→	kideh	'cook (a fatty sauce)'
bəlað	→	bileð	'lift'
lubok^{w}	→	lübœk^{w}	'obey'

c. *Combined effects of both constraints:*

gud	→	gud	'search with anxiety'
kurk^{w}	→	kurk^{w}	'search everywhere'
gum	→	gum	'work'

(Barreteau and le Bléis 1987, 1990; Ettlinger 2004)

The forms in (65) preclude two possible analyses of the realization of the featural allomorph of the imperfective suffix: if both vowels and consonants may be unaffected, the [palatal] feature cannot be said to target vowels, and then spread through agreement to neighboring stridents, or vice versa. It must target both vowels and coronal stridents at the same time.

Feature spreading, as Ettlinger shows, has to be ruled out altogether. A feature spreading account of agreement crucially rests on the notion of strict locality: a feature may not skip a potential licensor (i. e., a non-transparent segment) when spreading. The fact that /u/ may be transparent in some forms (66b), despite being a possible licensor of the [palatal] feature (66a), renders feature spreading inoperative.

(66) Contextual transparency of /u/

a. /u/ → /ü/

sur	→	ʃ̲ü̲r	‘sleep with a woman’
lubat	→	lü̲be̲t	‘twist’

b. *Ky does not prevent palatalization of all other licensors

suwdək	→	ʃuwdi̲k	‘miss’
tsuwah	→	t̲ʃuwe̲h	‘cut into pieces’

Ettlinger also rejects an Agreement by Correspondence analysis, on the basis that vowels and coronal stridents do not form a natural class, hence are both more similar to other segment classes than to each other, which contradicts the notion of similarity that is the basis of Agreement by Correspondence theory.

Instead, Ettlinger proposes that what is at work in Mafa is a form of “generalized agreement” that constrains all segments within a stem to be palatal in the presence of a palatal feature, within the limits of what the phonotactics of the language independently permits.

It is easy to see how the same problem arises (and a similar solution could be proposed) in other languages we have seen, such as Ga’anda, where the palatal prosody targets only the unnatural class /a, ə, s, ŋ/. A more thorough analysis of other Chadic or Ethio-Semitic languages with similar properties in the light of such theoretical questions would most probably yield new insights into phonological structure and the nature of the process of agreement.

5.3.3.6. The origin of prosodies and featural affixes

Finally, it is worth noting that the analysis of floating featural morphemes as affixes is supported by historical evidence: prosodies and featural affixes have been shown to derive from former segmental affixes and the phonological interactions between those affixes and the roots onto which they attached.

Wolff (1981), drawing from Ma Newman’s (1977) Ga’anda data, already puts forth the hypothesis that at least the palatal prosody in Wandala-Lamang languages originates in a former segmental suffix, most probably an old Chadic determiner. Wolff (2004, 2006) reconstructs old noun-stem suffixes in the Lamang-Hdi subgroup of Biu-Mandara. “These suffixes, synchronically defunct, have left traces as petrified additional root material, or are simply absent. Some of these suffixes, however, are the diachronic source of prosodies” (Wolff 2006: 143).

Similarly, Rose (1994) shows that palatalization and labialization in Chaha originate in former suffixes. For example, the palatalization of final coronal and velar consonants marking the second person singular feminine in the verbal system, illustrated in (52) above, originates in a suffix *-i*, attested in Amharic (optionally), Ge’ez, Tigrinya, and Arabic, among others.

Historical evidence shows that initial consonant mutation in North Atlantic languages originates in the phonotactic effects of former prefixes (or clitics, cf. Merrill 2013) on root-initial consonants. Those prefixes are still partially attested in Serer-Sine, but have been dropped in Fula, leaving consonant mutation as the only trace of their former presence. Merrill (2013) proposes a reconstruction of the proto-Fula-Serer class clitics, and a historical account of the sound changes through which initial consonant mutation and the present-day class prefixes or suffixes emerged in both languages.

Finally, Kießling (2010) identifies the emergence of initial consonant mutation systems in Bantoid languages of the Grassfields and Beboid groups through a process that is most probably similar to that which gave rise to consonant mutation in North Atlantic.[16]

> "[In those languages, consonant mutation emerges through] phonological condensation and diffusion of noun class prefix features into the nominal root … The trigger is almost always the same: high vowels of the prefixes in classes 3, 5, 7, 8 spread their labial and/or palatal quality to the nominal root causing purely automatic changes which could be described as progressive assimilations … As soon as the phonetic trigger of these assimilations, i. e. the labial or palatal quality of the prefix, is lost, the changes in the nominal root, labialization or palatalization, lose their motivation and become morphophonemicized as infixes or initial consonant mutations" (Kießling 2010: 215–216).

5.3.4. Nasality as a prosody

In many African languages, nasal consonants are in total or near complementary distribution with voiced oral counterparts. Thus, quite early in generative phonology, Schachter and Fromkin (1968) had proposed derivations such as the following for their dialects of Akan:

(67) Akan

a.	/bã/	→	[mã]	'give'
b.	/dã/	→	[nã]	'and'
c.	/yã/	→	[ỹã]	'receive'
d.	/wãdĩ/	→	[w̃ãnĩ]	'scrape'
e.	/hũ/	→	[h̃ũ]	'fear'

(Schachter and Fromkin 1968)

Rather than representing nasality on vowels, where it is contrastive, they also could quite easily have abstracted the feature away as a prosody, [+nas], in keeping with the Firthian tradition. This was subsequently proposed by Leben (1973) for Terena

[16] He also gives references to similar phenomena in the Plateau languages of Central Nigeria (Gerhardt 1983, 1988, 1990, 2010), but also in the Narrow Bantu languages Nilyamba (Kießling in preparation) and Zezuru and Venda (Gowlett 2003: 621–622).

and Goldsmith (1976) for Guarani, two Amazonian languages, and by Hyman (1982) for Gokana (68). In the latter language, nasality can be considered to be a property of morphemes rather than segments: only one [+nasal] specification per morpheme is allowed in underlying representations. This feature associates with any nasalizable segment, i. e., all vowels, all non-morpheme-initial consonants (restricted to /b, l, g/), and morpheme-intial /v, l, z/ only. Only one segment needs to be underlyingly specified as [+nas]: morpheme-initial /m/, which is the only segment for which nasality is distinctive (exclusively in that position), as shown by the triple contrast *bá* 'arm' versus *bǻ* 'pot' versus *mǻ* 'breast'.

(68) Gokana

a.	/lū/	→	[nl̃̃]	'thing'	cf.	/lí/	→	[lí]	'root'
	[+nas]		[+nas]						
b.	/bá/	→	[bǻ]	'pot'	cf.	/bá/	→	[bá]	'arm'
	[+nas]		[+nas]						
c.	/dɛ̄b/	→	[dɛ̃̄m]	'tongue'					
	[+nas]		[+nas]						
d.	/bá/	→	[mǻ]	'breast'					
	[+nas]		[+nas]						

(Hyman 1982:126–7)

As seen, the underlying nasal feature associates with all segments in (68a), since both /l/ and /u/ are both nasalizable. The stem-initial consonants /b/ and /d/ in (68b) and (68c) are not, and thus escape nasalization, contrary to stem-final /b/ in (68c). Finally, a comparison between (68b) and (68d) demonstrates the necessity to distinguish between two underlying stem-initial /b/'s: a non-nasal one and a nasal one which surfaces as /m/.

For recent work on African systems that lack a nasal contrast on consonants, see Clements and Osu (2003, 2005).

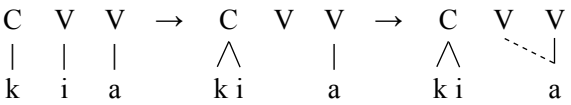
5.4. Segment organization and word structure

5.4.1. Syllables, slots and moras

In the early 1980s, African languages provided important contributions to the development both of skeletal (CV) and moraic phonology. A good case in point is Ganda compensatory lengthening, by which sequences such as /Cia/ and /Cua/ are realized [Cjaː] and [Cwaː], respectively. Clements's (1986) proposal within CV pho-

nology was that the high vowel reassociates to the preceding C slot, delinking from its V slot, which is in turn filled by spreading of the following vowel, as in (69).

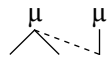
(69) Ganda



(adapted from Clements 1986)

In Hyman's (1985) moraic account, the /a/ spreads right to left onto the first mora:

(70) Ganda



(Hyman 1985)

Clements (1986) also considers the lengthening of a vowel before an NC sequence illustrated for Jita in (71) below, where the vowel length contrast is neutralized before NC. This time, if the nasal leaves its V to join the following C slot, the preceding vowel can lengthen to take its place.

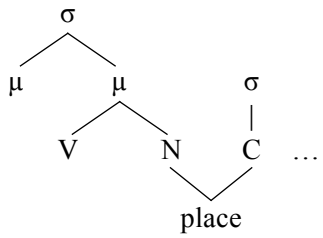
(71) Jita

a.	oku-cuma	'to get wealthy'	oku-cuːma	'to jump'
	oku-loja	'to try'	oku-loːja	'to visit the sick'
b.	oku-fuːmbula	'to guess a riddle'	(*oku-fumbula)	
	oku-saːnjága	'to pulverize'	(*oku-sanjága)	
c.	oku-saːkura	'to grab from'	okuː-n-saːkura	'to grab from me'
	oku-ganíra	'to tell a story'	okuː-ŋ-ganíra	'to tell me a story'

(after Downing 1996; cited in Downing 2005)

We saw in section 2.1 that numerous Bantuists and phonologists have worked on the problem of NC clusters, debating in particular whether they consist of one or two segments. We also saw the important role played by syllabification in choosing between the two alternatives. The analysis of pre-NC lengthening in terms of compensatory lengthening summarized above is often cited as evidence for the unit analysis of NC sequences. Downing (2005), based on phonological evidence indicating that N in VNCV sequences is syllabified as a coda in Bantu languages, proposes an alternative analysis, whereby the homorganic NC sequence is a heterosyllabic cluster, as schematized in (72). Pre-NC lengthening is viewed as arising not from compensatory lengthening following resyllabification of N, but through enhancement of the vowel's duration before a tautosyllabic nasal consonant, and the reduced duration of homorganic NC sequences (cf. also Maddieson, this volume, section 4.3).

(72)



Finally, most of the arguments in favor of moras developed in Hyman (1985) were based on African languages, particularly Gokana, where there is no evidence for syllable structure above the moras (although see Hyman 2011c).

One of the major successes of a "slot" approach to segmental length was its ability to characterize geminates and their "inalterabilty". Crucial to this inalterability is the fact that geminates are represented as one consonant linked to two C slots, as shown below.

(73) /t/ = C vs. /tt/ = CC
| ⋁
t t

Among the major examples of consonant inalterability that prompted this analysis were two Afroasiatic languages: Tigrinya (Schein and Steriade 1986; Kenstowicz 1982) and Hausa. In the latter, Hayes (1986) shows that a CV approach accounts very elegantly for why Klingenheben's Law, a series of sound changes through which coda obstruents became sonorants, illustrated in (74), fails to apply to geminate consonants.

(74) Klingenheben's Law in Hausa

a.	labials	→	/w/	sabroo	→	sawroo	'mosquito'
	alveolars	→	/ř/	biyad	→	biyař	'five'
	velars	→	/w/	batagyee	→	batawyee	'twin'

(Hayes 1986)

C]$_{syl}$
|

b. [-cont] → [+son] /___

The rule stated in (74b) targets only consonants that are uniquely linked to a C slot, i. e., singleton consonants. Geminate consonants, being doubly linked, are thus invisible to the rule.

Another Afro-Asiatic language, Imdlawn Tachelhit, has also been central to the study of syllabification, particularly of consonantal nuclei (Dell and Elmedlaoui 1985, 1988; Ridouane 2008), which provided one of the centerpieces in the development of Optimality Theory (Prince and Smolensky 1993) (See Maddieson, this volume, section 4.3 for more detail).

5.4.2. Reduplication

The vast majority of African languages exploit partial reduplication as a morphological process. In West African languages such as Akan, the reduplicant consists of a CV copy of the base verb, except that the vowel must be [+high]. Nupe examples are given in (75).

(75) Nupe

a.	/gí/	'eat'	→	gi-gí	'eating'
	/ge/	'be good'	→	gi-ge	'goodness'
	/gà/	'separate'	→	gi-gà	'separating'
b.	/gú/	'puncture'	→	gu-gú	'puncturing'
	/gò/	'receive'	→	gu-gò	'receiving'

(Hyman 1970)

The Nupe data comes up in the context of an argument in favor of abstract phonological representations (Hyman 1970), whereas corresponding Akan forms are cited both by Wilbur (1974) and Marantz (1982) for their "underapplication" property. Again, this can be illustrated from Nupe, where underlying /ts, dz, s, z/ are palatalized to [tʃ, dʒ, ʃ, ʒ] before front vowels. The issue is that a verb like /tsà/ 'choose' reduplicates as *tsi-tsà*, not as **tʃì-tsà*. The above-cited authors revert to rule ordering (palatalization precedes reduplication), whereas others have used this kind of African data to argue for a global "identity constraint" (Wilbur 1974), which is easily implemented as a base-reduplicant identity correspondence within Optimality Theory (McCarthy and Prince 1999).

While the above gives some idea of how West African CV reduplication has contributed to phonology, Bantu CVCV verb stem reduplication has also contributed to the development of prosodic morphology. The verb stem is a constituent consisting of a root plus one or more suffixes. In a number of Bantu languages, but not all, the preposed reduplicant may or must be exactly two syllables in length. Thus, in Nande, *tum-ir-an-a* 'send to each other' (send + APPLICATIVE + RECIPROCAL + FINAL VOWEL) obligatorily reduplicates as *tum-a* + *tum-ir-an-a* 'send to each other here and there' (Mutaka and Hyman 1990). Interestingly, *sw-a* 'grind' reduplicates as *sw-a-sw-a* + *swa* 'grind here and there', where the bisyllabic reduplicant, created by double reduplication, is actually longer than the base verb stem. Odden (1996) shows that in Kerewe there is some choice in how long the reduplicant can be. Hence, *lim-il-an-a* 'cultivate for each other' (applicative *-il-*, reciprocal *-an-*) may reduplicate as *lim-il-an-a.lim-il-an-a*, *lim-il-a.lim-il-an-a*, or *lim-a.lim-il-an-a*. The comparisons in (76), which show how Proto-Bantu **gu-a* 'fall' and **dim-ɪd-a* 'cultivate for/at' are reduplicated in three different Bantu languages, reveal that bisyllabicity can be imposed as a minimum (Sukuma), maximum (Kinyarwanda) or exact (Ndebele) requirement on the reduplicant (Hyman 2009):

(76) a. RED ≥ σ-σ
e. g., Sukuma
gw-a-gw-a + gw-a
lım-ıl-a + lım-ıl-a
(Matondo 2003)

b. RED ≤ σ-σ
e. g., Kinyarwanda
gw-aa + gw-aan-a
rim-aa + rim-ir-a
(Fidèle Mpiranya, p. c.)

c. RED = σ-σ
e. g., Ndebele
w-a-yi + w-a
lim-a + lim-el-a
(Hyman, Inkelas, and Sibanda 2008)

As seen, Sukuma double reduplicates a monosyllabic stem, like Nande, while Kinyarwanda accepts a monosyllabic reduplicant, but appears to augment the base from *gw-a* to *gw-aan-a* to provide an extra syllable. Ndebele inserts a dummy syllable [yi] to fill out the bisyllabic template. While the applicative suffix *-ıl-* is obligatorily truncated in both Kinyarwanda and Ndebele, it optionally appears in Sukuma, which has no upper limit on the size of the reduplicant, e. g., *leembeel-el-nij-iw-a* + *leembeel-el-nij-iw-a* ('be calm' + APPLICATIVE + SIMULTANEOUS + PASSIVE). However, when a verb stem contains only one productive suffix, it may optionally be truncated, e. g. *lım-ıl-a* + *lım-ıl-a* ~ *lım-a* + *lım-ıl-a* 'cultivate for here and there' (Matondo 2003:129–130, 154).

The apparent truncation observed in reduplicated forms such as Nande *lım-a* + *lım-ıl-a and túm-a* + *tum-ir-an-a* has also raised interesting morphological questions. Downing (1999ab, 2000) sees the final *-a* as an indicator that the reduplicant is a morphological constituent, while Hyman, Inkelas, and Sibanda (2008) present evidence from Ndebele that the reduplicant is obtained by morphosyntactic doubling, but is subject to additional prosodic restrictions (cf. Inkelas and Zoll 2005).

5.4.3. Accent and positions of prominence

As we said in our introduction to this contribution, one of the only aspects of general phonology that African languages have not substantially contributed to is stress. One reason for this is that, with notable exceptions (mostly Berber, African varieties of Arabic, North Atlantic languages, Swahili), African languages are mostly tonal, and have either no stress or a rather simple stress system.[17] However, African languages are not devoid of any form of "accent", and have actually played, and ought to play, an important role in controversies regarding the very definition of the notion of "accent".

[17] See Heath's (2005) grammar of Tamashek (Malian Tuareg), which includes multiple sections treating the extensive accentual properties of this language, much of it morphologically determined.

In her survey of accent in African languages, Downing (2010) adopts van der Hulst's (1999, 2002, 2006) definition of accent as a "prominence asymmetry that makes one syllable more salient than its neighbors by enhancing some combination of phonetic properties: pitch, duration, intensity, and/or contrastive segmental features" (Downing 2010: 382). Accent is culminative,[18] i. e., there is at most one (main) prominence peak per relevant domain, and demarcative,[19] i. e., prominence peaks are defined with reference to a particular morpheme edge (stem or word). Stress is thus only one form of accent, and we concur with Downing's proposition that prominence asymmetries independent of stress be considered forms of accent, as long as they have the two properties defined above. This idea is also defended by Dimmendaal (2012) in his survey of morphophonological phenomena involving foot structure in Nilotic languages, and was already expressed by Harris (2004[1990]: 26): "Stress prominence is of course not the only symptom of foot-hood … segmental and quantitative factors can also be in play, showing up in the asymmetric distribution of contrast and weight between head and dependent syllables."

While stress systems are rather infrequent in Africa, non-stress-related prominence asymmetries are on the other hand common, particularly in western and central Africa, in Nilotic languages, as well as in the Kalahari Basin, as we will see. As Downing (2010: 385) puts it, "it is this diversity of prominence asymmetries that in fact make African languages particularly interesting for research on the range of phonological properties that can define prominence or provide evidence of metrical constituency." Recent research has shown that metrical structure can indeed successfully account for various such asymmetries in African languages.

5.4.3.1. Stem-initial prominence

There are (at least) two areas in Africa where stem-initial prominence has very strong effects on segmental distribution and positional contrast neutralization: the Macro-Sudan Belt (Güldemann 2008), in particular the Niger-Congo languages of this area, and the Kalahari Basin.

As already shown in Hyman (2008a), Northwest Bantu languages have long been known to present such effects, interpreted as evidence of a stem-initial accent as early as Paulian's (1975) description of Teke-Kukuya. The properties of the prosodic stem in Kukuya are listed in (77).

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[18] See Hayes (1995), Hyman (1977, 1978, 2006), Odden (1988, 1999), van der Hulst (1999).

[19] See Hyman (1977), van der Hulst (1999), van Zanten and Goedemans (2007).

(77) Teke-Kukuya

a.	Five syllable shapes	:	CV, CV.V, CV.CV, CVV.CV, CV.CV.CV
b.	Five tonal melodies	:	L, H, LH, HL, LHL
c.	Six attested C_2 or C_3	:	P, T, K, l, m, n
d.	Six C_2–C_3 combinations	:	C-n-m, C-T-K, C-l-K, C-l-P, C-K-P, C-T-P
e.	Prefix consonants	:	P, K, l, m

(Paulian 1975; Hyman 1987)

As seen in (77a), stems may have from one to three syllables and be mono-, bi- or trimoraic. As we saw in (10) above, stems are assigned one of the five tonal melodies listed in (77b). Of the numerous consonants attested stem-initially, only the six in (77c) are attested in C2 or C3 positions, among which the underspecified consonants /P/, /T/, and /K/, which are realized, respectively, as [b ~ β], [r], and [k~g~ɣ]. Furthermore, out of the 36 (i. e., 6 × 6) possible C2–C3 combinations, only the six indicated in (77d) are attested. These combinations may not include consonants produced at the same place of articulation or disagreeing in nasality, and must be either coronal C2+ non-coronal C3, or velar C2 + labial C3. Finally, prefix consonants are restricted to the four listed in (77e): /P, K, l, m/.

Paulian notes that the left edge of stems is characterized by two additional properties, which she takes to be further evidence of a stem-initial accent in Teke-Kukuya: 1) there is a "pause", however slight, before every C1 consonant, and 2) a C1 nasal or /l/ is automatically geminated (/Pù-nónó/ → [bù.nnɔ́.nɔ́] 'selfishness'). The additional fact that prefixes, unless they fuse with a vowel-initial root, never form a prosodic domain with their stem, but always with the preceding stem can be used as further evidence that prosodic domains are stem-initial in Teke-Kukuya (Hyman 1987).

Paulian's analysis sets up all domains as accentual units (*unités accentuelles*) with an initial accent, and defines the stem as the minimal accentual unit (*accentogène*). Hyman (1987), formalizing Paulian's interpretation, proposes a metrical analysis of Teke-Kukuya postlexical prosodic domains (stem + any following non-stem material attached to it) using the notion of "stress-foot", defined by Abercrombie (1965: 22) as "the space in time from the incidence of one stress-pulse up to, but not including, the next stress pulse": a stem is parsed into a (maximally ternary) left-headed foot, as in (78a). The unfooted prefix is then added to the preceding foot to create a postlexical foot, as in (78b) (feet are in parentheses, heads are underlined).

(78) a. Lexical: CV-(CVCVCV) ## CV-(CVCVCV)
b. Postlexical: CV-(CVCVCV ## CV)-(CVCVCV)

In this analysis, the foot is the domain of application of both segmental and tonal constraints and rules (among which the assignment of the five tonal melodies seen in (10) above. See section 4.4.5 below for more on the relevance of metrical structure for tonal processes in other languages.

Hyman (2003c, 2008a) shows that similar facts are attested in Basaá. Stems in this language are, much like Teke-Kukuya, limited to three syllables, as shown in (79). Table 5 shows that the full consonant inventory is only attested in stem-initial position, with progressively fewer in C_2, C_3 and C_4 positions.

(79) a. 1 syllable: CV, CVC
b. 2 syllables: CV.CV, CV.CVC, CVC.CV, CVC.CVC
c. 3 syllables: CVC.CV.CV

Table 5: Distribution of Basaá consonants

C_1:	p	t	c	k	k^w	s	h	ɓ	l	j	g^w	y	w	m	n	ɲ	ŋ	$ŋ^w$	mb	nd	nj	ŋg
C_2:	b	d		g		s ~ h			l			y		m	n		ŋ		nb	bd		ŋg
C_3:	b	d		g		s ~ h			l						n							
C_4:				g			h								n							

Particularly striking is the distribution of non-contrastive voicing on stops: there is a single series of stops /P, T, K/ which is realized [p, t, k] stem-initially (and optionally before pause), but as voiced (and often continuant) in all other positions, as illustrated in (80). Note that prefix consonants behave like non-C1 consonants, as evidenced by the voiced realization of /P, T/ in examples (80d) and (80e).

(80) Basaá

	Underlying	*Orthographic*	*Phonetic*	
a.	/TíTKí/	tídgí	[tírgí]	'small'
b.	/KɔKnà/	kɔgnà	[kɔɣnà]	'crush each other'
c.	/lì-màPKà/	lìmabgà	[lì-màβgà]	'taking from' (class 5)
d.	/Pì-Pà/	bìpà	[bì-pà]	'machete' (class 8)
e.	/Tì-KɔTá/	dìkɔdá	[dì-kɔrá]	'pipes' (class 13)

(Hyman 2008a: 332)

One of the first analyses of stem-initial prominence making use of modern metrical theory was Harris's (2004[1990]: 126sq.) analysis of Ibibio. Building on research by Urua (1990), Connell (1991) and Akinlabi and Urua (1992), Harris shows that the distributional asymmetries and contrast neutralization patterns attested in Ibibio, illustrated in Table 6 for oral stops, are similar to those attested in English and Danish, where they are clearly dependent on stress and foot struc-

ture: full inventory of consonants and vowels stem-initially, reduced inventory and contrast neutralization (in particular laryngeal contrasts) elsewhere.

Table 6: Distribution of oral stops and related segments in Ibibio (Harris [1990] 2004: 14)

Foot-initial [C		Non-foot-initial VCCV	VC]{#/C}	VC(])V
k͡p	*b*	*pp*	*p̚*	*β*
t	*d*	*tt*	*t̚*	*r*
k		*kk*	*k̚*	*ɣ*

Harris thus proposes the same foot-based analysis for Ibibio. Syllable structure is indeed not explanatory: if the initial syllable were prominent, one would not expect the coda of that syllable to be in the weak part of the foot. Instead, only the foot-initial consonant and vowel, i. e., the stem-initial CV sequence, are prominent. Ibibio is thus a trochaic language, the head of the trochee being the initial CV sequence.

Further evidence for trochaicity in Ibibio comes from verbal morphology. Ibibio verbs, made of a root and an optional suffix, tend to conform to a trochaic CVX.CV shape, as shown in (81).

(81) Ibibio

	Root		*+reversive* -Cá		*+frequentative* -ŋá	
a.	síít	‘block’	sɨ́ttέ	‘unblock’	sííŋέ	‘unblock (freq.)
	fáák	‘wedge’	fákká	‘remove wedge’	fááŋá	‘remove wedge (freq.)’
	kɔ́ɔ́ŋ	‘hang on hook’	kɔ́ŋŋɔ́	‘unhook’	kɔ́ɔ́ŋɔ́	‘not hang on hook (freq.)’
b.	nɔ̀	‘give’			nɔ̀ɔ̀-ŋɔ̀	‘give (freq.)’
	k͡pá	‘die’			k͡páá-ŋá	‘die (freq.)’

(Urua 1990; Harris (2004[1990])

As seen, shortening of the root vowel (reversive *-Cá* in [81a]), deletion of the suffix consonant (frequentative *-ŋá* in [81a]), or lengthening of the root vowel (in [81b]) applies in order for the final verb form to conform with the trochaic CVX.CV template. See Akinlabi and Urua (2003) for a more detailed foot-based analysis of the Ibibio verbal system.

5.4.3.2. Conflicting prominence

In a few languages, there seem to be conflicting prominence requirements. Such is the case of most South African Khoisan languages, i. e., languages of the Kx’a, Tuu and Khoe-Kwadi families. In those languages, heavy restrictions are placed

both on root shape and on the distribution of phonemes within roots (Beach 1938; Traill 1985; Miller-Ockhuizen 2001; Miller 2010; Nakagawa 2006, 2010; Naumann forth.). As shown in (82), lexical roots are always bimoraic, and may be of three shapes only. Note that (82b) and (82c) are probably derived from (82a) (Beach 1938; Traill 1985).[20]

(82) a. $C(C)V_{\mu}.CV_{\mu}$
b. $C(C)V_{\mu}N_{\mu}$ (likely from *C(C)V.NV)
c. $C(C)V_{\mu}V_{\mu}$ (likely from *C(C)V.CV)

The distribution of consonants within roots, summarized in (83), offers an unambiguous case of stem-initial prominence.

(83) a. C(C)1: – All consonants except *y*, *ny* and *ŋ* (84 of the 88 consonants of the West !Xoon dialect of Taa)
– All consonant clusters (77 in West !Xoon)
b. C2: Only sonorants and /b/
(8 in West !Xoon: b [b~β~w], m, n, ny, ŋ, r, l, y)
NB: only nasals are attested in coda position, cf. (82b)

As seen, a total of 84 simplex consonants and 77 clusters (according to Naumann's [forth.] analysis, cf 2.3.2 above) are attested in C(C)1 position in West !Xoon, as opposed to only 8 consonants in C2. Additionally, the root-initial consonants and clusters include all the click consonants (arguably articulatorily "strong" and perceptually salient), whereas the intervocalic or coda C2 are all "weak" consonants, sometimes even phonetically weakened, as is the case for /b/, whose realization oscillates between [b], [ḅ], [β] and [w]. Miller (2010) proposes a prosodic account of those consonantal distribution asymmetries in Ju|'hoan of Ju in terms of stem-initial prominence. Although her analysis is not foot-based, the data certainly points to a possible trochaic analysis.

The very peculiar distribution of vowels, on the other hand, does not seem to point to any clear positional prominence effect, as shown in Table 7.

[20] The generalizations presented here are drawn primarily from Nakagawa's (2010) analysis of G|ui (Khoe-Kwadi) and Naumann's (forth.) analysis of the West !Xoon dialect of Taa (Tuu), but can be considered to hold, with only minor changes, for all South African Khoisan languages, except perhaps for Kalahari Khoe East and Kwadi, for which much uncertainty remains.

Table 7: The vowel system of West !Xoon (after Naumann forth.: 29)

	Front	*Back*			*Front*		*Back*		
V_1	--	u	+	*tense/glottalized*	--	--	a’	o’	u’
	--	o		*breathy*	--	--	ah	oh	uh
	a			*pharyngealized*	--	--	aq	oq	uq
				strident	--	--	aqh	oqh	uqh
V_2	i	u	+	*nasalized*	in	--	an	--	un
	e	o							
	a								

As seen, it is difficult to determine which vowel is more prominent: while phonation contrasts are neutralized in V_2 position, V_1 is reduced to the three back vowel qualities /a, o, u/. V_2 is also the only nasalizable vowel. This is summarized in (84), where potential prominence-inducing properties are underlined.

(84)

	vowel quality	*phonation type*	*nasalization*
a.	V_1: a, o, u	<u>all</u>	no
b.	V_2: <u>all</u>	modal voice only	<u>yes</u>

Nakagawa (2010) goes one step further in his analysis of this distributional pattern in G|ui, showing that V_1 and V_2 have non-overlapping, complementary feature specifications: V_1 needs only be specified for the two non-dorsal features [round] and [pharyngeal], while V_2 is specified for all non-dorsal features ([high], [low], [back]) and nasality, as summarized in Table 8. A summary of the phonotactic constraints shaping lexical roots in G|ui is presented in Figure 2.

At least two hypotheses can be put forth to explain this asymmetry: either only consonants are sensitive to stem-initial prominence, or foot structure; or both consonants and vowels are affected, in which case the head of the trochee is the initial CV sequence, and aspects of the quality (dorsal features and nasality) of V_1 are subject to phonotactic requirements independent of footstructure: local CV assimilation similar to the Guttural OCP and Back Vowel Constraint in Ju|’hoan of Ju (Miller-Ockhuizen 2001), weak-trigger vowel harmony *à la* Walker (2005). More research is needed to understand exactly how prominence can be determined and how foot-based analyses fare in cases of apparent conflicts in prominence.

Table 8: Distribution of vowel features in disyllabic roots in G|ui (adapted from Nakagawa 2010)

	Phoneme	*V_1 features*		*V_2 features*				*V_1 allophones (predictable from C1, C2 and/or V_2)*
		[rd]	[phar]	[hi]	[lo]	[bk]	[nas]	
V_1	/A/	–	–					[i, e, a, ĩ, ã]
	/U/	+	–					[u, o, ũ]
	/a^{ʕ}/	–	+					[a^{ʕ}, ã^{ʕ}]
	/u^{ʕ}/	+	+					[u^{ʕ}, ũ^{ʕ}]
V_2	/i/			+	–	–	–	
	/e/			–	–	–	–	
	/a/			–	+	+	–	
	/o/			–	–	+	–	
	/u/			+	–	+	–	
	/ĩ/			+	–	–	+	
	/ã/			–	+	+	+	
	/ũ/			+	–	+	+	

C1	V1	C2	V2
|	|	|	|
Obstruents (Sonorants)	**Non-dorsal** [±round] [±pharyngeal]	**Sonorants** (Obstruents)	**Dorsal** [±high, ±low] [±back] & [±nasal]

Figure 2: Distribution of C and V features in disyllabic roots in G|ui (Nakagawa 2010)

5.4.3.3. Iambic languages

While stem-initial prominence lends itself, at least in some cases, to a trochaic analysis, iambic languages are also attested in Africa. Pearce (2003, 2006, 2007a,b) convincingly describes Kera as an iambic language. Despite having no word-level phonetic prominence or stress, word-well-formedness, together with phonetic cues of duration, allophony and intensity can indeed be used as evidence for the existence of iambic feet in Kera. The CV.CV shape being disallowed, underlying /CV.CV/ sequences undergo either deletion or lengthening of their final vowel,

to form an acceptable iambic foot, as shown in (86). The possible iambic feet are listed in (85) (heads are underlined).

(85) Kera

a.	monosyllabic:	(C<u>VV</u>)	(C<u>VC</u>)
b.	disyllabic:	(CV.C<u>VV</u>)	(CV.C<u>VC</u>)

(Pearce 2006: 263)

(86)

		phrase-medial	*phrase-final*
a.	/CV.CV/	(C<u>VC</u>)	(CV.C<u>VV</u>)
b.	/bɛ̀gɛ́/ ‘cattle, animal’	(b<u>ɛ̀g</u>)	(bégɛ́<u>ɛ</u>)

As can be seen in (86b), the metrical structure is also indicated by an alternation in vowel quality: non-head low vowels /ɛ, a, ɔ/ are realized as [+ATR] [e, ə, o], respectively, as further illustrated in (87). Table 9 presents the vowel system of Kera.

Table 9: Kera vowel system

	/i/	/ɨ/	/u/	/ɛ/	/a/	/ɔ/
head [-ATR]	[i]	[ɨ]	[u]	[ɛ]	[a]	[ɔ]
non-head [+ATR]				[e]	[ə]	[o]

(87)

not phrase-final	*phrase-final CV.CVV*		*phrase-final CV.CVC*	
[pɛ́p]	[pépɛ́ɛ]	‘god’	[pépɛ́ŋ]	‘God’
[gɔ̀l]	[gɔ̀lɛ̀ɛ]	‘to look’	[gɔ̀lɔ̀ŋ]	‘looked’
[tár]	[tə́ráa]	‘a run’	[fə́láŋ]	‘found’

This allophony can be analyzed as a case of vowel reduction, the [-ATR] vowels being on average longer than the [+ATR] ones by approximately 20 ms (50 ms versus 30 ms) (Pearce 2006: 266). Additionally, heads are realized with more intensity than non-heads, the former being on average louder than the latter by roughly 3 to 8 dB (Pearce 2006: 270–1, 2007a: 63). The foot is also a relevant domain for vowel harmony and tone assignment in Kera, as we will see in sections 4.4.5 and 4.4.6 below.

As noted by Pearce (2007b: 66–67), Hausa is claimed to possess a similar iambic structure independent from stress (Newman 2000; Schuh 1989, 1999): “It is possible that the foot structure does play a part in several Chadic languages but that they are yet to be analysed in this way” (Pearce 2006: 261–2).

5.4.3.4. Interplay between prominence and vowel harmony

It has been noted that prominence often plays an important role in vowel harmony, for example, the prominence of roots over suffixes in so-called "root control" (cf. section 3.2.1.1 above). Beckman (1997) developed the notion of "positional faithfulness" to account for the fact that only stem-initial vowels trigger height harmony in Shona.

Shona has five contrastive vowels. All five vowels are attested in the initial root syllable of verb stems, but only a subset are attested in the following syllables, as summarized in.

(88) Shona

Initial Root σ		Internal V's (extensions)		Final V morpheme
i	u	i~e	u~o	
e	o			-e
a		a		-a

As can be seen, the opposition between high and mid vowels root-internally is fully predictable: it is conditioned by a vowel height harmony typical of many Bantu languages, schematized in (89) (Hyman 1999, cf. section 3.2.1.3 above).

(89) a. Front height harmony: i → e / {e, o} C___
b. Back height harmony: u → o / o C___

Examples (90) and (91) below illustrate the application of front height harmony (89a) when a verb root combines with the applicative (*-ir/-er*) and causative (*-is /-es*) extensions, respectively: the examples in (90b) and (91b) show the effect of a root mid vowel on the vowel of the extension.

(90) Shona

a.	ip-a	'be evil'	ip-ir-a	'be evil for/at'
	svetuka	'jump'	svetuk-ir-a	'jump for/at'
	ʃata	'hold'	ʃat-ir-a	'hold for/at'
b.	per-a	'end'	per-er-a	'end for/at'
	sona	'sew'	son-er-a	'sew for/at'

(Beckman 1997, based on Fortune 1955)

(91) Shona

a.	kwir-a	'climb'	kwir-is-a	'make climb'
	bvum-a	'agree'	bvum-is-a	'make agree'
	pamh-a	'do again'	pamh-is-a	'make do again'
b.	sek-a	'laugh'	sek-es-a	'make laugh'
	om-a	'be dry'	om-es-a	'make to get dry'

(Beckman 1997, based on Fortune 1955)

Beckman argues that the absence of a high–mid opposition internally to the verb stem is due to the fact that mid vowels are only licensed in the stem-initial syllable. Mid vowels are analyzed as being in general more marked than both high and low vowels, and they owe their contrastive status stem-initially to a strong requirement that the underlying height of the stem-initial vowel not be changed. Couching her analysis in Optimality Theory, Beckman translates the vowel height markedness scale into the markedness constraint hierarchy: *MID >> *HIGH, *LOW, i. e. the ban against mid vowels is stronger in Shona than the ban against high and low vowels. The reason why mid vowels not only surface but are contrastive stem-initially is because of a highly ranked positional faithfulness constraint preventing any change to the [high] feature of the stem-initial vowel: IDENT-σ_1(hi) >> *MID >> *HIGH, IDENT(hi), i. e., mid vowels are more marked than high vowels, but systematically protected and kept in stem-initial position. Consequently, only the stem-initial vowel, the only one that is contrastive for [high], can condition the harmony: the interaction of *MID, *HIGH and IDENT(hi) favors both outputs without any mid vowel and outputs where the stem-initial and stem-internal vowels agree in [high]. Since the stem-initial vowel is protected by IDENT-σ_1(hi), the only way to satisfy the latter requirement without modifying the stem-initial mid vowel is to make the stem-internal vowel agree with it in [high], i. e., to allow a stem-internal mid vowel.

Another case of vowel harmony that could lend itself to such an analysis is the Laal high-harmony seen in (42) above, although in that case stem-initial faithfulness does not account for the other two harmonies (low and rounding, cf. [43], [44] and [45] above), which target the intial vowel and thus seem to contradict the very idea of stem-initial faithfulness.

Pearce (2006: 270–272, 2007a: 80–129) shows that one of three types of vowel harmony attested in Kera is sensitive to metrical structure: the central vowels /a, ɨ/ are systematically fronted to /e, i/ by a front suffix, on the condition that both be in the same iambic foot (independently necessary, cf. section 4.4.3), as illustrated in (92).[21]

(92)

	Imperative *Verb* + la	*Imperfective* *Verb* + -ɛ́	*Front harmony*
a.	(dʒɛ̀l) là	(dʒɛ̀lɛ̀ɛ)	*n/a (non-central V)*
	(dìg) là	(dìgíi)	*n/a (non-central V)*
b.	(bàl) là	(bɛ̀lɛ̀ɛ)	a > e
	(bìŋ) là	(bìŋìi)	ɨ > i
c.	(bàa)(d-ɨ̄ làa)	(bàa)dɛ̀	*n/a (different foot)*
	(ɨ̄s)(k-ɨ̄ láa)	(ɨ́s)kí	*n/a (different foot)*

[21] Note that in *dìgíi*, *bìŋìi* and *ɨ́skí*, the suffix /-ɛ́/ harmonizes in height with the previous vowel. This height harmony, applying between root and suffix, is independent of foot structure.

(92)	*Imperative* *Verb* + la	*Imperfective* *Verb* + -ɛ́	*Front harmony*
a.	(dʒɛ̀l) là	(dʒɛ̀lɛ̀ɛ)	*n/a (non-central V)*
	(dìg) là	(dìgíi)	*n/a (non-central V)*
b.	(bàl) là	(bɛ̀lɛ̀ɛ)	a > e
	(bɨ̀ŋ) là	(bɨ̀ŋɨi)	ɨ > i
c.	(bàa)(d-ɨ̀ làa)	(bàa)dɛ̀	*n/a (different foot)*
	(ɪ̄s)(k-ɪ̄ láa)	(ɪ́s)kí	*n/a (different foot)*

As can be seen, Front harmony applies in (92b), where both vowels are in the same foot, but not in (92c), where this condition is not met.

5.4.3.5. Interactions between metrical structure and tone

Interactions between tone and metrical structure have been noted in a few African languages (cf. Pearce 2013: 132 for references about both African and non-African languages). Leben (1997, 2001, 2003) argues that the metrical foot may be a domain of tone-assignment (a "tonal foot"), on the basis of data from Bambara (aka Bamanankan) and Hausa. In loanwords from English, for instance, Hausa constructs a binary foot starting with the stressed syllable of the English word. The transition between the stressed and the following unstressed syllable(s) in English is translated into a transition between H and L tone. The H tone is assigned to the foot thus created, and unfooted material receives a default L tone, as shown in (93a). If there is no unfooted material following the tonal foot, the L tone necessary to achieve the HL transition is inserted at the right edge of the tonal foot, as illustrated in (93b), (93c) and (93d).

(93) Hausa

a. ˈmessenger → (máásín)jà Niˈgeria → nà(jéérí)yàà
H L L H L

b. ˈgovernor → (gwámnà)
H L

c. guaranˈtee → gàràn(tíì)
L HL

d. ˈtimeˌkeeper → (tâŋ)(kíifàa)
HL H L

(Leben 2001)

The fact that the pitch drop in (93a) does not occur on the same syllable as in the original English words (i. e., on the syllable immediately following the stressed syllable) provides clear evidence that tone is not used in Hausa to simply mimic English intonation, and it thus justifies Leben's foot-based analysis.

Pearce (2006, 2013: ch. 4) analyzes in detail the very interesting case of Kera,

where the TBU is either the syllable (in disyllabic words), or the (iambic) foot (in words of three syllables and more). As can be seen in Table 10, metrical structure is irrelevant in disyllabic words, where tones associate to syllables.

Table 10: Tone melodies on Kera disyllabic words (Pearce 2013:136)

	2σ, 1Ft		**2σ, 2Ft**		**2σ, 1Ft + 1 unfooted σ**	
	(σ σ̲) \ / T		(σ̲) (σ̲) \ / T		(σ̲) σ \ / T	
L	(gèdɛ̀l)	‘mud’	(gɔ̀r)(nɔ̀y)	‘hyena’	(bɔ̀ɔ)bɛ̀	‘start of dry season’
M	(kélɛ̄w)	‘flute’	(kɛ̄f)(tɛ̄r)	‘book’	(lāā)wɛ̄	‘sadness’
H	(kókɔ́y)	‘muts’	(cúŋ)(kúy)	‘spear’	(tɔ́ɔ)má	‘snake’
	(σ σ̲) | | T_1 T_2		(σ̲) (σ̲) | | T_1 T_2		(σ̲) σ | | T_1 T_2	
LH	(gùɓúː)	‘stand for pots’	(gɨ̀ɨ)(gúr)	‘chickens’	(màs)ká	‘uncultivated land’
HL	(gégɛ̀l)	‘basket, cage’	(máa)(hùr)	‘flute’	(lám)bà	‘taxes’
MH	(sōlɔ́y)	‘money’	(kār)(mán)	‘thing’	(sɛ̄s)ká	‘star’
HM	(kítīr)	‘moon’	(kɔ́s)(lɔ̄m)	‘laziness’	(fár)tā	‘skirt’

For trisyllabic and longer words however, tone melodies associate with feet, as shown in (94): each tone in a bitonal melody is assigned to the head of a separate iambic foot, then spreads within that foot. No tone spreading is allowed across feet.

(94) Kera

a.	(dàk) | L	(tə́láw) ⌝ H	‘bird *sp.*’	*(dàk) ⌞---⌝ L	(tə̀láw) | H
b.	(sáa) | H	(tərāw) ⌝ M	‘cat’	*(sáa) ⌞---⌝ H	(tə́rāw) | M
c.	(kúɓúr) ⌝ H	(sīː) | M	‘coal’	*(kúɓūr) | ⌝ H	(sīː) ⌟ M
d.	(gə̀dàà) ⌝ L	(mɔ́ː) | H	‘horse’	*(gə̀dáá) | ⌝ L	(mɔ́ː) ⌟ H

(Pearce 2013: 142)

Interesting interactions between tone and metrical structure are also attested in Moro, where Jenks and Rose (2011) show that the distribution of H tone is sensitive to a number of morphological and prosodic factors, including metrical structure: H tones spread rightward on verbs within a binary foot. Similar foot-based analyses of tone doubling (i. e., local spreading of a tone to one adjacent syllable only) have been proposed for many other languages, including the African languages Suma (Bradshaw 1998), Lamba (Bickmore 2003; de Lacy 2002), Northern Karanga Shona (Topintzi 2003), and Bambara (Leben 2003; Weidman and Rose 2006) (all cited in Jenks and Rose 2011). Pearce (2006: 262) mentions that "a number of [Chadic languages] display signs of possible metrical and tonal interaction [e. g., Mukulu, Migaama, Masana, most Central Chadic languages], and … further investigation of the phenomenon within this language family is merited". Such a comment certainly applies to all tonal languages of sub-Saharan Africa, many of which are still poorly known.

5.4.3.6. Similar unresolved issue: the Tiene case

Some templatic developments can be quite mysterious. Tiene, a Bantu Language of the Teke group, closely related to Teke-Kukuya, restricts stems (consisting of a root + possible suffixes) as in (95):

(95) The "prosodic stem" in Tiene
  a. Five shapes: CV, CVV, CVCV, CVVCV, CVCVCV
  b. In case of $C_1V_1C_2V_2C_3V_3$:
    i. C_2 must be coronal
    ii. C_3 must be non-coronal
    iii. C_2 and C_3 must agree in nasality
    iv. V_2 is predictable (with few exceptions)
    (Ellington 1977; Hyman 2010)

As seen, the Tiene stem, like Teke-Kukuya or Basaá, may consist of up to three syllables. When trisyllabic, there are severe restrictions on the distribution of the second and third consonants: coronals must precede labials and velars. When a coronal suffix such as causative -Vs- or applicative -Vl- threatens to produce the reverse order, the /s/ or /l/ appears to metathesize with the final labial or velar consonant:

(96)	a.	lab-a	'walk'	→	lasab-a	'cause to walk'
		lók-a	'vomit'	→	lósek-ɛ	'cause to vomit'
	b.	dím-a	'become extinguished'	→	díseb-ɛ	'extinguish (tr.)'
		yóm-a	'become dry'	→	yóseb-ɛ	'make dry'

(97) a. yɔb-ɔ ‘bathe’ → yɔlɔb-ɔ ‘bathe for’
bák-a ‘reach’ → bálak-a ‘reach for’

b. dum-a ‘run fast’ ‘load’ → dunem-ɛ ‘run fast for’
lɔŋ-ɔ → lɔnɔŋ-ɔ ‘load for’

The examples in (96b) and (97b) show that C2 and C3 must agree in nasality. Thus, stem- /m/ denasalizes in the presence of causative -Vs-, and /l/ nasalizes in the presence of root /m/. While there are a number of ways one might account for the CVTV{P,K}- template (cf. Hyman and Inkelas 1997), it is not at all obvious what the historical motivation was for the observed place-driven metathesis. Based on the limited documentation available, Hyman (2010) shows that there is considerable variation in the templatic properties of CVCVCV stems in the Teke group to which Tiene most likely belongs. What is clearly called for is a comparative study of the group, first to establish what is versus is not attested, and then to resolve the question of how and why such requirements are placed on trisyllabic stems. (There are no corresponding restrictions on the C2 of bisyllabic stems.)

5.5. Interface phenomena

5.5.1. Syntax–phonology interface

From early generative phonology to the present, African languages have also been central in the study of the syntax–phonology interface. Among the earliest and most informative documentations of this interaction are Kisseberth and Abasheikh’s (1974) treatment of syntactically conditioned vowel length alternations in Mwiini and Clements’s (1978) analysis of syntactically conditioned tonal alternations in Ewe. In Mwiini for example, vowel length is underlying contrastive, as shown in (98).[22]

(98) Mwiini

shta:wa	‘clay pot’	*shtawa*	‘fish *sp.*’
kuba:rama	‘to talk’	*kubalama*	‘to promise’
xtu:fa	‘to go around the *ka’aba*’	*xtufa*	‘to spit’

(Kisseberth and Abasheikh 1974: 194)

However, vowel length is also culminative within the syntactic-prosodic phrase, where only one long vowel is allowed, in either antepenultimate or penultimate position. Any long vowel that does not occupy the (ante)penultimate position is shortened. Long vowels may be lexical, or derived in three ways: pre-clitic lengthening (before certain clitics, e. g., the second-person plural imperative *-ni* in

[22] The examples taken from Kisseberth and Abasheikh (1974) are not marked for tone.

[99b]);[23] word-final lengthening (any word within a phrase ends in a long vowel if it is not phrase-final, and if its last syllable is in (ante)penultimate position, as in [99c]); and vowel coalescence across a morpheme boundary (CV_1-$[V_2\ldots]_{stem}$ > C-$[V_2$:$\ldots]_{stem}$, as in [100a]). Note that when both the antepenult and the penult are long, only the latter is realized long, as shown in (99b) and (100b).

(99) Mwiini

a.	/soːma/	‘read’	
b.	[somaː=ni]$_{\phi}$	‘read (pl)!’	*pre-clitic lengthening*
c.	[soma=niː chuwo]$_{\phi}$	‘read (pl)!) a book!’	*word-final lengthening*
d.	[soma=ni chuwo ichi]$_{\phi}$	‘read(pl)! this book!’	*no underlying/ derived long vowel in (ante)penultimate position*

(Kisseberth and Abasheikh 1974: 199–200)

(100) Mwiini

a.	/si-oloke/	[s-oːloke]$_{\phi}$	‘don’t go!’	*VV coalescence*
b.	/si-oloke-ni	[s-olokeː=ni]$_{\phi}$	‘don’t go (pl)!’	*pre-clitic lengthening*

(Kisseberth 2010)

The phrasal nature of the domain is clear in (99b) and (99c), where the domain of vowel length restriction is the whole verb + object sequence. The examples in (101) illustrate a few other phonological phrases and phrase boundaries in Mwiini, supporting the claim that the realization of vowel length is heavily constrained by prosody.[24]

(101) Mwini

a.	/mp^{h}aka	choːndoka	| mp^{h}an̲a	hut̲awala/	*(clauses separated by |)*
	[mp^{h}aka	choːndoka]$_{\phi}$	| [mp^{h}an̲a	hut̲awala]$_{\phi}$	
	*[mp^{h}aka	chondoka	| mp^{h}an̲a	hut̲awala]$_{\phi}$	
	cat	leaves	rat	take.over	
	‘When the cat leaves, the rat takes over.’				
b.	[maskiːni]$_{\phi}$	[haːt̲ali]$_{\phi}$			
	poor	not.choose			
	‘A poor man does not choose.’				

[23] Kisseberth and Abasheikh (1974) analyze this clitic as a suffix.

[24] The original examples are not glossed. We added very approximative glosses for the sake of clarity.

c. /d̲awa ya mulo ni mulo/
[d̲awa ya: mulo]$_{\phi}$ [ni: mulo]$_{\phi}$
remedy for fire is fire
'The remedy for fire is fire.'

d. /panzize cho:mbo mwa:mba/
[panzize cho:mbo]$_{\phi}$ [mwa:mba]$_{\phi}$
*[panzize chombo [mwa:mba]$_{\phi}$
he.ran vessel rock
'He ran the vessel onto the rock.'

e. /nimwand̲ikilile Nu:ru xati/
[nimwand̲ikilile Nu:ru]$_{\phi}$ [xati]$_{\phi}$
*[nimwand̲ikilile Nuru: xati]$_{\phi}$
I.wrote Nuru letter
'I wrote Nuru a letter.'
(Kisseberth and Abasheikh 1974: 202, 204)

As can be seen, a phonological phrase may not include or straddle two different clauses (101a); the subject is phrased separately from the verb (101b) and (101c); the copula is phrased together with its complement (101c); oblique complements are phrased separately from the Verb+Object phrase (101d); and in double object constructions, the first (indirect) object is phrased with the verb, like a regular object, while the direct object is phrased separately, like an oblique.

Studies such as these informed Chen's (1987) approach to Xiamen tone sandhi, from which Selkirk (1986) generalized her end-based theory of derived domains, based largely on Mwiini. Several of the contributions in *Phonology Yearbook 4* (1987) and Inkelas and Zec (1990) deal with the syntax–phonology interface in African languages. Both Kaisse (1985) and Hayes (1987) cite earlier manuscript versions of Odden (1987) on the phrasal phonology of Matumbi to support their views on this interface. Subsequent work by Kanerva (1990a, 1990b), Truckenbrodt (1995, 1999), Zerbian (2007), Downing (2008), and others have provided important advances in our understanding of interactions between phonological phrasing, syntactic representation, and focus based on Bantu languages such as Chewa, Mwiini, Matumbi, Tumbuka, Northern Sotho and Zulu.

The remainder of this section is devoted to more puzzling cases of interplay between phonology, morphology and syntax, which tend to obscure the boundaries between these three domains in many African languages, and seem to challenge their very definition. We will concentrate on three particularly interesting phenomena: intriguing cases of tonal morphology (5.5.2), dependent and construct states (5.5.3), and phonologically conditioned mobile affixation (5.5.4).

5.5.2. Tonal morphology

Although African tone systems played a crucial role in shaping modern phonology through the autosegmental revolution, as we saw in section 3, subsequent theoretical innovations, most notably within Optimality Theory (Prince and Smolensky 1993), have largely been based on other phonological phenomena: segmental phonology, stress, syllabification, reduplication, etc.[25] However, the general properties of tone make it particularly well suited for probing the limits of phonology, and testing any phonological theory. One crucial property in this respect is the fact that tonal processes apply at both word and phrase levels: while other prosodies (e. g., vowel, consonant, and nasal harmony, featural affixes) are typically word-bound, and often root-controlled, tone knows no such limitations. The consequences of this property go far beyond the role of tone in the interface between phonology and syntax, as we will show here. Tone gives rise to complex, productive, lexical and postlexical phonology, but also to complex morphology. Tonal morphology, as attested in numerous African languages, challenges our view of grammar: not only can it do anything that non-tonal morphology can do, as we saw in section 3, it can do more than non-tonal morphology, and thus often blurs the boundaries between phonology, morphology and syntax.

5.5.2.1. Non-segmentable tonal morphemes

In section 3.1.1.3, we saw that tonal morphemes could be prefixes, suffixes, clitics or independent words. The Eton (15–18) (Van de Velde 2009) and Abo (aka Bankon) (19–23) (Hyman and Lionnet 2012) examples illustrated cases where tonal morphemes were easily segmentable. However, it is not always possible to segment tonal exponents, which may in some cases be subject to different possible interpretations, as shown by the examples in (102) from Kunama, where the number distinction on possessive determiners is purely tonal: L in the singular, H in the plural.

(102) Kunama

	a. *paradigmatic*		b. *[[pers.]-number]*		c. *[[number-[pers.]]*	
	sg.	*pl.*	*sg.*	*pl.*	*sg.*	*pl.*
1st pers. incl.		-íŋ-		-iŋ-H-		-H-iŋ-
1st pers. excl.	-àaŋ-	-áaŋ-	aaŋ-L-	-aaŋ-H	-L-aaŋ-	-H-aaŋ-
2nd pers.	-èy-	-éy-	-ey-L-	-ey-H-	-L-ey-	-H-ey-
3nd pers.	-ìy-	-íy-	-iy-L-	-iy-H-	-L-iy-	-H-iy-

(Connell, Hayward and Ashkaba 2000: 17)

[25] There have been some interesting applications in Optimality Theory (Prince and Smolensky 1993; McCarthy 2002), for example Myers's (1997) treatment of the Obligatory Contour Principle (OCP), or the Theory of Tone Mapping developed by Zoll (2003).

As seen, one could equally analyze the number-marking tonal suffixes -L- and -H- as being ordered after the person suffixes as in (102b) or before them as in (102c). The impossibility of segmenting tonal morphemes unambiguously poses problems to generalizations such as Trommer's (2003: 284) statement that number agreement should be maximally rightwards and person agreement maximally leftwards.[26]

"Replacive" tone (Welmers 1973: 132–3) offers another case of non-segmentable tonal morphology, as illustrated by the Kalabari examples below. As seen, detransitivization of a transitive verb is obtained through imposition of a LH melody on the verb, irrespective of its underlying tonal melody:

(103) Kalabari

	Transitive					
a.	kán	H	'tear, conquer'	kàán	LH	'tear, be conquered'
b.	kɔ̀n	L	'judge'	kɔ̀ɔ́n		'be judged'
c.	ányá	H-H	'spread'	ànyá	L-H	'be spread'
d.	dîmà	L-L	'change'	dîmá		'change'
e.	sá↓kí	H-↓H	'begin'	sàkí		'begin'
f.	kíkímà	H-H-L	'hide, cover'	kìkìmá	L-L-H	'be hidden, covered'
g.	párìrí	H-L-H	'answer'	pàkìrí		'be answered'
h.	gbóló↓má	H-H-↓H	'join, mix up'	gbòlòmá		'be joined, mixed up'

(Harry and Hyman 2014)

While it is impossible to segment the LH melody of the intransitive forms in the Kalabari examples in (103), the Laal examples in (104) show how such non-segmentable replacive tonal melodies might emerge historically from affixes. In Laal, the gerund suffix has two allomorphs:[27] a copy of the root vowel with consonant-final verbs, and Ø with vowel-final verbs.[28] Both allomorphs impose an L-tone melody on the whole verb form, irrespective of the underlying tone of the verb. As seen, the replacive L-tone on Laal vowel-final verbs in (104b) clearly originates in the effect of a suffix, which is still attested with consonant-final verbs (104a).

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[26] See also Hawkins and Gilligan (1988), who indicate that languages show a clear suffix tendency for marking number (as well as gender, case, indefiniteness, nominalization, mood, tense, aspect, valence, causative), vs. Enrique-Arias (2002) who suggests that person marking favors prefixation.

[27] This suffix is used when the gerund is followed by a syntactic object NP *in situ*, i. e. not extracted or elided (Lionnet 2015).

[28] This is true of CVC, CVCVC and CV(:)CV, CVCCV verbs respectively. A few complications arise with verbs of other shapes.

(104) Laal

a. Segmental allomorph with C-final verbs:

	basic		*gerund (tr.)*	
H	sór	→	sòr-ò	'find'
M	pīg	→	pìg-ì	'tie'
L	jàr	→	jàr-à	'cut'
LH	sə̌ny	→	sə̀ny-ə̀	'fight'
HL	págàr	→	pàgr-à	'think' (+V_2 deletion)

b. Tonal allomorph with V-final verbs:

	basic		*gerund (tr.)*	
H	tíwá	→	tìwà	'weave (sp.)'
M	yīrā	→	yìrà	'know'
L	gùmà	→	gùmà	'call'
LH	gùlí	→	gùlì	'turn around'

(NB: there is no attested V-final HL transitive verb)
(Lionnet 2015)

5.5.2.2. Tone cases

Tone case systems, attested in several African languages, notably in the Nilotic and Southwest Bantu groups, offer particularly complex cases of non-concatenative tonal morphosyntax that still constitute analytical challenges. Maasai is a famous example of a language that uses tone to mark nominative versus accusative case, as shown in Table 11.

Table 11: Tone cases in Maasai (Nilotic) (Tucker and Ole Mpaayei 1955: 177–184; Bennett 1974; Plank 1995: 59–62)

	Nominative	***Accusative***		***Nom. vs. acc. patterns***
Class I	èlòkònyá èncòmàtá	èlókónyá èncómátá	'head' 'horse'	L^n-H vs. L-H^n
Class II	èndéròní ènkólòpà	èndèróní ènkòlópà	'rat' 'centipede'	H on σ1 vs. σ2
Class III	òlmérégèsh òlósówùàn	òlmérègèsh òlósòwùàn	'ram' 'buffalo'	H on σ2 & σ3 vs. σ2
Class IV	òmótònyî òsínkìrrî	òmótònyî òsínkìrrî	'bird' 'fish'	No change

While the Maasai system above is relatively simple (only two cases, distinct in only three classes of nouns), the tone cases attested in Southwest Bantu languages

offer a much more complex picture. Consider the five distinct tone cases in Phende (Democratic Republic of Congo), an abridged version of which is presented in Table 12, and illustrated in Table 13 and Table 14 for di- and trisyllabic noun roots (based on unpublished work by Hyman and Mwatha Ngalasso in 1998).[29]

Table 12: Phende tone cases, given for di- and trisyllabic noun roots

	a. /L-L.L/	b. /L-L.L.L/	c. /L-L.H/	d. /L-L.H.L/	e. /L-H.L/	f. /L-H.H/	g. /L-H.H.L/	h. /L-H.H.H/
1	L-L.L	L-L.L.L	L-L.H	L-L.H.L	L-H.L	L-H.H	L-H.H.L	L-H.H.H
2	H-H.L	H-H.H.L						
3			H-L.H	H-L.H.L				
4					H-H.L	H.H-H	H-H.H.L	H-H.H.H
5			H-H.˩H	H-H.˩H.L	H-˩H.L	H-˩H.H	H-˩H.H.L	H-˩H.H.H

L- = noun prefix
1: Citation form, subject, object of negative infinitive, left dislocation
2: Focused object
3: Genitive, second object, object after negative verb, subject after relative verb
4: Predicative (‘it is …’)
5: Object after affirmative verb or *na* ‘with’

Table 13: Phende tone cases illustrated (part 1)

	a. /L-L.L/ ‘knife’	b. /L-L.L.L/ ‘luggage’	c. /L-L.H/ ‘basket’	d. /L-L.H.L/ ‘window’
1	gi-koto	gi-pidinga	gi-kunzú	ma-didíshi
2	gí-kóto	gi-pídínga		
3			gí-kunzú	má-didíshi
4				
5			gí-kú˩nzú	má-dí˩díshi

[29] In the interest of simplicity and legibility, only di- and tri-syllabic noun roots are illustrated here. Note that there is a sixth case, the vocative, which we do not discuss here.

Table 14: Phende tone cases illustrated (part 2)

	e. /L-H.L/ ‘rat *sp.*’	f. /L-H.H/ ‘broom’	g. /L-H.H.L/ ‘ladder’	h. /L-H.H.H/ ‘baby’
1	gi-ndémba	gi-kómbó	gi-kálélo	gi-tébélé
2				
3				
4	gí-ndémba	gí-kómbó	gí-kálélo	gí-tébélé
5	gí-ˈndémba	gí-ˈkómbó	gí-ˈkálélo	gí-ˈtébélé

As seen in the paradigms above, all but case 1 in Phende seem to involve an H- prefix, which, however, is realized differently in each case. In case 2, H- appears only if the stem is all L (a–b), and spreads from the prefix to the penult. In case 3, H- appears only if the stem begins L (a–d) and spreads to the penult if the stem is all L (a-b). In case 4, H- appears on all nouns, spreads onto all following L’s (a–d) and downsteps a following H. In case 5, H- appears on all nouns, only on the prefix, except when the stem is all L, in which case it spreads to the penult (a–b); it does not condition downstep.

Such a complex system lends itself to many different analyses: it could be interpreted in in terms of prefixal versus proclitic H tones, realizational morphology, or co-phonologies (Inkelas 2008, 2011) converting the underlyingly toneless prefix to H- as indicated in (105), with H- spreading to the penult if the noun stem is underlyingly toneless (assuming a privative /H/ versus Ø analysis of the tone system).

(105) A co-phonology account of Phende tone cases (where underlying Ø is represented as L in the interest of legibility)
- a. case 1: L- remains L- on all nouns (Ø → L)
- b. case 2: L- → H- unless there is a H anywhere in the stem, i. e., a skeleton-insensitive OCP(H) restriction
- c. case 3: L → H- unless there is a H in the first syllable of the stem to avoid a local, skeleton-sensitive OCP(H) restriction
- d. case 4: L- → H- in all nouns; the H spreads to the penult or up to a H, which is downstepped to avoid an OCP violation
- e. case 5: L- → H- in all nouns; the H spreads to the penult if the stem is all L, otherwise is realized only on the prefix, without downstepping the following H, the OCP violation thus being tolerated

It is not clear, however, what such a system is the manifestation of: as seen above, the contexts conditioning the use of cases 1–5 do not seem to form natural group-

ings and have as much to do with information structure as they do with grammatical relations. For example, case 1, the citation form, is used to mark the subject of a verb, the object of a negative infinitive, but also left dislocation. Since the five patterns can affect the realization of noun tones at the word level, this does seem to be morphology determined by phrasal conditions.[30]

5.5.2.3. Postlexical assignment of tonal morphemes

The examples of tonal morphology we have seen so far are all word-bounded. However, tonal morphology may extend beyond the word, blurring the boundaries between both lexical and postlexical processes, and phonology and morphosyntax.

Intriguing cases of non-phrasal, lexical and morphological tone assigned postlexically at the phrase level are attested in many African languages, in particular in /H, Ø/ Bantu languages. In Giryama, for example, the lexical H tone of a verb surfaces on the penultimate syllable of its syntactic object:

(106) Giryama

a.	ku-tsol-a	ki-revu	'to choose a beard'	/-tsol-/ 'choose'
b.	ku-on-a	ki-révu	'to see a beard'	/-ón-/ 'see'

H

(Philippson 1998: 321)

Mwiini offers a clear example of a tonal morpheme assigned at the phrase level. In this H-marked Bantu language spoken in Somalia, tone ("accent" in Kisseberth's terms) is only grammatical, and is limited to one H tone per phrase, on one of the last two moras. As can be seen by comparing (107) and (108), the final versus penultimate H tone that distinguishes first- and second-person subjects from third-person subjects is assigned postlexically at the phrase level, although it seems like it should be word- (or stem-) level (notice also the lengthening of the verb-final vowel before the object in [108]). Note that the realization of vowel length in (108) is subject to the prosodic requirement described in section 5.1 above.

(107) Mwiini

	pers.	*tone*	*singular*		*plural*	
a.	1st:	Final H	n-jiːlé	'I ate'	chi-jiːlé	'we ate'
b.	2nd:	Final H	jiːlé	'you sg. ate'	ni-jiːlé	'you pl. ate'
c.	3rd:	Penult H	jíːle	's/he ate'	wa-jíːle	'they ate'

(Kisseberth 2009, 2010)

[30] Other Southwest Bantu languages with tone cases include Kongo (Daelemann 1983), Umbundu (Schadeberg 1986) and Herero (Kavari, Marten and van der Wal 2012).

(108) Mwiini

a.	jile: n̪amá	'you sg. ate meat'
b.	jile: n̪áma	's/he ate meat'
c.	jile ma-tu:ndá	'you sg. ate fruit'
d.	jile ma-tú:nda	's/he ate fruit'

(Kisseberth 2009, 2010)

An even more intriguing case of postlexical morphological tone assignment comes from Kuria, which assigns an H tone to different moras of the verb stem (ignoring prefixes), depending on tense, aspect and mood. The H then spreads to the penultimate mora, as illustrated in (109) (where "[" represents a stem-initial boundary).

(109) Kuria

a.	*μ1*	n-to-o-	[hó̲ótóótéér-a	'we have reassured'	*Past*
b.	*μ2*	n-to-o-	[hoó̲tóótéér-a	'we have been reassuring'	*Past prog.*
c.	*μ3*	n-to-re-	[hootó̲ótéér-a	'we will reassure'	*Future*
d.	*μ4*	to-ra-	[hootoó̲téér-a	'we are about to reassure'	*Inceptive*

(Marlo et al. 2015)

The examples in (110) illustrate verbs of different sizes (from one to four moras) in the inceptive form, which assigns an H tone on the fourth mora of the verb stem. As seen in (110b), when the stem is one mora short, a rising tone is obtained. When it is more than one mora short, as in (110c) and (110d), the final L tone is not realized as a L falling tone, which is the default realization of final L tones, but as a level tone L^{o}, which betrays the presence of a following floating H tone.

(110) Kuria

			H tone assignment
a.	to-ra-[karaaŋg-á	'we are about to fry'	[karaaŋg-á̲
b.	to-ra-[sukură	'we are about to rub'	[sukur-a *μ́*
c.	to-ra-[βun-a^{o}	'we are about to break'	[βun-a *μ μ́*
d.	to-ra-[ry-a^{o}	'we are about to eat'	[ry-a *μ μ μ́*

(Marlo et al. 2015)

When the following word[31] is underlyingly toneless, some speakers count its moras and the TAM-dependent H tone is assigned accordingly, and then spreads to the penultimate mora of the whole phrase, as shown in the following example with the sequence Inceptive verb + /eɣetɔɔkɛ/ 'banana'.

[31] The word following the verb may be a locative enclitic, a second infinitival verb, the negative marker *hai*, or a noun (Mwita 2008; Marlo et al. 2009).

(111) Kuria

a.	to-ra-[karaaŋg-á̲	éɣétɔ́ɔ́kɛ	‘we are about to fry a banana’
b.	to-ra-[sukura	é̲ɣétɔ́ɔ́kɛ	‘we are about to rub a banana’
c.	to-ra-[βun-a	eɣé̲tɔ́ɔ́kɛ	‘we are about to break a banana’
d.	to-ra-[ry-a	eɣetɔ̰́ɔ́kɛ	‘we are about to eat a banana’

(Marlo et al. 2015)

Once again, H-tone assignment seems as if it should be word-level morphology (or stem-level, since the prefixes are irrelevant), but it is actually calculated at the phrase level. Such examples of “wandering morphs” are extremely intriguing: is this a case of incorporation? Postlexical cophonology? More research is definitely needed on such phenomena, which may change our definition of phonology and its limits.

5.5.2.4. Construction tonology

The last case of morphological tonology challenging current theoretical approaches to phonology and interface phenomena is what Harry and Hyman (2014) term “construction tonology”, i.e., morphosyntactically governed replacive tonal overlays (cf. McPherson 2014b). Replacive tone assigned by word-level morphological constructions, illustrated in (103) above, is a relatively common phenomenon. It is far less common for such tonal overlays to be syntactically governed. At least two cases have been reported in Africa in the recent literature: Kalabari and the Dogon languages of Mali.[32]

In Kalabari, a head-final language, the noun appears finally within the NP, followed by the definite article. Whenever the noun is non-initial, it loses its tones and receives one of four “melodies” depending on the word class of the preceding specifier/modifier (the “controller”, in McPherson’s [2014b] terms). Thus the /H-H-H/ tone of /ɓúrúmá/ ‘indigo’ has the four realizations shown in (112) (both ` and unmarked = L).[33]

(112) Kalabari

	controller	*controllee tone*	*example* (ɓúrúmá ‘indigo’)	
a.	Nposs	HL	tʊɓɔ ɓurúmà	‘the child’s indigo’

[32] Different replacive tone melodies can also be assigned by specific lexical items in other Ijo lects and at least two non-African languages: Urarina (Isolate, Peru; Olawsky 2006), and Yagaria (Trans-New Guinea; Ford 1993), analyzed and compared to Kalabari and Dogon in Harry and Hyman (2014).

[33] We will only focus on the replacive tones within the Kalabari noun phrase here. See Harry and Hyman (2014) for more detail about replacive grammatical tone in the Kalabari verb phrase. In the following examples, L tone is marked (`) only when it is assigned by melody; other L TBUs lack an accent.

b. PROposs HLH (→ H-ˈH) ɪna ɓurúˈmá ‘their indigo’
c. Det LH tɔ ɓùrumá ‘which indigo?’
d. Quant/Num L ja ɓùruma ‘some indigo’
(Harry 2004; Harry and Hyman 2012; Hyman 2013)

The following table shows that the five tonal patterns found on bisyllabic nouns neutralize and receive the indicated construction-specific tones.

Table 15: Construction tonal overlays in Kalabari

			‘the child’s’ (HL)	‘their’ (HLH)	‘which’ (LH)	‘some’ (L)
H-H	námá	‘meat’	tʊɓɔ námà	ɪna náˈmá	tɔ nàmá	ja nàma
L-L	pulo	‘oil’	tʊɓɔ púlò	ɪna púˈló	tɔ pùló	ja pùlo
H-L	béle	‘light’	tʊɓɔ bélè	ɪna béˈlé	tɔ bèlé	ja bèle
L-H	garí	‘garri’	tʊɓɔ gárì	ɪna gáˈrí	tɔ gàrí	ja gàri
H-ˈH	ɓáˈrá	‘hand’	tʊɓɔ ɓárà	ɪna ɓáˈrá	tɔ ɓàrá	ja ɓàra

The four overlays do not map onto longer nouns in the same way. The HL and HLH melodies link to the last two syllables of trisyllabic nouns (the tone of the initial syllable agrees with the final tone of the controller), as illustrated in (113a) and (113b). The initial L of the LH melody imposed by determiners links to the initial syllable of the noun, while the H tone goes on the last syllable. (Any intervening syllables are also L.) Finally the quantifier-/numeral-controlled L melody is assigned to the whole noun.

(113) Kalabari

a.	$\text{Noun}_{\text{poss}}$ +Noun^{HL}			*‘my’*	*‘your (sg.)’*
	lubulu	‘sheath’	L-L-L	i lubúˈlú	í lúbúˈlú
	ɓúrúmá	‘indigo’	H-H-H	i ɓurúˈmá	í ɓúrúˈmá
	kʊ́kalí	‘fruit’	H-L-H	i kʊkáˈlí	í kʊ́káˈlí
b.	Pro_{poss} + Noun^{HLH}			*‘child’s’*	*‘bird’s’*
	lubulu	‘sheath’	L-L-L	tʊbo lubúlù	féní lúbúlù
	ɓúrúmá	‘indigo’	H-H-H	tʊbo ɓurúmà	féní ɓúrúmà
	kʊ́kalí	‘fruit’	H-L-H	tʊbo kʊkálì	féní kʊ́kálì
c.	Dem + Noun^{LH}			*‘this’*	*‘these’*
	lubulu	‘sheath’	L-L-L	mí lùbulú	míˈná lùbulú
	ɓúrúmá	‘indigo’	H-H-H	mí ɓùrumá	míˈná ɓùrumá
	kʊ́kalí	‘fruit’	H-L-H	mí kʊ̀kalí	míˈná kʊ̀kalí

d. Quant/Num + Noun^{L}

lubulu	'sheath'	L-L-L	tɔ̃wá lùbulu	sɔ́ná lùbulu
ɓúrúmá	'indigo'	H-H-H	tɔ̃wá ɓùruma	sɔ́ná ɓùrùmà
kókalí	'fruit'	H-L-H	tɔ̃wá kò̰kalı	sɔ́ná kò̰kalı

(Harry 2004; Harry and Hyman 2012; Hyman 2013)

Harry and Hyman (2014) argue that although they apply to entire syntactic phrases, such tonal assignments have all of the properties of morphological rules. Such data raise two types of questions. First, how should the constructional tones be analyzed synchronically: i. e., how are they assigned, and how do they (potentially) interact with each other? The second question is why Kalabari has constructional tones: what is their relationship to what is found in other languages, and where do they come from, diachronically? Although much research is still needed on this fairly recently discovered phenomenon, elements of answers, mainly to the first question, have already been proposed, as we will see in the following paragraphs.

When the controller is followed by several nouns (Controller +N1 +N2), the tonal overlays map over the whole sequence of nouns, as shown in (114) for the three complex melodies HL, HLH and LH (the melody assignment domain is underlined).

(114) Kalabari

a. Noun$_{poss}$ + [N1+N2 …]^{HL}

tʊɓɔ +fɛ́ní +námá	→	tʊɓɔ	fení nàma	'the child's bird's meat'
			H L	
fɛ́ní +minji +kúkú	→	fɛ́ní	mínjí kùku	'the bird's water pot'
			H L	

b. Poss + [N1+N2 …]^{HLH}

ɪ +fɛ́ní +námá	→	i	fení nàmá	'my bird's meat'
			H L H	
í +minji +kúkú	→	í	mínjí kùku	'your sg. water pot'
			H L	
ɪ +fɛ́ní +minji +kúkú	→	i	fení mìnji kukú	'my bird's water pot'
			H L H	
í +tʊɓɔ +sírɪ +námá	→	í	tʊ́bɔ́ sìrɪ namá	'your sg. child's leopard meat'
			H L H	

c. Dem + [N1+N2 …]^{LH}

mí +fɛ́ní +námá	mí	fèni namá L H	‘this bird’s meat’
mí +minji +kúkú	mí	mìnji kukú L H	‘this water pot’
mí +fɛ́ní +minji +kúkú	mí	fèni minji kukú L H	‘this bird’s water pot’
mí +tʊɓɔ +sírɪ +námá	mí	tʊ̀bɔ sɪrɪ namá L H	‘this child’s leopard meat’

(Harry and Hyman 2014)

In complex noun phrases, e. g., when multiple modifiers imposing different competing overlays precede the head noun, two options are attested. Usually, the first modifier imposes its tone melody on the following sequence of modifier(s)+Noun. Alternatively, with the HLH and L melodies, a default HL melody may be assigned.

Very similar syntactically governed tonal overlays are attested in the Dogon languages. Limiting ourselves once again to the noun system, we will take examples from Jamsay (Heath 2008) and Tommo So (McPherson 2014b; Heath and McPherson 2013; McPherson and Heath 2014).[34] In both languages, two tonal overlays are attested that are imposed by similar morphosyntactic constructions: adjectives, demonstratives and relative clauses impose an L melody on the noun they modify, while possessors impose an H(L)[35] melody on a following (inalienable) head noun. Note that these processes are neutralizing, as can be seen in (116c) and (116d) and (117b) and (117c), where both *náá* ‘mother’ and *nàá* ‘cow’ surface as nàà before *èsú* ‘pretty’ and *nɔ́* ‘this’ in Tommo So.

(115) Syntactically governed tone overlays in Jamsay and Tommo So nouns
a. L : [NounL + Adj/Dem]
[NounL + Rel. clause], internal head noun of relative clause
b. H(L) : [Poss NounHL], inalienable noun after possessor[36]
(Heath 2008: 106; McPherson 2013)

[34] Heath (2008: 106) mentions other cases of tonal overlays affecting nouns, which we leave aside here, since they do not seem to be as clearly governed by the syntactic environment.

[35] This overlay is always realized HL in Jamsay. In Tommo So it is realized H on nouns of one to two moras, and HL on nouns of more than two moras.

[36] Only with pronominal possessors in Tommo So.

(116) Jamsay, Tommo So
Noun + Adj: L overlay
a. /úró + jɛ́m/ → ùrò^{L} jɛ́m ‘black house’ (Jamsay)
b. /bàbé + kómmó/ → bàbè^{L} kómmó ‘skinny uncle’ (Tommo So)
c. /nàá + èsú/ → nàà^{L} èsú ‘pretty cow’ (Tommo So)
d. /náá + èsú/ → nàà^{L} èsú ‘pretty mother’ (Tommo So)
(Heath 2008: 106; McPherson 2013)

(117) Jamsay, Tommo So
Noun + Dem: L overlay
a. /úró + núŋò/ → ùrò^{L} núŋò ‘this/that house’ (Jamsay)
b. /nàá + nɔ́/ → nàà^{L} nɔ́ ‘this cow’ (Tommo So)
c. /náá + nɔ́/ → nàà^{L} nɔ́ ‘this mother’ (Tommo So)
(Heath 2008: 106; McPherson 2013)

(118) Jamsay, Tommo So
Noun + Rel. clause: L overlay
a. ùrò^{L} ù ê: (< úró) (Jamsay)
house you saw
‘the house that you (sg.) saw’
b. sáná jàndùlù^{L} bɛ́nd-è=gɛ (< jàndúlú) (Tommo So)
Sana donkey hit-PFV.REL=DEF
‘the donkey that Sana hit’
(Heath 2008: 106; McPherson 2013)

(119) Jamsay, Tommo So
Poss + Noun$_{inal}$: HL overlay in Jamsay, H(L) in Tommo So
a. /mí + dě:/ → mí dê:^{HL} ‘my father’ (Jamsay)
b. /mí + bàbé/ → mí bábé^{H} ‘my uncle’ (Tommo So)
c. /ú + ánígé/ → ú ánígè^{HL} ‘your friend’ (Tommo So)
(Heath 2008: 106; McPherson 2013)

As for Kalabari, complexity arises when the head noun is modified by multiple modifiers. If a second adjective is added, both the noun and the second adjective are affected by the L overlay:

(120) Noun^{L} Adj^{L} Adj (Tommo So)
a. /nàá+póó+èsú/ → nàà^{L} pòò^{L} èsú ‘pretty fat cow’
b. /náá+póó+èsú/ → nàà^{L} pòò^{L} èsú ‘pretty fat mother’

When a noun is targeted by two or more controllers imposing different overlays, different strategies apply in different Dogon languages. For example, in Tommo So, when an inalienable noun is modified by both an adjective and a possessive pronoun, the adjective’s L overlay trumps the possessor’s H(L), as shown in (121):

(121) Tommo So

/mí	bàbé	kómmó/	→	mí	bàbè^{L}	kómmó	'my skinny uncle'
my	uncle	skinny			*bábé^{H}		
					*bàbé		

(McPherson 2013)

Other Dogon languages resolve such conflicts differently, as schematized in (122), where the controller imposing its overlay is in boldface type, and the domain of assignment of the overlay is underlined:

(122) Dogon

PossPro(HL) + Noun + Adj(L) (e. g. 'your ugly uncle')

a. Tommo So : PossPro Noun^{L} Adj
b. Jamsay, Yorno So : PossPro^{L} Noun^{L} Adj
c. Nanga : PossPro Noun^{HL} Adj

(McPherson 2013)

As all the above examples clearly show, the constructional tones of Kalabari and Dogon are sensitive to both syntactic structure and to syntactic category, and hence are not simply cases of syntactically determined phrasal phonology. They constitute a very intriguing case of syntactically controlled non-linear morphological change, i. e., they are at the intersection of phonology, morphology and syntax, three traditionally distinct compartments of language that are very difficult to disentangle here.[37]

Note that even within each of these compartments, the relevant properties of these constructions are not easy to analyze. Not only are the tonal overlays non-segmentable (cf. section 5.3.2 above), but the exact syntactic definition of the relation between the controller and the controlee itself is not always easy to determine: while both the Kalabari and Dogon constructions appear to be cases of head marking, what is marked is in reality often more than the head itself, and seems to correspond to an entire postlexical prosodic domain, as can be seen in (114) and (122b) above, where several consecutive words that do not constitute a head are assigned one single tonal overlay.

McPherson (2013, 2014b) proposes an innovative analysis of the Dogon data in terms of syntactic c-command: the controller in such Dogon constructions assigns a tonal overlay to material that it c-commands. Drawing from Booij's (2010) construction morphology, which is an output-oriented lexical theory of morphology where particular constructions are lexically listed, McPherson proposes the fol-

[37] Heath (2008: 7), highlighting how tightly prosody is integrated with syntax in Dogon languages, goes as far as to say that "working on Jamsay has deepened [his] conviction that currently dominant grammatical theories, with their sharp compartmentalization of 'phonology' and 'syntax', are badly misguided."

lowing two constructions for Dogon, which both have the same basic format [X^{T} controller], where T stands for a particular tonal overlay imposed by the controller onto material (X, which can be one word or multiple words) that it c-commands.

(123) Dogon Constructions: [X^{T} Controller]
a. [X^{L} Adjective]: 'Adjective X'
b. [Posspro X^{H}]: 'Pronominal possessor's X'

One of the great advantages of such an analysis of constructional tone is that both the assignment of tonal overlays to more than one word and the non-segmentability of non-discrete morphemes cease to be problematic. McPherson further shows how both conflict resolution between competing constructions and cross-linguistic variation among Dogon languages can be accounted for in a constraint-based approach, by simply changing the relative ranking of construction-specific constraints and faithfulness constraints.

One important question is whether the above effects of one word or word class on another constitute further evidence that there are some things that only tone can do (Hyman 2011a), or whether we can relate these cases to better-known constructional effects on the segmental make-up of words. In fact, as we will show in the next section, the two constructions attested in Africa that seem to be the closest non-tonal equivalents to tonal cases and construction tonology (the "dependent" and "construct" states) are actually only partial counterparts: even if they have similar syntactic and morphophonological properties, only tonal morphology may target postlexical prosodic domains.

5.5.3. Dependent and construct states

5.5.3.1. Dependent state in Berber

The controller–controlee structure we have seen with constructional tone in Kalabari and Dogon is very reminiscent of two similar structures attested in Africa: the Berber "dependent state", and the "construct state" attested in Semitic and various sub-Saharan African languages.[38] Following Creissels (2009) and Good and Creissels (this volume), we wish to keep those two types of constructions distinct, despite their structural similarities: the construct state is a case of head marking (the controlee is the head), and the Berber "dependent state", often misleadingly labeled "construct state", is a case of dependent marking (the head is the controller).

In Berber, nouns beginning with a frozen vowel prefix have a reduced form, which is typically used in three contexts: when the noun is the complement of a

[38] We borrow the label "dependent state" from Heath's (2005) grammar of Tamashek. The Berber dependent state is also frequently called "annexed state" (*état d'annexion*).

preposition, when it is a directly post-verbal syntactic subject, and in noun complement constructions (and after certain numerals). The reduced form always consists in a phonological reduction of the vowel prefix, thus affecting only those nouns that have such a prefix, as shown by Guerssel (1983) based on the Ait Seghrouchen dialect. Tamashek examples are given in (125) through (129), after a brief presentation of the Tamashek vowel system and vowel prefixes in (124).[39]

(124) Tamashek

a. Long/full vowels		b. Short/reduced vowels
i	u	ə
e	o	
ɑ		æ [ă ~ ŭ]

(Heath 2005)

(125) Possible noun vowel prefixes in Tamashek:[40]

a. Sg. ɑ-, e-, æ-/ə-
b. Pl. i-

(126) Prefix reduction in Tamashek:

a. {ɑ, e} → æ (> ə, if followed by high V, through height harmony)
b. i → ə (or Ø with epenthetic /ə/, subject to dialectal variation)

(127) Preposition + Noun

a.	ɑ-rə́zzej	'livestock'	→	s ə̲-rə́zzej	'with livestock'
b.	é-hæn	'home'	→	fæl ǽ-hæn	'on the house'
c.	i-kɑll-æn	'lands'	→	dæɣ Ø̲-kɑll-æn (í-dæɣ)	'in (those) lands'

(128) Noun + Noun

a.	é-dægg	'place'	→	erk ǽ̲-dægg	'bad place'[41]
b.	í-dægg-ɑn	'places'	→	erk Ø̲-dægg-ɑn	'bad places'
c.	t-ɑ-məšer-t	'campsite'	→	t-erk t-ə-məšer-t	'bad campsite'
d.	t-í-mšɑr	'campsites'	→	t-erk t-ə́-mšɑr	'bad campsites'

[39] In the interest of clarity, we have simplified Heath's notation of accent: only lexical accentuation is marked (with an acute accent), and default accentuation, assigned postlexically on the antepenult of an accentual phrase, is left unmarked.

[40] Feminine nouns add a further *t-* prefix before the vocalic prefix.

[41] The word *erk* 'bad' is a noun in Tamashek.

(129) Subject following inflected verb
a. i-nhæy ɑ-jənna (object: no reduction)
3-see:PFV rain
'He saw the rain.'
b. i-wæt ə̲-jənna (subject: prefix reduction)
3-hit:PFV rain
'The rain struck (=fell).'

As seen, the Berber dependent state is "as close as we come in this language to structural case-marking" (Heath 2005: 147).[42] The phonological reduction characterizing this construction thus constitutes, much like the tone cases of Maasai or Southwest Bantu languages, a case of syntactically governed word-level morphophonology.

Heath (2005: 11, 146–160) considers the prefix reduction of the dependent state in Tamashek to be one among several instantiations of a general "local dependency" configuration [X Y' …], where X is a phrase-initial controller (word or particle) triggering morphophonological changes (mostly forms of reduction, marked with an apostrophe) to the following phonological word Y. Table 16 presents a simplified summary of those local dependencies.

Table 16: [X Y' …] Local dependencies (Heath 2005: 11, 146–160)

X	*Y'*	*Type of modification of Y'*
Preposition Inflected verb Noun	Noun	Prefix-reduction (dependent state)
Negative particle *wæ̀r* Future particle *àd* Definite demonstrative Past *kælá*	Verb	Ablaut change

As can be seen, there are roughly two types of modifications, determined by different syntactic environments and targeting different word classes. While nouns are subject to prefix reduction, verbs undergo what Heath terms "ablaut changes": the vocalic make-up of the verb stem, its accentual pattern and the length of certain of its vowels are changed following complex rules varying according to verb stem shape and tense-aspect-mood. Since it is beyond the scope of this contribution to present the (sometimes complex) details of Heath's description, we will content ourselves with one example. After the negative particle *wæ̀r*, the long form of

[42] See also Creissels (2009: 75): "The so-called [annexed and free] states of Berber nouns are instances of nominal dependent marking, and are therefore functionally … similar to cases."

the indicative imperfective[43] undergoes the following changes: all its vowels are raised to high (if not already high) and the stem-initial stress and first post-consonantal vowel lengthening characteristic of the long imperfective form are lost (i. e., V_1 shortening: {i,e,a,o,u} → ə), as illustrated in (130).

(130) Negative wə̀r + long imperfective stem

	positive		*negative*		*V1 shortening (+raising)*	*V2 raising*
a.	-ríddu-	→	-rəddu-	'believe'	i > ə	
b.	-hə́llək-	→	-həllək-	'destroy'	ɑ > ə	
c.	-jə́nnɑ-	→	-jənni-	'say'	ɑ > ə	ɑ > i
d.	-bə́ddæd-	→	-bəddəd-	'stand up'	ɑ > ə	æ > ə

(Heath 2005: 334–5)

Once again, we are faced with a phenomenon that is at the intersection between phonology, morphology and syntax. In fact, the interaction between syntax and phonology is so pervasive in Tamashek that it makes "a strong case for a *morphological* view of the grammar" according to Heath (2005: 146), who writes:

> … instead of a model of grammar that starts with an autonomous abstract syntax, and then allows a phonological module to execute more or less natural phonological adjustments to the outputs of the syntax, Tamashek lends itself to a model where grammatical categories, linear ordering, and phonology (segmental, accentual, and ablaut) are inextricably intertwined.

5.5.3.2. Construct form

Similar to, but different from the Berber dependent state is what Creissels (2009) and Good and Creissels (this volume) call "construct form". While many such construct forms of nouns are characterized by segmental affixes, e. g., the so-called "genitive linkers" *-n* (masculine singular, plural) and *-r̃* (feminine singular) marking the head of a genitive construction in Hausa (cf. Good and Creissels, this volume, section 6.1.2.3.7, ex. 18), some others are more similar to the phonological reduction at work in Berber dependent forms. Such is the case of the Mende construct forms illustrated in (131).

(131) Mende

a. ndopó-i l̲oko-í (cf. *tokó* 'arm')
child-DEF arm-DEF
'the child's arm'

[43] The long imperfective is the only imperfective form that can directly follow the negative particle.

b. ndopó-i yilɛ-í (cf. *ngíla* ‘dog’)
child-DEF dog-DEF
‘the child’s dog’
(Creissels 1994: 152–168, 2009: 80)

As seen, the initial consonant of the construct form of nouns in Mende seems to undergo lenition (t → l; ng → y), as suggested by Innes (1971), among others. Creissels shows that the construct form is actually derived through the deletion of an underlying nasal prefix *n-* present in the free form, followed by the lenition of the initial consonant: the free form /n-tokó/, phonotactically unacceptable, is realized *tokó*, while the construct forms /tokó/ and /gíla/, prefixless, are realized *lokó* and *yíla* respectively, after lenition of their initial consonant.

Northern Mao offers a case of tonal construct form, which on the surface looks quite similar to the tonal constructions of Kalabari and Dogon. In this language, there is partial neutralization of a noun’s tone when modified: the nine underlying melodies (tone classes) of disyllabic nouns are reduced to a three-way contrast when they are modified: MM, ML and LL, as summarized in (132).

(132) Northern Mao

	Citation Tone Classes		*Construct Form*
a.	H-H_1	>	M-M
b.	M-M, L-L, H-L_1, M-H, M-L	>	M-L
c.	H-H_2, H-L_2, L-H	>	L-L

(Ahland 2012: 145)

As can be seen from the examples in (133), the above changes take place on the noun independent of the tone of the preceding modifier.

(133) Northern Mao

a.	H-H_1:	k’éts’é	‘land’	→	M-M	íʃ	k’ēts’ē	‘the land’
						nà	k’ēts’ē	‘this land’
b.	M-M:	p’īʃē	‘child’	→	M-L	íʃ	p’īʃè	‘the child’
						nà	p’īʃè	‘this child’
c.	H-L:	múnts’è	‘woman’	→	L-L	íʃ	mùnts’è	‘the woman’
						nà	mùnts’è	‘this woman’

(Ahland 2012: 147–149)

However, this phenomenon is quite different from the Kalabari and Dogon tonal constructions since “… only the head noun/nominal (i. e. whatever serves as the head of the NP) takes on the construct form” (Michael Ahland, p. c.): the tonal melodies are assigned to one word, not to a postlexical prosodic domain.

Similar cases of head marking are also attested in the verb phrase in several African languages, in which the verb is marked when followed by a direct object *in*

situ. This symmetry between verb phrase and noun phrase is again reminiscent of tonal constructions, attested both in the noun phrases and verb phrases in Kalabari and in Dogon. One could propose to enlarge Creissels's definition of the construct form to include construct forms of verbs. Perhaps the most famous (African) case of verbal construct form is Hausa final vowel shortening (FVS), briefly illustrated in (134). As seen, the long final vowel of a transitive verb is shortened only when immediately followed by an overt Object NP, as in (134b).

(134) Hausa

a. *ná: ká:mà: ká:mà:*
I catch it
'I have caught (it).'

b. *ná: ká:mà kí:fí:*
I catch fish
'I have caught a fish.'

c. *ná: ká:mà: wà Mú:sá: kí:fí:*
I catch For Musa fish
'I have caught Musa a fish.'
(Hayes 1990)

Hausa final vowel shortening, among other processes in various languages, motivated Hayes' (1990) Precompiled Phrasal Phonology. His account posits two allomorphs derived in the lexicon: *ká:mà:* and *ká:mà*. The sensitivity to syntax of each of the two forms is due to "syntactic instantiation frames", i. e., different syntactic contexts for which each allomorph is diacritically marked, which is a "fossilized or lexicalized version of a phrase-phonological rule" (Crysmann 2005: 109), as illustrated in (135).

(135) Precompiled Phrasal Phonology account of Hausa FVS:

a. Frame 1: [VP___ NP …]
b. Syntax sensitive shortening: V: → V / [Frame 1]
c. The second (not shortened) allomorph *ká:mà:* is inserted in all other contexts (Elsewhere Condition)

One can see how this analysis could be applied to other construct forms, such as the Mende examples in (131).

Crysmann (2003, 2005, 2010), however, convincingly shows that Precompiled Phrasal Phonology does not offer an appropriate account of Hausa final vowel shortening, among other reasons because adjacency between the verb and its object is not required, thus making phrasal boundaries irrelevant. Following Crysmann, Lionnet (2015) shows that the same holds for morphosyntactically conditioned M-lowering on nouns and verbs in Laal. Precompiled Phrasal Phonology also seems to be inapplicable to Kalabari and Dogon constructional tones, because the distribution of tones in this case is determined phrasally, not lexically: see for

example the Kalabari possessive HLH melody in (114b) above, distributed over three successive nouns in the last two examples.

All the above phenomena illustrate complex processes at the crossroad between phonology, morphology and syntax. Many involve some form of marking of head-dependent relations. We have also seen crucial differences between what tonal and non-tonal morphology can do respectively: only tonal morphology (as exemplified by the tonal constructions of Kalabari and Dogon) can target post-lexical prosodic domains. This results in a rather impressive blurring of the distinction between phonology, morphology and syntax, to the point of casting some doubt upon the validity of their strict compartmentalization in various theoretical models. They seem to have all of the properties of lexical "co-phonologies" (cf. Inkelas 2011, and references therein), but some of them apply postlexically at the phrase level. How to account for the properties of such phenomena is still largely an open question.

5.5.4. Phonologically conditioned mobile affixation

We have so far seen cases of morphosyntactically governed phonological processes, but cases of phonologically determined morphology, although rare, are also attested in Africa. Such is the case of mobile affixes, whose realization varies between a prefixal and a suffixal allomorph. Those affixes are attested in a very small number of languages worldwide, the two most-cited cases being Afar (Cushitic) (Fulmer 1991; Rucart 2006) and Huave (isolate, Mexico) (Noyer 1994; Kim 2008, 2010). Such cases of "mobile affixation" (Noyer 1994) are very rare and there has been an ongoing debate on the nature of the conditions governing their mobility, focusing in particular on the question whether phonological constraints should be allowed to determine morphological position (Jenks and Rose 2015, and references therein).

In a recent paper, Jenks and Rose (2015) present evidence in favor of a phonological conditioning of mobile affix position, based on an analysis of the placement of object affixes with respect to the verb stem in Moro. The following examples illustrate the prefixal (136) versus suffixal (137) realizations of the second-person singular object marker, with different aspectual forms.

(136) Moro

	no object marker	*2sg object marker ŋá*
a. *proximal imperfective*	g-a-váléð-a	g-a-ŋá-vəleð-a
	SM-CL-RTC-pull-IPFV	SM-CL-RTC-2SG.OM-pull-IPFV
	'(s)he is pulling here'	'(s)he is pulling you here'
	g-a-tʃómbəð-a	g-a-ŋá-tʃombəð-a
	SM-CL-RTC-tickle-IPFV	SM-CL-RTC-2SG.OM-tickle-IPFV
	'(s)he is tickling here'	'(s)he is tickling you here'
b. *consecutive imperfective*	t̪-áŋ-ˈváléð-ˈó	t̪-áŋ-ˈŋá-vəleð-ó
	COMP-3SG.SM-pull-CONS.IPFV	COMP-3SG.SM-2SG.OM-pull-CONS.IPFV
	'then (s)he is pulling	'then (s)he is pulling you'
	t̪-áŋ-ˈtʃómbəð-ˈó	t̪-áŋ-ˈŋá-tʃombəð-ó
	COMP-3SG.SM-tickle-CONS.IPFV	COMP-3SGS.SM-2SG.OM-tickle -CONS.IPFV
	'then (s)he is tickling'	'then (s)he is tickling'you'
	(Jenks and Rose 2015)	

(137) Moro

	no object marker	*2sg object marker ŋá*
a. *distal imperfective*	g-á-vəleð-ó	g-á-vəleð-ə-ŋá
	SM-CL-DIST.IPFV-pull-DIST.IPFV	SM-CL-DIST.IPFV-pull-DIST.IPFV-2SG.OM
	(s)he is pulling there'	(s)he is pulling you there'
	g-á-tʃombəð-ó	g-á-tʃombəð-ə-ŋá
	SM-CL-DIST.IPFV-tickle-DIST.IPFV	SM-CL-DIST.IPFV-tickle-DIST.IPFV-2sg.om
	(s)he is tickling there'	(s)he is tickling you there'
b. *perfective*	g-a-vəleð-ó	g-a-vəleð-ə-ŋá
	SM-CL-RTC-pull-PFV	SM-CL-RTC-pull-PFV-2SG.OM
	'(s)he pulled'	'(s)he pulled you'
	g-a-tʃombəð-ó	g-a-tʃombəð-ə-ŋá
	SM-CL-RTC-tickle-PFV	SM-CL-RTC-tickle-PFV-2SG.OM
	'(s)he tickled'	'(s)he tickled you'
	(Jenks and Rose 2015)	

Jenks and Rose show that the position of object markers in Moro does not depend on any single morphosyntactic property, be it aspect (perfective versus imperfective), spatial deixis (distal versus proximal), mood, or the main versus dependent verb distinction. The position of these affixes is actually fully phonologically determined: it follows from restrictions on the distribution of tone in the Moro verb.

> If a verb form requires a particular melodic tone pattern, object markers are suffixes. On the other hand, if a verb form adopts a default, phonologically predictable pattern, then object markers appear as prefixes. The tone property of the object markers themselves also dictates their appearance as prefixes. Only a single H toned object prefix is allowed, whereas low-toned and additional object markers appear as suffixes (Jenks and Rose 2015: 47).

Their analysis, couched in Optimality Theory, crucially relies on what they term a "P >> M" approach, where M-constraints referencing morphosyntactic (verb stem/verb phrase) domains are dominated by phonological (P) constraints, which enables phonologically driven violations of morphosyntactic requirements on affix position.[44] Moro thus offers evidence in favor of the existence of phonologically determined patterns of affix position, which, despite their rarity, ought to be integrated in the architecture of grammar, at the interface between phonology, morphology and syntax.

5.6. Conclusion

This completes our survey of phonological issues to which African languages have contributed in a significant way, as well as African phenomena whose understanding has been (or has yet to be) greatly improved by theroretical developments. There are doubtless others, and perhaps some phonologists or Africanists will take issue with the choice of topics or specific omissions. As stated in the outset, it is hard to cover the diverse phonological properties of African languages in a chapter of this length. From the sampling just seen, it is safe to say that African languages have been prominent in almost all of the major phonological developments over the past half-century, with the notable exception of metrical stress theory.

In the preceding sections we have outlined some of the major phonological properties of African languages, most of which have had some impact on general linguistics and are well known. The questions we would like to consider in our conclusion are: (i) What is the state of our understanding of these issues? (ii) How should students of African phonology proceed from here? The easy answer

[44] Similar P>>M approaches had already been proposed by Kim (2008, 2010) for Huave, and Wolf (2008).

to (ii) might be "continue as our predecessors have done", but which predecessors? While African phonology has definitely benefited from its alliance with general linguistics, in this final section we would like to emphasize the Africanist side of the equation: the extraordinary progress on the issues raised in sections 2 through 5 have only been possible because of the careful and brilliant work undertaken by scholars deeply committed to Africa. Whether describing, reconstructing, classifying, or formalizing, such scholars have been concerned with what African languages tell us about language and languages in general. Perhaps this has been the strength of African linguistics, and we suggest that we try to follow in their footsteps.

While deep descriptive work is still lacking for many (most?) of the 2,000 languages of Africa, our proposal for making progress at this point is to focus inward on Africa. The publication in the past ten years of language descriptions with detailed phonology sections illustrates the increasing availability of good-quality data. One could cite Heath's grammars of Tamashek (2005) and Jamsay (2008), Van de Velde's (2008) description of Eton, or more recently Hellwig's (2011) grammar of Goemai and McPherson's grammar of Tommo So (2013), to mention just a few. With more and more attention given to detail and exhaustiveness in linguistic fieldwork, and the increased use of instrumental and computational methods, works like Naumann's (2012) description of the phonological inventory of Siwi, in which phonemic segments are established on the basis of acoustic measurements and statistical analysis, will become more frequent and both improve our understanding of the sound systems of African languages and offer new grounds on which to test phonological theory. Finally, we propose that the African phonological phenomena be addressed from a historical and comparative perspective. While we have a basic understanding of the issues in African phonology, the field is still shrouded in mystery once we adopt a diachronic perspective. Questions such as the following have yet to be answered.

(i) Where does tone come from in Niger-Congo, Nilo-Saharan, and Khoisan? How did languages of the Chadic, Omotic, and Cushitic branches of non-tonal Proto-Afro-Asiatic develop their tonal systems?

(ii) Where does ATR vowel harmony come from in Niger-Congo and Nilo-Saharan? While cases of ATR harmony spreading through contact are suspects (e. g., from Central Sudanic to neighboring Bantu languages such as Nande), we don't fully understand how it originates. Does it have a monogenesis or has it developed separately in different places on the continent? Often correlating with the high concentration of ATR systems is the fact that a number of African languages, including Kpelle (Mande), Jomang aka Talodi (Kordofanian) and Teke-Kukuya (Bantu), contrast two degrees of high vowels /i, u/ versus /ɪ, ʊ/ without having a corresponding contrast of /e, o/ versus /ɛ, ɔ/. Since such a vowel system is highly unusual outside Africa, the natural question that should be addressed is where such systems come from. There is a likely relationship between their development and

that of ATR harmony systems, which would account for why both are so much more prevalent in Africa than elsewhere.

(iii) How do labial and palatal prosodies, as well as other types of "fusion", arise? Fusion is of course rampant in tonal morphology, the stability effect allowing tones to survive the historical loss of their TBUs. Through such fusion, quite complex systems have developed in Africa, such as the one in Dinka, whose resultant polymorphemic monosyllabic words contrast three degrees of length, three tones, and three voice qualities. Thus, "… for many transitive verbs there are at least six stem types, each of which has a distinct derivational status: a simple stem, a centrifugal stem, a centripetal stem, a benefactive stem, a benefactive-antipassive stem, and an antipassive stem" (Andersen 1992–1994: 12).

Some of the phenomena we mentioned in the course of this chapter point to two conclusions. First, there are interesting and important discoveries still to be made in African phonology and morphology. Second, when such phenomena are identified, it is important to pursue them in their genetic and geographic setting. If we are to understand how and why such systems arise, we will need first to establish the full range of possibilities. While such an approach has been applied to certain subgroups or areas with respect to tone (Hyman and Schuh 1974; Hyman 2011a), vowel harmony (Casali 2003), nasalized vowels (Rolle 2014), question markers (Rialland 2007; Clements and Rialland 2008), and a few other issues, there is much more waiting to be done.

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6. Current issues in African morphosyntax

Denis Creissels and Jeff Good

Introduction

Jeff Good

This chapter has two primary aims. The first is to highlight a number of typological features of African languages that make clear the extent to which the morphosyntax of languages of the continent remains significantly underexplored. The second is to provide an overview of significant work within formal linguistic frameworks on African languages.

The two-part structure of the chapter reflects different possibilities for survey work like this one. On the one hand, while there has recently been a thorough overview of relatively well-known typological features of African languages, both in terms of what is especially common and what is surprisingly rare (Creissels et al. 2008), it is also the case that the increasing availability of good descriptions of morphosyntactic patterns in languages of the continent has revealed a number of emerging topics of typological interest. The present work, therefore, provides opportunity to map out future directions for the study of African morphosyntax on the basis of new discoveries. On the other hand, there is a gap in the existing literature with respect to a review presentation of formal work on African languages aimed at a general linguistics audience as well as descriptively-oriented Africanists. The goal here is to emphasize, in particular, the contribution that data from African languages has made to morphosyntactic theory.

This chapter, therefore, has both a prospective orientation (in its first part) and a retrospective one (in its second part). Taken together, the two parts complement each other by summarizing important work that has been done while also highlighting data that provides new analytical challenges.

As a way of providing some context to the discussion below, it will be useful to consider the list of generalizations regarding the morphosyntactic typology of African languages provided in Creissels et al. (2008: 149–150). While it is impossible for any summary of this kind to fully convey the grammatical diversity of the languages of the continent, it provides a good sense of the state of the art:

(a) The ergative type of core syntactic role coding is exceptional among African languages.
(b) Case-marked subjects or objects are less common among African languages than at world level.
(c) The so-called "marked-nominative" type of case contrast between subjects and objects is exceptional in other parts of the world but very common among African languages that have a case contrast between subjects and objects.

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(d) Obligatory agreement of transitive verbs with their object does not seem to be attested among African languages.
(e) Second-position clitics are relatively common in the languages of the world, but exceptional among African languages.
(f) In a relatively high proportion of African languages, the construction of verbs with an argument frame of the type *giver–given–recipient* tends to assimilate the recipient (rather than the thing given) to the patient of prototypical transitive verbs, and double object constructions are particularly frequent.
(g) Focus strategies implying morphosyntactic alternations, and in particular focus marking by means of verbal inflection, are particularly common in Africa.
(h) The use of special verb forms in sequential constructions is particularly widespread among African languages.
(i) Applicatives are particularly common in Africa, and a relatively high proportion of African languages make a wide use of obligatory applicatives and of various types of non-canonical applicatives.
(j) Classifier systems are exceptional among African languages.
(k) Relatively few African languages are devoid of a morphological plural or have a morphological plural restricted to a subset of nouns occupying a high position in the animacy hierarchy.
(l) African languages that do not use the same morpheme as a noun phrase coordinator and as a comitative adposition are relatively rare.
(m) The proportion of languages with a syntactically flexible constituent order is much lower among African languages than at world level.
(n) The constituent order SOVX, relatively rare at world level, is relatively frequent among African languages.
(o) Clause-final negative particles occur among African languages much more frequently than in other parts of the world.
(p) Changes in the constituent order triggered by negation are particularly common among African languages.
(q) True relative pronouns are particularly rare in African languages, and the use of dependent verb forms in postnominal relatives, relatively rare in the languages of the world, is common among African languages.
(r) Logophoricity is particularly widespread among African languages.
(s) Systems of coding of spatial relations in which the distinction *location at*/*movement towards*/*movement from* manifests itself exclusively on verbs are more frequent in Africa than in most other parts of the world.

This survey below, like any survey of this kind, is necessarily selective, especially for the first part, given its focus on highlighting significant new developments. The second part of the chapter also shows significant bias towards Niger-Congo, and, in particular, Bantu languages, in response to the fact that these have seen the

most attention within formal linguistic circles. While each part of the chapter was written separately, there are, nevertheless, significant points of contact between them. These will be highlighted where possible, and they reflect the fact that certain patterns of African morphosyntax have been striking enough to already have been of significant interest in formal work, even if this work has often not fully explored the typologically significant details of these patterns. This is especially the case in the domain of valency alternations, covered in section 6.1.3 of the first part of the chapter and section 6.2.4 of the second part, and there is also significant overlap in the discussion of work on the expression of information structure discussed in section 6.1.6 and section 6.2.6 of the respective parts of the chapter.

All told, the material presented here is intended to give readers a good sense of the current state of the study of the morphosyntax of African languages, and it is hoped that it will prove a useful complement to existing reference sources, none of which discuss the topics considered here with a general linguistics audience in mind.

6.1. Current issues in African morphosyntactic typology

Denis Creissels

6.1.1. Introduction

This paper does not aim at providing a general survey of morphosyntactic phenomena already signaled as particularly frequent or rare among Sub-Saharan languages, or showing a particular genetic or areal distribution in Sub-Saharan Africa. This has been already done in Creissels et al. (2008), and I do not systematically resume here the points discussed in Creissels et al. (2008) or others that have long been widely discussed elsewhere in the literature.

The present paper is conceived as an update. Important typological questions to which it has long been known that Sub-Saharan languages make a significant contribution (such as, among many others, serialization, pluractionality, logophoricity, or part-of-speech systems) are not necessarily dealt with, if it happens that I have nothing important to add to Creissels et al. 2008, or to other general surveys of African language structure. The idea here is rather to select topics on which recently published works shed some new light, or which I consider particularly promising on the basis of my own descriptive work on individual languages, or my participation in collective research projects.

The questions discussed in the following sections are grouped under the following five headings:

– Nouns and noun phrases (section 2)
– Argument structure and valency operations (section 3)
– Clause structure (section 4)
– Complex constructions (section 5)
– Information structure (section 6)

In the remainder of this text, when identifying the genetic affiliation of the languages I quote, I will in general limit myself to well-established genetic units, and avoid as far as possible reference to phyla whose delimitation is controversial (Niger-Congo, Nilo-Saharan) or for which there is now consensus that they do not constitute valid genetic units (Khoisan) – on this point, see Dimmendaal (2011: 307–331). When I happen to use "Niger-Congo," "Nilo-Saharan" or "Khoisan," these terms must be understood as abbreviations for 'the language families and language isolates that Greenberg grouped into the Niger-Congo/Nilo-Saharan/Khoisan phylum,' without any commitment to the genetic validity of the groupings in question.

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6.1.2. Nouns and noun phrases

Several morphosyntactic mechanisms may contribute to making explicit the relationship between head nouns and their modifiers. Gender-number agreement of noun modifiers with their head is widespread among the languages of Sub-Saharan Africa (see section 6.1.2.1), and the indexation of genitival modifiers on their head (resulting in constructions such as lit. *the man his-car* for 'the car of the man') is well-attested too, but the languages of Sub-Saharan Africa also provide interesting data about two other possible strategies: a variety of the dependent marking strategy consisting in the systematic use of linkers in noun-modifier constructions (section 6.1.2.2), and a variety of the head-marking strategy consisting in the systematic use of a special "construct" form of the head noun (section 6.1.2.3). The following questions are also addressed in this section: the incorporation of attributive adjectives (section 6.1.2.4), dependency reversal in noun-attributive constructions (section 6.1.2.5), and the relationship between NP coordination and comitative adjunction (section 6.1.2.6).

6.1.2.1. Gender systems

A recent survey of gender systems in Sub-Saharan Africa (Di Garbo 2014) confirms the generalizations put forward by Creissels et al. (2008) about the two broad types of gender systems found in Sub-Saharan Africa: binary gender systems with the sex distinction as their semantic basis (*masculine* vs. *feminine*), found in all the branches of Afroasiatic, in several branches of Nilo-Saharan, and in several minor families or isolates, and so-called noun class systems (multiple gender systems in which biological gender plays no role), common across Niger-Congo, and found also in Kx'a and Tuu. In this section, I summarize some recent advances in the investigation of the gender systems of individual languages that are of interest for a general typology of gender systems.

6.1.2.1.1. Gender without semantic basis: the case of Uduk

Uduk has a binary gender system that according to Killian (2015: 67–68) is an exception to the commonly accepted generalization that systems of gender assignment always have some semantic core.

6.1.2.1.2. Gender and genericity

The term "generic" is used by linguists in two different meanings. It may refer to a hierarchy of nouns according to the greater or lesser extension of their lexical meaning (in this sense, *animal* is a generic (or superordinate) term in comparison with *dog*, *cat*, *lion*, etc.). But "generic" may also refer to the referential status of

nouns in discourse. In this second meaning of generic, nouns are said to be used generically when they refer to kinds, as illustrated by *lion* and *human* in *Lions can be dangerous to humans* (as opposed for example to *The lions attacked the herd yesterday*, in which *lions* has specific reference). In this sense of generic, no noun is intrinsically generic, and generic reference can be carried by any common noun in appropriate contexts, irrespective of its status with respect to the hierarchical relationship of lexical meanings.

To the best of my knowledge, the possibility of a relationship between gender and the expression of generic reference (reference to kinds) has been discussed for the first time in the survey of Atlantic noun class systems edited by Konstantin Pozdniakov and myself (Creissels and Pozdniakov 2015).

A gender alternation expressing genericity in the sense of reference to kinds can be found in the noun class system of Fouta-Djalon Fula (aka Pular) – but apparently not in other Fula varieties. The rule is that genericity is expressed by the combination of a zero suffix and the agreement pattern of class ON (which as a class lexically assigned to a subset of nouns is the human singular class):[1]

> In addition to the singular and plural noun forms, there is often a generic noun form that is neither singular nor plural. […] The following table gives some examples of nouns with generic, singular, and plural forms:

SINGULAR	PLURAL	GENERIC	MEANING
bareeru ndun	*bareeji dîn*	*bare on*	'dog'
biiniiri ndin	*biiniije ɗen*	*biini on*	'bottle'
otowal ngal	*otoje ɗen*	*oto on*	'car'
ñariiru ndun	*ñariiji dîn*	*ñari on*	'cat'
bareeru ndun	*bareeji dîn*	*bare on*	'dog'
saabiwal ngal	*caabiije ɗen*	*saabi on*	'key'
kotiraawo on	*kotiraaɓe ɓen*	*koto on*	'older brother'
leemunneere nden	*leemunneeje ɗen*	*leemunne on*	'orange'
bireediwal ngal	*bireediije ɗen*	*bireedi on*	'bread'

> Often the generic form is the most commonly heard, and the singular is only used to emphasize that a single item is being referred to. The generic always takes the *on* article (*leemunne on*) regardless of the class of the singular (*leemunneere nden*).
> (Caudill and Diallo 2000: 25)

Among the languages whose noun class systems are described in Creissels and Pozdniakov (2015), Joola languages and Bidyogo attest the possibility of another

[1] In the examples provided in this extract from Caudill and Diallo (2000), noun forms are not segmented into a stem and a class suffix, but the forms in the third column are bare stems, and the agreement class to which noun forms belong is unambiguously indicated by the postposed article.

type of interaction between genericity in the sense of reference to kinds and noun class systems: in Joola languages and Bidyogo, genericity conditions class agreement between subject nouns and subject indexes attached to verbs.

The way Bidyogo uses class agreement to express generic reference is reminiscent of the French construction illustrated by *Les chiens, ça aboie* 'Dogs bark' (lit. 'The dogs it barks'), where a plural masculine noun is resumed by the neuter singular index *ça*, typically used to express vague reference. In Bidyogo, vague reference is expressed by class ƊO, which not surprisingly includes *ŋoo* 'thing' as one of its members, and as illustrated in (1), one of the possible functions of the subject index of class ƊO is to indicate that a noun belonging to another class and fulfilling the subject function must not be understood as referring to an individual, but to a kind.

(1) Bidyogo

a. *Kɔ-kpɛñ* *kɔ-tɔnɔŋ.*
CLko-silk_cotton_tree CLko.CPL-be_tall
'The silk cotton tree is tall.'
(deictic or anaphoric reference to an individual)

b. *Kɔ-kpɛñ* *ŋɔ-tɔnɔŋ.*
CLko-silk_cotton_tree CLŋo.CPL-be_tall
'Silk cotton trees are tall.'
(reference to kind)
(Segerer 2002: 109 and pers. com.)

The way Joola languages use class agreement to specify that a noun in subject function refers to the kind rather than to an individual is more surprising, at least at first sight. In Joola languages, when singular nouns that do not denote humans are used in subject function with specific reference, they can only be indexed on the verb by means of the index corresponding to their class prefix. When they carry generic reference, it is still possible to have morphological agreement (in which case there is no overt indication that the subject noun must be understood as generic), but it is also possible to cross-reference them by the human singular index, and this deviation from morphological agreement can only be interpreted as indicating that the subject noun does not refer to an individual, but to a kind. This construction, illustrated in (2), is particularly common in proverbs.

(2) Banjal

Fu-kun *ındı* *a-bʊgɔr* *ga-pɔrɔk.*
CLfu-fish_sp HAB.NEG CLa-beget CLga-fish_sp
'Fúkun fishes do not beget gaporok fishes.'
> 'Children are what they are made.'
(Sagna 2011)

This particularity of class agreement in Joola languages is interesting in the perspective of the general question of the status of names of kinds with respect to the distinction between common nouns and proper names. Generally speaking, it has been observed that names of kinds have some affinities with typical proper names, and this is consistent with the choice of a class A index in the construction illustrated in (2), since class A is in Joola the human singular class, and proper names of humans in subject role can only be cross-referenced by a class A index.

6.1.2.1.3. An extreme case of flexibility in gender assignment: Hamar

The gender system of Hamar as described by Petrollino (2016) shows several interesting typological particularities. First, in Hamar, gender is not an obligatory category of nouns (but almost all nouns can be marked for gender). Second, instead of being more or less arbitrarily assigned a gender value, as in most languages with a binary masculine vs. feminine gender distinction, inanimate nouns all have a masculine form and a feminine form, whose use is a particularly fascinating aspect of Hamar grammar.

With very few exceptions, Hamar nouns, irrespective of the animate vs. inanimate distinction, have four forms with distinct properties as agreement controllers: a "general form" unmarked for gender and number, a masculine singular form, a feminine singular form, and a plural form. The forms inflected for gender or number are definite. In other words, the gender distinction is restricted to the singular form of nouns; it appears neither in the general nor in the plural forms, see (3).

(3) Hamar

qáski	(general) 'dog'	*ooní*	(general) 'house'
qaskê	(singular masculine) 'dog'	*ɔɔnɛ̂*	(singular masculine) 'house'
qáskino	(singular feminine) 'dog'	*onnó*	(singular feminine) 'house'
qáskina	(plural) 'dogs'	*onná*	(plural) 'houses'

(Petrollino 2016: 110)

What justifies describing such a system in terms of a masculine vs. feminine distinction is that, with nouns referring to "higher animates" (human beings and animals that Hamar people breed), singular masculine and singular feminine invariably encode reference to male individuals and female individuals, respectively, see (4).

(4) Hamar

kána	(general) 'younger sibling'
kanâ	(singular masculine) 'younger brother'
kánno	(singular feminine) 'youner sister'
kánna	(singular feminine) 'younger siblings

(Petrollino 2016: 121)

Nouns for domestic animals and a few nouns referring to human beings depart however from this pattern by having two feminine forms: one with the regular meaning of reference to a female individual, the other with a collective meaning, see (5).

(5) Hamar
naasí (general) 'child'
naasâ (singular masculine) 'boy, son'
naanó (singular feminine) 'girl, daughter'
naasóno (singular feminine) 'group of children'
naaná (plural) 'children'
(Petrollino 2016: 120)

A handful of kinship terms are also exceptional in that they only have either a masculine or a feminine form.

As regards inanimate nouns, gender assignment entirely depends on how their referents are viewed by the speaker. For example, with nouns referring to places, masculine gender may suggest a specific position in a delimited area, whereas feminine is used for a more vague location. With mass nouns, masculine gender may encode 'a small quantity of', and feminine gender 'a lot of'. Masculine gender may render solid mass nouns singulative, etc.

As regards lower animates (i. e., animals for which biological gender is not fundamental in Hamar culture), the link between gender assignment and biological gender is weak, and the *masculine* vs. *feminine* distinction rather tends to be used to encode size, with the typologically unusual association *masculine-small* and *feminine-big*. Note that masculine is the default form when speakers do not feel the need to insist on size, see (6).

(6) Hamar
átti (general) 'bird'
attê (singular masculine) '(small) bird'
áttino (singular feminine) 'big bird'
áttina (singular feminine) 'birds'
(Petrollino 2016: 126)

6.1.2.1.4. Phonology-driven gender assignment: The case of Afar

Many languages have systems of gender assignment rules in which phonological criteria are variously involved. A particularly clear and straightforward case is that of Afar. Another interesting particularity of this system is the particular type of interaction between gender and number.

Like many Afroasiatic languages, Afar has a binary gender system (masculine vs. feminine). With the exception of a handful of human nouns for which a seman-

tic rule of gender assignment takes precedence, gender assignment in Afar can be predicted by the following rules (Hassan Kamil 2015: 111):
– noun forms ending with an unstressed vowel are masculine,
– nouns ending with a stressed vowel are feminine,
– nouns ending with a consonant are masculine.

These rules operate regardless of the morphological status of the ending of nouns, and they operate on noun forms (not on lexemes!) regardless of the singular vs. plural distinction: the gender of plural noun forms is simply determined by their phonological form, and consequently does not necessarily coincide with the gender of the corresponding singular form.

(7) Afar

fiddimá (F)	'mat'	> *fíddim* (M)	'mats'
makiiná (F)	'machine'	> *makáayin* (M)	'machines'
báal (M)	'feather'	> *balwá* (F)	'feathers'
búyyi (M)	'well'	> *buyyá* (F)	'wells'

(Hassan Kamil 2015: 176, 179)

For example, the proximal demonstrative has two forms, *á* (M) and *tá* (F), and each of these two forms is indifferently used with singular and plural nouns, according to the gender value determined by the ending of the noun.

(8) Afar

a. *á kítab* (M) 'this book'
   á fíddim (M) 'these mats'
b. *tá saagá* (F) 'this cow'
   tá ʕaleelá (F) 'these mountains'
   (Hassan Kamil 2015: 211–213)

6.1.2.1.5. The question of alliterative concord

As discussed by Corbett (2006: 87–90), 'alliterative agreement' can be understood in two different ways: this term may refer to "a characterization of morphological exponence," in systems in which agreement controllers have an inflectional marker correlated to their behavior in the agreement system, and phonologically identical segments are used as agreement markers on agreement targets. In this sense of "alliterative agreement," Niger-Congo systems of class agreement (but also many Indo-European systems of gender-number-case agreement) can be characterized as partially alliterative, since they involve both class agreement markers phonologically identical to the corresponding class membership markers found in noun forms, and class agreement markers phonologically distinct from the corresponding class membership markers of nouns. As rightly pointed out by

Corbett, this characterization of agreement systems as ±alliterative is not an "all or nothing" classification. Moreover, it is worth emphasizing that a thorough description of Niger-Congo class agreement systems often leads to the conclusion that they are in fact much less alliterative than they may look at first sight, because class agreement markers that are roughly similar to the corresponding class membership markers of nouns often differ from them in an unpredictable way in details such as vowel quality or tone.

There is another possible view of alliterative agreement, for which Corbett proposes the term of "radical alliterative agreement" (another possible term would be "generalized alliterative agreement"). In a noun class system with radical alliterative agreement, agreement markers would invariably copy the initial of the noun form acting as controller (in the case of prefixed agreement markers) or its ending (in the case of suffixed agreement markers), regardless of the status of the copied material in a morphological analysis.

In the general literature on gender, partial and wrongly interpreted data from the Ñun language Guñaamolo have played a prominent role in discussions of generalized alliterative agreement (see in particular Dobrin 1995), which means that the recent descriptions of Guñaamolo and other Ñun languages that put an end to this myth lead to the conclusion that the theoretical discussions in question were basically flawed, and consequently of very little value.

Sauvageot (1967) suggested that a radical alliterative agreement system might be found in Guñaamolo but this hypothesis does not stand up to scrutiny. For example, in Guñaamolo, (Bao Diop 2015), *reeŋ* 'earth', *pɔrɔr* 'kitchen', *jɪh* 'dog' and *duluur* 'rice' all belong to class A, in which the agreement markers may be *a* or *nɔ* ~ *no*, depending on the nature of the agreement target. As argued by Cobbinah (2010), contrary to the claim by Sauvageot that was taken at face value in theoretical discussions of generalized alliterative agreement, Guñaamolo and the other Ñun languages that have been documented recently have just the unremarkable kind of partially alliterative system of class agreement commonly found throughout Niger-Congo.

To the best of my knowledge, among the Niger-Congo languages that have noun class systems, Landoma is the only one for which, on the basis of the available data, the hypothesis of a generalized alliterative agreement system deserves consideration (see Sumbatova 2003 and pers. com.).

6.1.2.2. Linkers in noun-modifier constructions

In their noun-modifier constructions, many languages of Sub-Saharan Africa variously use grammatical words or clitics (or phrasal affixes) adjacent to the word/phrase in modifier function, whose role is to enable this word/phrase to act as a noun modifier. Linkers in noun-modifier constructions may be invariable or express agreement with the head noun.

6.1.2.2.1. Specialized linkers

Linkers are particularly common in noun–genitive (or genitive–noun) constructions. For example, in many Bantu languages, a proclitic genitival linker consisting of an invariable element *a* preceded by a class agreement marker attaches to NPs in genitive role, whereas in Manding languages, the genitive–noun construction involves an enclitic postposition whose use is regulated by the semantic nature of the relationship between the genitival modifier and its head.[2]

(9) Tswana
  a. *mò-sádì* *w-á-mó-tsí*
     CL1-woman CL1-LK-CL3-village
     'woman of the village'
  b. *lì-káù* *l-á-mó-tsí*
     CL5-boy CL5-LK-CL3-village
     'boy of the village'
  c. *sì-fòfù* *s-á-mó-tsí*
     CL7-blind_person CL7-LK-CL3-village
     'blind person of the village'
  d. *ŋàkà* *y-á-mó-tsí*
     (CL9)doctor CL9-LK-CL3-village
     'doctor of the village'
     (pers. doc.)

(10) Mandinka
  a. *wòtôo* *kódòo*
     car.D money.D
     'the money of the car' (i. e. 'the money necessary to buy the car')
  b. *kèwôo* *lá* *kódòo*
     man.D LK money.D
     'the man's money'
  c. *sàatéwòo* *àlìkáalòo*
     village.D chief.D
     'the chief of the village'

[2] Manding languages have a typologically unusual variety of alienable vs. inalienable distinction. Cross-linguistically, the construction expressing inalienable possession tends to be available for a restricted set of "inalienably possessed nouns" only, whereas in Manding languages, there is no such restriction, and the animate vs. inanimate nature of the possessor plays a major role in the use of the linker in the genitival construction (Creissels and Sambou 2013: 242–251).

d. *ì* *lá* *àlìkáalòo*
they LK chief.D
'their chief'
(pers. doc.)

Linkers are also common in noun–relative clause constructions. In a typological account of Sub-Saharan languages, it is important to emphasize that the terminology used in many language descriptions blurs the important distinction between relative linkers and relative pronouns. I know of no uncontroversial instance of relative pronouns in the languages of Sub-Saharan Africa, in the sense of words occurring at the left edge of relative clauses but showing evidence of having been "extracted" from it. In general, the "relative pronouns" mentioned in descriptions of Sub-Saharan languages are relative linkers for which an analysis as pronouns fulfilling the relativized function in the relative clause does not have the slightest justification. Diachronically, there is often clear evidence that relative linkers originate from sequences *noun – demonstrative – relative clause* in which the demonstrative has grammaticalized as a purely syntactic element, losing its original deictic function. This is in particular the case for the linker found in the noun–relative clause construction of Tswana, see (11).

(11) Tswana

a. *mò-sádì* *yó* *kí-mò-tʰúsítsè-ŋ́* *máàbání*
CL1-woman CL1.LK 1SG-CL1-help.PRF-REL yesterday
'the woman I helped yesterday'

b. *lì-káù* *lé* *kí-lì-tʰúsítsè-ŋ́* *máàbání*
CL5-boy CL5.LK 1SG-CL5-help.PRF-REL yesterday
'the boy I helped yesterday'

c. *sì-fòfù* *sé* *kí-sì-tʰúsítsèŋ́* *máàbání*
CL7-blind_person CL7.LK 1SG-CL7-help.PRF-REL yesterday
'the blind person I helped yesterday'

d. *ŋàkà* *é* *kí-ì-tʰúsítsè-ŋ́* *máàbání*
(CL9)doctor CL9.LK 1SG-CL9-help.PRF-REL yesterday
'the doctor I helped yesterday'
(pers. doc.)

In quite a few languages (among others, Tswana), the same linker introduces relative clauses and attributive adjectives, see (12).[3]

(12) Tswana

a. *mò-sádì* *yó* *mò-fá*
CL1-woman CL1.LK CL1-new
'new woman'

b. *lì-káù* *lé* *lì-fá*
CL5-boy CL5.LK CL5-new
'new boy'

c. *sì-fòfù* *sé* *sì-fá*
CL7-blind_person CL7.LK CL7-new
'new blind person'

d. *ŋàkà* *é* *ǹ-tʃʰá*
(CL9)doctor CL9.LK CL9-new
'new doctor'
(pers. doc.)

(13a) illustrates the obligatory repetition of the linker within the same NP, as many times as there are modifiers requiring it. (13b) shows that the head noun can be omitted, resulting in a "headless" NP in which the linker fulfills a pronominal function, much in the same way as determiners in the absence of the head noun they normally modify. These two examples also illustrate that, in spite of the fact that this relative/attributive linker is still homonymous with one of the demonstratives of Tswana (and probably evolved from this demonstrative), the distinction is ensured by the position of true demonstratives after all modifiers (including those introduced by the homonymous relative/attributive linker):

(13) Tswana

a. *mò-sádì* *yó* *mò-léèlé* *ꜜyó* *mó-ǹtsʰò*
CL1-woman CL1.LK CL1-tall CL1.LK CL1-black
yó *ꜜó-ɔ́pέl-à-ŋ́* *ꜜyó-lé*
CL1.LK CL1-sing-FV-REL CL1.DEM-DIST
'this tall woman with dark complexion who is singing'

[3] In other Southern Bantu languages, this linker is currently described as a prefix (or as the first element of complex prefixes), but in Tswana, its tonal behavior excludes it from being analyzed as either a prefix or a proclitic. For a detailed discussion of the relevant tone rules of Tswana, see Creissels 1998.

b. *yó* *mɔ̀-léèlé* *ˈyó* *mɔ́-ǹtsʰɔ̀*
CL1.LK CL1-tall CL1.LK CL1-black
yó *ˈó-ɔ́pɛ́l-à-ŋ́* *ˈyó-lé*
CL1.LK CL1-sing-FV-REL CL1.DEM-DIST
'the tall one (CL1) with dark complexion who is singing'
(pers. doc.)

Tswana also has a linker for numeral modifiers. It differs from the relative/attributive linker just presented, and its origin is a participial form of the verb *lí* 'be' – see (14).

(14) Tswana
a. *bà-sádí* *ˈbá-lí* *bá-bèdí*
CL2-woman CL2-LK CL2-two
'two women' etymologically 'women they-being two'
b. *mà-káú* *ˈá-lí* *má-bèdí*
CL6-boy CL6-LK CL6-two
'two boys'
c. *dì-fòfù* *dí-lí* *pèdí*
CL8-blind_person CL8-LK (CL8)two
'two blind persons'
(pers. doc.)

6.1.2.2.2. Multipurpose linkers

As illustrated above, more or less specialized linkers in noun-modifier constructions are common in Sub-Saharan Africa. The question that arises is whether Sub-Saharan languages also attest situations comparable to that of West Iranian languages, with a multipurpose linker (traditionally called *ezafe* in Iranian linguistics) used for all kinds of noun-modifier relationships. Von Prince (2008) argues that some items traditionally analyzed as genitival linkers (including Swahili CL-*a*) are best analyzed as multipurpose noun-modifier linkers ("attributive linkers" in her terminology). However, her demonstration is not very convincing, since in the particular case of Swahili, most of the discussion relies on the use of CL-*a* with infinitives: Swahili infinitives have clear nominal properties, and, consequently, their compatibility with CL-*a* is not contradictory with the identification of CL-*a* as a genitival linker.

Basari (aka Oniyan) is to the best of my knowledge the Sub-Saharan language whose situation in this respect is closest to that of West Iranian languages, although the range of uses of the Basari linker is not as wide as that of the West Iranian ezafe.

According to Perrin (forthcoming), in Basari, demonstratives, numerals, and adjectives are the only types of noun modifiers that do not require a linker. All

the other types of noun modifiers are introduced by the same multipurpose linker: NPs in genitive function, possessives, preposition phrases in noun modifier function, the interrogative determiner *fɛ́* 'which?', quantifiers such as *mbáŋ* 'many', and relative clauses. This linker consists of a class prefix expressing agreement with the head noun and a constant element, which however may appear as *r*, *d* or *nd* depending on a system of consonant alternation (represented in the glosses by means of Roman numerals) that is pervasive in the morphology of Basari.

(15) Basari (aka Oniyan)

a. *ɛ-pátát-ɛl* *ɛ-d* *a-sɔ́ʃan* *ajɔ́*
CLɛl(II)-gun-CLɛl(II).D CLɛl(II)-LK CLan(I)-man CLan(I).DEM
'this man's gun'

b. *ɛ-pəɲá-ɛŋ* *ɛ-nd* *gər* *kərənú*
CLɛŋ(III)-road-CLɛŋ(III).D CLɛŋ(III)-LK LOC God
'the way (leading) to God'

c. *a-káyəta* *a-nd* *fɛ́*
CLaŋ(III)-book CLaŋ(III)-LK which
'which book?'

d. *ɔ-yékax* *ɔ-r* *ri-kánɔ:l*
CLɔl(I)-good_things CLɔl(I)-LK do-CPL.1PL.CLɔl(I)
'the good things that we have done'
(Perrin, forthcoming)

6.1.2.3. Construct forms of nouns

In this section, I argue that a notion of *construct form of nouns* generalizing the notion of *construct state* found in traditional Semitic grammars may help to capture similarities in the nominal system of languages that are not immediately apparent in current accounts.

6.1.2.3.1. Generalizing the notion of "construct state of nouns" traditionally used in Semitic linguistics

In Semitic linguistics, the term of construct state applies to nouns immediately followed by another noun in the role of genitival modifier or by a bound pronoun in possessive function. For example, in Hebrew, *bajit* 'house' occurs as *be(j)t* when immediately followed by another noun in genitive function, as in *be(j)t sefer* 'school' ('house of book'); in the same context, *malkah* 'queen' occurs as *malkat*, as in *malkat ha-medina* 'the queen of the country'.

Cross-linguistically, it is relatively common that person markers cross-referencing the genitival dependent attach to the head of genitival constructions. Morphological marking of nouns encoding nothing more than the mere fact that

they fulfill the role of head in a given type of noun–modifier construction is less common, but by no means limited to the Semitic languages. However, the range of noun dependents triggering the choice of a special form of their head varies across the individual languages that have this phenomenon.

This section is an update of Creissels (2009), where I proposed the term *construct form* as a general label for noun forms that are obligatory in combination with some types of dependents and cannot be analyzed as instances of cross-referencing in the genitive construction.

6.1.2.3.2. Some possible misunderstandings about the notion of construct form

Construct forms of nouns have in common with case forms that they are conditioned by the syntactic status of nouns, but case encodes the role of NPs as elements of broader constructions, irrespective of their internal structure, whereas construct forms encode information on the internal structure of NPs. Case is a particular variety of dependent marking, whereas construct forms are an instance of head marking.

Some authors neglect this distinction and consider construct forms as cases, which implies broadening the definition of case to any morphological variation of nouns carrying syntactic information. My position on this point is that the head vs. dependent marking distinction is crucial, in the description of individual languages as well as in typological perspective. Consequently, I do not retain the proposal to consider construct forms as cases.

In this connection, it must be emphasized that some descriptive traditions use terms that may suggest some analogy with the construct state of Semitic languages but refer in fact to very different phenomena.

In Berber languages, nouns have two forms traditionally termed *states*. One of them is generally termed *annexed state*, but some descriptions use *construct state*, suggesting a false analogy with the states of Semitic nouns. The point is that, contrary to Semitic states, the so-called states of Berber nouns are instances of dependent marking, not of head marking: they do not encode the relation between the noun and its dependents, but the function of the NP within a broader construction. In a broad typological perspective, the two so-called states of Berber nouns are simply cases – see Arkadiev (2015) for a recent discussion.

The term annexed state has also been proposed by Elders (2003) for a syntactically conditioned alternation affecting nouns in Kulango and some other Gur languages, by which nouns in isolation have an obligatory class suffix (or number suffix, in languages in which the class system is no longer active) but seem to lose this inflectional suffix in certain constructions. Crucially, this concerns nouns that are always in non-final position in the relevant construction but cannot be uniformly characterized as heads or dependents, since some constructions triggering the omission of the inflection of the first term have the order *head – dependent*,

and some others have the order *dependent – head*. In (16) from Dagara, 'goat' in the suffixless form is the head of an attributive construction in (16b) and the dependent of a genitival construction in (16c).

(16) Dagara

a. *bʊ-ɔ* (pl. *bʊʊ-d*)
goat-CL
'goat'

b. *bɔ̀* *bɛ́d-ʊ*
goat big-CL
'big goat'

c. *bɔ̀* *zʊʊ-d*
goat tail-CL
'goat's tail'
(Delplanque 1997: 60)

In Dagara and other Gur languages showing this kind of alternation, if one accepts that in (16b) 'goat' is the head of an attributive construction,[4] the use of the uninflected noun illustrated by (16b) can be compared to the construct state of Semitic languages, since it characterizes the noun fulfilling the role of head in a head–dependent construction, but this does not hold for the use illustrated by (16c). The relevant notion here is rather that of compounding, and the construction of (16b) is in fact an instance of incorporation of attributive adjectives (Section 6.1.2.4).

6.1.2.3.3. Construct forms of nouns in Nilotic languages

In African linguistics, construct forms of nouns have so far been identified mainly in East African languages belonging to the Nilotic family (see among others Andersen (2002) on Dinka, which includes detailed references on previous works dealing with this topic in other Nilotic languages). However, a variety of terms have been used to label construct forms of nouns in descriptions of individual languages:

[4] One might argue that this is a genitival construction, lit. 'goat's bigness' (see section 6.1.2.5 on dependency reversal in noun-attributive constructions), but class agreement provides evidence against this analysis, at least in a strictly synchronic perspective. Note however that, within the frame of this alternative analysis, the recognition of the uninflected form of nouns as a construct form is excluded even more radically, since the use of the uninflected form of nouns would uniformly characterize nouns in the role of dependent.

> Such a form also occurs in some other Western Nilotic languages, and in descriptions of those languages it has been variously labeled "genitive" (Kohnen 1933:28 on Shilluk, Okoth-Okombo 1982:32 on DhoLuo), "appertentive" (Gregersen 1961:83 on DhoLuo), "status constructus" (Tucker and Bryan 1966:83), "antigenitive" (Andersen 1988:284 on Päri), and "modified noun form" (Reh 1996: 116 on Anywa aka Anuak).
>
> (Andersen 2002: 13)

Since the existence of construct forms of nouns is widely acknowledged in Nilotic languages, it is not necessary to insist on Nilotic illustrations. By contrast, it is worth emphasizing here that construct forms of nouns are not uncommon elsewhere in Sub-Saharan Africa, although they are not identified as such in the descriptions of the languages in which they are found.

6.1.2.3.4. Construct forms of nouns in other East African languages

In the northeastern part of Sub-Saharan African, outside of the Nilotic language family, a construct form of nouns has been identified in the Cushitic languages Iraqw (Mous 1993) and Konso (Orkaydo 2013).

The case of Konso is particularly interesting, since the construct form of Konso nouns is marked by a tonal alternation, a situation relatively common in Sub-Saharan Africa. This tonal change affects nouns modified by a numeral, a relative clause, a noun in genitive function, or a possessive prefix (Orkaydo 2013: 252).

6.1.2.3.5. The construct form of Tswana nouns

In Tswana, the nouns whose basic tonal contour ends with two successive H tones (which constitute an important proportion of Tswana nouns, perhaps the majority) show a tonal alternation … HH ~ … HL that must be recognized as morphological, since its conditioning cannot be stated in purely phonological terms. In this alternation, the variant ending with … HL must be analyzed as a construct form. Interestingly, Tswana shows that the use of a construct form of the nouns and of a linker introducing the modifier may combine in the same construction.

For example, in (17a), *sìtswáná* 'Tswana culture, language, etc.' is the head of the NP *sìtswánà sé básìbúàŋ́* 'the Tswana they speak > the way they speak Tswana', and consequently, the contact with the linker *sé* introducing the relative clause triggers the use of the construct form *sìtswánà*. In (17b), *sìtswáná* is in contact with the same linker *sé*, but the linker introduces a dependent of *sìtílɔ́* 'chair',[5] not of *sìtswáná*; in (17b), *sìtswáná* has no dependent, and consequently the construct form would not be correct.

[5] The construct form *sìtílɔ̀* is licensed by the genitival dependent *sásìtswáná.*

(17) Tswana

a. *χà-kí-rátí* *sì-tswánà* *s-é* *bá-sì-búà:-ɲ́*
NEG-1SG-like CL7-Tswana.CSTR CL7-LK CL7-speak-REL
'I do not like the Tswana they speak (the way they speak Tswana).'

b. *χà-kí-rátí* *sì-tílɔ̀* *s-á-sì-tswáná* *s-é*
NEG-1SG-like CL7-chair.CSTR CL7-GEN-CL7-Tswana CL7-LK
bá-sì-rékílè:-ɲ́
CL2-CL7-buy.PRF-REL
'I do not like the Tswana chair they bought.'
(pers. doc.)

In Tswana, nouns with a basic tonal contour ending with … HH must take the construct form characterized by the contour … HL when immediately preceding one of the following types of dependents:
– a demonstrative,
– a genitival dependent,
– an adjective or a relative clause introduced by a linker homonymous with the demonstrative (and historically cognate with it – see Section 6.1.2.2)
– the interrogative determiner *-fĩ*,
– the negative determiner *-pé*,
– the determiner *-sìlí* 'other'.

6.1.2.3.6. The construct form of Eton nouns

Van de Velde (2017), analyzing relativization in Eton, argues that, in this language, the so-called "augment" (a nominal prefix whose original function was admittedly the expression of definiteness distinctions) has only subsisted as an obligatory element of the 'noun + relative clause' construction, and consequently fulfills a purely syntactic function in the present state of the language.

This situation is interesting to compare to that described by Jenks, Makasso and Hyman (2017) for Basaá. In both languages, a prefix *í* analyzable as the reflex of the Bantu augment is found with nouns modified by a relative clause. However, according to Jenks, Makasso and Hyman's description, contrary to Eton, this prefix is not obligatory in Basaá, and it encodes definiteness distinctions. Consequently, Basaá and Eton can be analyzed as illustrating successive stages in the same grammaticalization process, with some interesting typological particularities:
– In Basaá, according to Jenks, Makasso and Hyman, the use of the augment to express definiteness distinctions has been restricted to nouns modified by a relative clause. Typologically, definiteness distinctions conditioned by the presence of a given type of noun modifier are not unknown, but this constitutes a somewhat unusual phenomenon (in Baltic and Slavic languages, which are

the best-known cases of languages illustrating this kind of situation, the conditioning factor is rather the presence of an adjective).

– As regards Van de Velde's analysis of Eton, head marking (or in other words, the use of a construct form of nouns) in the 'noun + relative clause' construction is rarely if ever mentioned in the literature: quite obviously, construct forms of nouns (i. e., noun forms signaling that the noun combines with a given type of modifier) are more typically found with nouns heading genitival constructions.

6.1.2.3.7. The construct form of Hausa nouns

Hausa has a construct form of nouns characterized by a suffix *n* (singular masculine or plural) or *r̃* (singular feminine), commonly called a "genitive linker". This suffix occurs when the noun is the head of a genitival construction, as in (18 a) and (18 c). It must also be used when the noun takes a possessive suffix other than first-person singular, see (18 e) and (18 f). It results from the cliticization of a pronoun *na*/*ta* co-referent with the head noun in the synonymous construction illustrated by (18 b) and (18 d).

(18) Hausa

a. *kàre-n* *Daudà* (cf. *kàree* 'dog')
dog-CSTR.SG.M Dauda
'Dauda's dog'

b. *kàree* *na* *Daudà*
dog that_of.SG.M Dauda
'Dauda's dog'

c. *saanìya-r̃* *Daudà* (cf. *saanìyaa* 'cow')
cow-CSTR.SG.F Dauda
'Dauda's cow'

d. *saanìyaa* *ta* *Daudà*
cow that_of.SG.F Dauda
'Dauda's cow'

e. *kàre-n-sà*
dog-CSTR.SG.M-3SG.M
'his dog'

f. *saanìya-r̃-sà*
cow-CSTR.SG.F-3SG.M
'his cow'
(pers. doc.)

A difficulty in the analysis of *n* ~ *r̃* as the mark of a construct form of Hausa nouns is however that the same suffix characterizes attributive adjectives preceding nouns in the construction illustrated by *fari-n kàree* 'white dog' or *fara-r̃ saanìyaa* 'white cow' (*fari* and *fara* are the masculine and feminine forms, respectively, of the adjective 'white'). See Creissels (2009) for a discussion and a possible solution.

6.1.2.3.8. The construct form of Wolof nouns

In Wolof, a construct form of nouns characterized by the suffix *-u* (sg.)/*-i* (pl.) is used exclusively for nouns followed by a genitival dependent. It occurs with no other type of dependent, and, contrary to Semitic construct forms, it does not occur with possessive affixes or determiners either.

The construct form of Wolof nouns shares with Semitic construct forms a constraint of strict contiguity with the dependent noun. This means that other dependents of the head noun in the construct form must follow the genitival dependent, and that, if the dependent noun itself has dependents that must precede it, they must be placed to the left of the head noun, as illustrated by (19).

(19) Wolof

a. *fas* *w-u* *ñuul*
horse CLW-LK be_black
'black horse'

b. *suma* *nijaay*
1SG maternal_uncle
'my uncle'

c. *suma* *fas-u* *nijaay* *w-u* *ñuul*
1SG horse-CSTR maternal_uncle CLW-LK be_black
'the black horse of my uncle' (lit. 'my horse of uncle black')

d. **fas-u* *suma* *nijaay*
horse-CSTR 1SG maternal_uncle
(pers. doc.)

6.1.2.3.9. Construct forms of nouns in Mande languages

In Mende (South Western Mande), the initial of nouns shows a consonant alternation triggered by the syntactic status of the noun. One of the two forms can be characterized as a construct form, since it is automatically used whenever the noun is immediately preceded by a dependent, whereas the other (the free form) occurs whenever the noun is the first element of an NP, or is not accompanied by any dependent, as illustrated by (20).

(20) Mende
a. *ndopô* 'child', *tokó* 'arm', *ngíla* 'dog' (free forms)
b. *ndopó-i loko-í*
child-D CSTR.arm-D
'the child's arm'
c. *ndopó-i yilɛ-í*
child-D CSTR.dog-D
'the child's dog'
(pers. doc.)

Most accounts of Mende morphology suggest describing the initial of the construct form in terms of "lenition" of the initial of the free form, but as shown in Creissels (1994: 152–168), the construct form must rather be characterized by the absence of an underlying nasal present at the initial of the free form. In Mende, a nasal with exactly the same morphophonological properties but prefixed to verbs is the manifestation of a third-person object pronoun, and comparison with Kpelle shows that, before being reanalyzed as the mark of the free form of nouns, the nasal prefixed to nouns was a definite article.

However, this is only part of the story. The construct form of Mende nouns is also marked tonally: as can be seen from (20), Mende nouns used as heads in genitive–noun constructions, in addition to a change in their initial consonant, show a uniform L tonal contour, regardless of the lexical tone they show in their free form. Interestingly, the historical processes that led to a segmental marking of the construct form of Mende nouns must be relatively recent (since they are easy to reconstitute by comparing Mende with the other South Western Mande languages) whereas the existence of tonally-marked construct forms of nouns must be very ancient in the Mande language family. Construct forms of nouns marked by an L or LH replacive morphotoneme are found in the two major branches of the Mande family (see among others Creissels [2016a] on Soninke [West Mande], Khachaturyan [2015: 53] on Maan [South Mande]),[6] and a tonally marked construct form of nouns can safely be reconstructed at Proto-Mande level. (21) illustrates the action of the LH replacive morphotoneme that marks head nouns in the genitival construction of Soninke.[7]

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[6] Following the Russian terminological tradition, Khachaturyan calls this construct form 'izafet'. This is etymologically correct, since *'iḍāfah* is the term used in Arabic grammars for the noun–genitive construction in which the head noun occurs in the construct form. However, this can be misleading, since for most general linguists, this term rather evokes linkers of the kind found in West Iranian languages and called *ezafe* in Iranian linguistics – see Section 6.1.2.2.2.

[7] The final modulation on the last vowel of nouns in the construct form is the manifestation of a floating L tone that marks the definite form of Soninke nouns.

(21) Soninke

a.	*móbílì*	'the car'	→	*Múusá mòbìlî*	'Moussa's car'
				Moussa car.CSTR	
b.	*dòròkê*	'the cloth'	→	*Múusá dòròkê*	'Moussa's cloth'
				Moussa cloth.CSTR	
c.	*qálìsî*	'the money'	→	*Múusá qàlìsî*	'Moussa's money'
				Moussa money.CSTR	
d.	*kìtáabè*	'the book'	→	*Múusá kìtàabê*	'Moussa's book'
				Moussa book.CSTR	

(pers. doc.)

6.1.2.3.10. Construct forms of nouns in Dogon languages

A major typological feature of Dogon languages (Heath 2008; McPherson 2013) is the complexity of tonal alternations affecting nouns and triggered by the presence of various types of modifiers. For example, in Tommo So, alienably possessed nouns have a L tonal overlay replacing their lexical tones – Ex. (22).

(22) Tommo So

a. *gìnɛ́* 'house', *ìsé* 'dog' (free forms)

b. *Sáná* *gìnè*
Sana house^{L}
'Sana's house'

c. *Àrámátá* *ìsè*
Ramata dog^{L}
'Ramata's dog'
(McPherson 2013: 183–184)

In Jamsay, alienably possessed nouns undergo no tonal modification, but inalienably possessed nouns have an H(H …)L tonal overlay replacing lexical tones. (23) illustrates the tonal contrast between *dĕ:* 'father' in its free form and in the form tonally modified by the presence of an inalienable possessor.

(23) Jamsay

a. *Dĕ:* *sà:-rá-m.*
father have.NEG.1SG
'I do not have a father.'

b. *Séydù* *dê:*
Seydou father^{HL}
'Seydou's father'
(Heath 2008: 237)

6.1.2.3.11. Concluding remarks

In Sub-Saharan Africa, construct forms of nouns are found in languages that have no close genetic or areal link. The examples give an idea of the possible variations in the distribution of construct forms (which however almost always includes the role of head in noun–genitive (or genitive–noun) constructions, Eton being the only exception to this generalization I am aware of). They also illustrate the variation in their morphological marking: the construct form may involve the addition of a segmental marker to the free form, as in Hausa or Wolof, the deletion of a morphological element present in the free form, as in Mende, or tonal alternations (Mande, Dogon, Konso, Tswana). Diachronically, although not all these construct forms are historically transparent, they illustrate a variety of scenarios that may result in the emergence of a construct form of nouns:

– The construct form of Tswana nouns probably results from the morphologization of tonal sandhi processes.
– In Hausa, the construct form of nouns is marked by a suffix resulting from the encliticization of a resumptive pronoun in a genitive construction whose literal equivalent in English would be something like 'the dog that.of the man' for 'the man's dog'.
– In Mende, the construct form of nouns is marked by the absence of a prefix present in the free form that diachronically can be characterized as a frozen definite article, whereas in Eton, it is the construct form of nouns that is marked by a prefix analyzable as a frozen definite article.

It is also worth noting that there is no correlation between the relative order of nouns and their modifiers and the use of construct forms, since construct forms are equally attested in noun–modifier and modifier–noun constructions.

6.1.2.4. Incorporation of attributive adjectives

6.1.2.4.1. Introductory remarks

In most languages, adjective–noun compounding is limited either to lexicalized combinations (as in *blackbird*) or to bahuvrihi compounds (as in *redbreast*). Adjective–noun compounding as a regular and productive morphological process creating words equivalent to the attributive adjective–noun phrases found in most languages is not common. Attention has been drawn to this phenomenon by Dahl (2004: 225–235, 2015: 127–131), who argues that "combinations of adjectives and nouns may become tightened and integrated into a one-word construction without losing their productivity." He mentions Lakota, Burmese, Chukchi, and Elfdalian (Scandinavian), as having tighter combinations of adjectives and nouns that are not constrained in the ways compounds usually are, and also notes that Celtic,

Romance, and Southern Ute have a contrast between tighter preposing constructions and looser postposing ones, the formers being consequently analyzable as instances of quasi-compounding (combinations of words that in some respects behave as if they were the two elements of a single compound word).

Although this is rarely made explicit in the available grammatical descriptions, phenomena interpretable in terms of quasi-compounding in attributive adjective–noun combinations are pervasive in the languages of sub-Saharan Africa. Moreover, languages in which the integration of attributive adjectives and nouns into one-word constructions is obligatory can be found at least within the Mande and Gur language families.

Creissels (2003) argues that sub-Saharan languages provide evidence against mainstream approaches to lexical categories that put on a par adjectives and adverbs (and sometimes adpositions) with nouns and verbs, and rather support the view that there are only two basic lexical categories (nouns and verbs), since adjectives and adverbs do not necessarily have the ability to "project" phrasal categories.

In Sub-Saharan languages, the recognition of "adjectival phrases" with an internal structure comparable to that of NPs or VPs is problematic, since the possibilities of expansion of attributive adjectives are most of the time limited to a single word expressing intensity. For example, typical sub-Saharan languages may have attributive adjectives equivalent to English *proud*, but cannot use them in constructions similar to *a man proud of his son*, whose equivalent is a relative clause construction involving a verb cognate with an adjective (*a man who takes-pride of his son*).

To take another example, Bambara (aka Bamanankan) has an adjective *júgú* 'bad' that can be juxtaposed to nouns as an attributive modifier, but there is nothing in Bambara syntax (and as far as I know, in the syntax of other sub-Saharan languages) that could be compared to the use of *bad* as the head of an adjective phrase including a complement NP such as *as bad as NP* in English. In Bambara, *a dog as bad as yours* can only be rendered as lit. *a dog whose badness and that of your dog are equal*, as in (24).

(24) Bambara (aka Bamanankan)

a. *wùlù-júgú*
dog-bad
'bad dog'

b. *wùlû mîn júgú-yâ ní í ká wùlû tá ká kán*
dog.D REL bad-ABSTR.D and 2SG LK dog.D that_of POS be_equal
'a dog as bad as yours'
(pers. doc.)

6.1.2.4.2. Incorporation of attributive adjectives in Soninke (Mande)

As regards the morphological incorporation of attributive adjectives, Soninke (West Mande) illustrates the clearest possible case of a language with noun–adjective compounding, since in this language (Creissels 2016a), the distinction between phrases and compounds is particularly clear-cut.

Crucially, Soninke nouns have a distinction between an autonomous form that can function as a word without any additional material, and a non-autonomous form occurring exclusively when the nominal lexeme is a non-final formative of a complex lexeme. For example, the non-autonomous form of *yìràamê* 'cloth' is *yìràn* (as in the compound *yìràn-gáagàanâ* 'cloth seller', where *gáagàanâ* is an agent noun derived from *gáagà* 'sell').

Morphologically, Soninke adjectives are not different from nouns, and can fulfill the same syntactic functions. For example, *qúllè* 'white' can be found in all nominal positions with the type of meaning expressed in English as *a/the white one*. Simply, much in the same way as for example in French and other Romance languages, this use of adjectives requires some discursive conditioning. Adjectives can also combine with nouns expressing the concept they modify, as in *yìràn-qúllè* 'white cloth', but as shown by this example, noun–adjective combinations expressing the kind of modification typically expressed by attributive adjectives can only take the shape of compounds with the noun in its non-autonomous form:

(25) Soninke
a. *Ń* *dà* *yìràamê-n* *qóbó.*
1SG TR cloth-D buy
'I bought a/the cloth.'
b. *Ń* *dà* *qúllè-n* *qóbó.*
1SG TR white-D buy
'I bought a/the white one.'
c. *Ń* *dà* *yìràn-qúllè-n* *qóbó.*
1SG TR cloth-white-D buy
'I bought a/the white cloth.'
(pers. doc.)

Crucially, it is also possible to combine adjectives with nouns in their autonomous form, but adjectives following nouns in their autonomous form can only be interpreted as secondary predicates, not as attributive modifiers. In (26a), *yúgú* is the non-autonomous form of 'man', whereas in (26b), *yúgò* is the autonomous form of the same noun:

(26) Soninke
a. *Yúgú-xásè-n* *kàrá.*
man-old-D die
'The/An old man died.'

b. *Yúgò-n qàsé-n kàrá.*
man-D old-D die.
'The man died old.'
(pers. doc.)

In Manding languages (which belong to another branch of the Mande language family), adjectives are divided into two classes: all simplex adjectives and a minority of derived adjectives form morphological compounds with the noun they qualify, exactly like the adjectives of Soninke, whereas most subtypes of derived adjectives combine with nouns in a way that cannot be analyzed in terms of morphological compounding – see for example Creissels and Sambou (2013: 229–230) on the morphological behavior of attributive adjectives in Mandinka.

6.1.2.4.3. Incorporation of attributive adjectives in Gur languages

One can find among Gur languages noun–attributive adjective constructions that show no evidence of morphological compounding, but very clear cases of noun–adjective compounding are also attested in various branches of the Gur language family.

Gurmanche (Ouoba 1982) is a case in point. In Gurmanche, nouns have obligatory class suffixes, for example *dāa-gā* (pl. *dāa-mú*) 'market,' *tí-bū* (pl. *tīi-dí*) 'tree'. In compound nouns, the modifying noun occurs without its class suffix, for example *dāa-tī-bū* (pl. *dāa-tīi-dí*) 'market tree' (i. e., tree belonging to a variety commonly found in markets) vs. *dāa-g tí-bū* 'tree of the market', *dāa-g tīi-dí* 'trees of the market', if 'market' has specific reference (Ouoba 1982: 157). In this language too, adjectives are morphologically nouns, with the difference that adjectival stems can combine with any of the class suffixes found in the language. In most Niger-Congo languages with similar noun class systems, in the construction 'noun + attributive adjective', both the noun and the adjective have their class affix, and there is agreement between them. By contrast, in Gurmanche (and quite a few other Gur languages), such constructions constitute single words (with just one class suffix) in which the adjectival lexeme can be described as inserted between the noun stem and its class suffix, for example with *ciám* 'big':

(27) Gurmanche

a.	*tí-bū*	'tree'	+ *ciám* 'big'	> *tī-ciám-bū*	'big tree'
b.	*tīi-dí*	'trees'	+ *ciám* 'big'	> *tī-cián-dī*	'big trees'
c.	*diē-gū*	'house'	+ *ciám* 'big'	> *diē-cián-gū*	'big house'
d.	*diē-dī*	'houses'	+ *ciám* 'big'	> *diē-cián-dī*	'big houses'

(Ouoba 1882: 131–133)

The compound nature of the noun–attributive adjective construction is equally obvious in Dagara as described by Delpanque (1997), although the author of this

description writes nouns and their attributive modifiers as distinct words and does not even mention the possibility of an analysis in terms of compounding.

An explicit and well-motivated acknowledgement of the compound nature of the noun–attributive adjective construction can be found in Dombrowsky-Hahn's description of Syer (aka Western Karaboro), a language belonging to the Senufo branch of the Gur family (Dombrowsky-Hahn 2015: 228).

6.1.2.5. Dependency reversal in noun–attributive constructions

This section is based on Van de Velde (2011). This unpublished paper represents a decisive step toward a better understanding of a phenomenon that had already drawn the attention of linguists describing sub-Saharan languages, but had never been delimited properly, which resulted in some ambiguity as regards its exact definition and cross-linguistic extent.

As illustrated by (28b) and (28c), to be compared with (28a), in a number of central African languages, attributive constructions have the form of a genitival construction in which the attributive modifier is construed as the head.

(28) Basaá

a. *lì-wándá* *lí=kíŋɛ̂*
CL5-friend CL5.LK=chief
'the friend of the chief'

b. *lì-kéŋgɛ́* *lí=m-ût*
CL5-clever CL5.LK= CL1-person
'a clever person'

c. *mà-kéŋgɛ́* *má=6-ôt*
CL6-clever CL6.LK=CL1-person
'clever people'
(Hyman 2003)

Outside of Africa, this crosslinguistically rare phenomenon has been observed among others in Aleut and Chinook (Malchukov 2000).

Dependency-reversal in noun-attributive (DRNA) constructions must be carefully distinguished from another type of possessive-like attributive construction, illustrated by English *a thing of beauty*, which is cross-linguistically much more widespread (and found in particular in many sub-Saharan languages).

DRNA constructions are less easy to distinguish from the type illustrated by English *a bear of a man*, but this latter type is a highly marked strategy bound to expressivity, whereas DRNA constructions are the most neutral and often the only strategy for noun qualification. Moreover, the head in *a bear of a man* denotes an entity, whereas the head in DRNA constructions denotes a quality.

Crucially, in the Bantu languages that have DRNA constructions, it is not possible to distinguish adjectives from nouns according to the criterion that noun

classes are assigned to nouns lexically, and to adjectives via agreement rules. In DRNA constructions, both the class expressed by the qualifier and that expressed by the qualified are lexically assigned. Moreover, the qualified agrees with the qualifier exactly like a genitival modifier with its head, and it is the qualifier that (exactly like the head noun in uncontroversial noun–genitive constructions) determines the behavior of the qualifier–qualified construction in class agreement.

The specificity of DNRA constructions is particularly clear in Eton and neighboring languages. In other Bantu languages spoken in the extreme northwest of the Bantu area, and in some non-Bantu Benue-Congo languages spoken further to the north, the languages become more analytic and the evidence less clear, and the DRNA construction is often in competition with alternative constructions.

Gbaya is another case in point. Although the particularly clear kind of evidence provided by class agreement in Eton or Basaa is not available in Gbaya, Van de Velde concludes that the evidence supporting the recognition of a DRNA construction is particularly strong in Gbaya. He further states that the same applies to the other Ubangi languages he has examined, whereas in the other language families, clear instances of a DRNA construction are only found in a few languages adjacent to the Ubangi languages. By way of a conclusion, he hypothesizes that DRNA arose in Ubangi and spread from there.

6.1.2.6. NP coordination

6.1.2.6.1. NP coordination and comitative adjunction in Manding languages

The Mandinka preposition *nîŋ* (with an allomorph *ní* conditioned by the nature of the following word) is the usual translational equivalent of English *with* introducing comitative adjuncts, and of English *and* in NP coordination, but is not used for the coordination of other categories. This is a common feature among sub-Saharan languages, but in some respects, this preposition *nîŋ* and its cognates in other Manding languages show crosslinguistically uncommon properties that contrast with those commonly found in the languages that share with Manding languages the use of a comitative marker to encode NP coordination.

As illustrated by the Wolof preposition *ak* ‘with’ in (29), the situation commonly found in the languages of sub-Saharan Africa is that *with*-phrases are found in two distinct constructions in which they encode related but not identical meanings:

– *With*-phrases may immediately follow an NP with which they form a constituent, in which case they encode that the semantic role assigned to the NP in the *with*-phrase is identical to that of the preceding NP), as in (29a).
– *With*-phrases may also occupy the same position as other adpositional phrases in oblique role, in which case they encode a comitative meaning, as in (29b).

(29) Wolof
a. *Jend-al ceeb ak diwlin!*
buy-IMPER rice with oil
'Buy rice and oil!'
b. *Dem-al ak moom!*
go-IMPER with 3SG
'Go with him!'
(pers. doc.)

By contrast, in Mandinka, it is not possible to distinguish a construction in which *nîŋ* would unambiguously express NP coordination from another in which it would unambiguously mark comitative adjuncts. The reason is that, contrary to Wolof [*ak* N] sequences, Mandinka [*nîŋ* N] sequences cannot occupy the same postverbal position as other adpositional phrases, and can only be found immediately after a noun phrase with which they form a constituent [N_1 *nîŋ* N_2].

As illustrated by (30), in Mandinka, the [N_1 *nîŋ* N_2] construction can be found with a clearly coordinative meaning in all the positions that can be occupied by NPs in a Mandinka clause: subject (30a), object (30b), complement of a postposition (30c), and genitive (30d). By "coordinative meaning", I mean that the referents of N_1 and N_2 are interpreted as sharing the semantic role assigned to NPs occupying this position.

(30) Mandinka
a. *[Mùsôo-lú nîŋ díndíŋ-ò-lú] tú-tà súwòo kónò.*
woman.D-PL with child-D-PL remain-CPL house.D in
'The women and the children remained at home.'
b. *Ŋá [ñòô níŋ tìyóo] sèné.*
1SG.CPL millet.D with peanut.D cultivate
'I cultivated millet and peanuts.'
c. *À yè kódòo díi [súŋkútòo ní à fúláŋ-ò-lú] là.*
3SG CPL money.D give girl.D with 3SG peer-D-PL POSTP
'He gave money to the girl and her peers.'
d. *Ì fùtá-tà [Fúládúu níŋ Kàabú] nàanéwòo tó.*
3PL reach-CPL Fuladuu with Kaabu boarder.D LOC
'They reached the border between Fuladuu and Kaabu.'
(pers. doc.)

However, as illustrated by (31), [N_1 *níŋ* N_2] sequences can be found in the same syntactic positions in contexts in which it is clear that the semantic role assigned to NPs occupying the position in question is assigned to N_1 only, and N_2 can only be interpreted as expressing accompaniment or manner.

(31) Mandinka

a. *[Nóosòo níŋ dèenàan-óo] nǎa-tà.*
nurse.D with baby.D come-CPL
'The nurse brought the baby (came with the baby).'

b. *[À níŋ càkôo-lú] yé à lá nàafúlóo kàsáarà.*
3SG with prostitute.D-PL CPL 3SG LK wealth.D squander
'He squandered his wealth with prostitutes.'

c. *[Kàmbàanôo níŋ bòr-óo] nǎa-tà.*
boy.D with running.D come-CPL
'The boy came running.' lit. 'The boy with running came.'

d. *[Súŋkútòo níŋ kùmbóo] nǎa-tà.*
girl.D with crying.D come-CPL
'The girl came in tears.' lit. 'The girl with crying came.'

e. *[Kùcâa ní à lá kùmóo] lè kà fálîŋ.*
sorrel.D with 3SG LK sharpness.D FOC ICPL sprout
'Sorrel sprouts with its sharpness.'
(pers. doc.)

Crucially, N_2 in such [N_1 *nîŋ* N_2] sequences does not behave differently from N_2 in [N_1 *nîŋ* N_2] sequences expressing semantic role sharing. Movement to postverbal position is possible, but only if *nîŋ* is immediately preceded by a pronoun resuming N_2, and this transformation is possible regardless of the precise meaning carried by the construction – compare (32) with (30b) and (30c) above. This constitutes clear proof that in all cases, *nîŋ* N_2 can only exist as part of a [N_1 *nîŋ* N_2] constituent.

(32) Mandinka

a. *Ðá ñǒo$_i$ sèné, [à$_i$ níŋ tìyôo].*
1SG.CPL millet.D cultivate 3SG with peanut.D
'I cultivated millet, and also peanuts.' lit. 'I cultivate millet, it with peanuts.'

b. *Kàmbàanóo$_i$ nǎa-tà, [à$_i$ níŋ bòrôo].*
boy.D come-CPL 3SG with running.D
'The boy came running.' lit. 'The boy came, he with running.'
(pers. doc.)

To summarize, *nîŋ* 'with' can only occur in [N_1 *nîŋ* N_2] sequences that have the syntactic status of NPs. In this respect, [N_1 *nîŋ* N_2] sequences are similar to English [N1 and N2] sequences or their equivalent in other European languages. However, semantically, the [N_1 *nîŋ* N_2] construction is not a coordinative construction: the semantic role corresponding to the position occupied by [N_1 *nîŋ* N_2] is assigned to N_1, whereas N_2 is assigned the role of companion of N1. The role of companion does not exclude role sharing with N1 (and consequently, the associative construction of Mandinka can be used as the translation equivalent of English NP coordina-

tion), but it does not imply it either, and the precise interpretation of the associative construction entirely depends on semantic and/or contextual factors.

Additional proof that Mandinka [N_1 *nîŋ* N_2] phrases are only superficially similar to English [N_1 and N_2] comes from the fact that [N_1 *nîŋ* N_2] lends itself to manipulations that are not possible with dedicated coordinative constructions. In particular, as shown by (33), N_1 and N_2 can be dissociated in focalization, relativization, and negation.

(33) Mandinka

a. *[Í nîŋ Músáa] bè kúwòo táamándì-lá.*
2SG with Musaa COP problem.D fix-INF
'Musaa and you will fix the problem.'
or 'You will fix the problem with Musaa.'

b. *[Í-tè lè nîŋ Músáa] bè kúwòo táamándì-lá.*
2SG-EMPH FOC with Musaa COP problem.D fix-INF
'YOU will fix the problem with Musaa.'

c. *[Í nîŋ Músáa lè] bé kúwòo táamándì-lá.*
2SG with Musaa FOC COP problem.D fix-INF
'You will fix the problem with MUSAA.'

d. *[í nîŋ mîŋ] bé kúwòo táamándì-lá.*
2SG with REL COP problem.D fix-INF
'the person with whom you will fix the problem'

e. *[mîŋ nîŋ Músáa] bè kúwòo táamándì-lá.*
REL with Musaa COP problem.D fix-INF
'the person who will fix the problem with Musaa'

f. *[Í nîŋ Músáa] tè kúwòo táamándì-lá.*
2SG with Musaa COP.NEG problem.D fix-INF
'Musaa and you will not fix the problem.'
or 'You will not fix the problem with Musaa.'
(pers. doc.)

6.1.2.6.2. A rare type of inclusory coordination in Tswana

Inclusory coordination constructions are constructions consisting of two nominal terms with the following characteristics:

– the first term refers to a group including an individual *I1*;
– the second term refers to an individual *I2*;
– the construction refers to a plural individual whose individual parts are *I1* and *I2*.

In an inclusory coordination construction, the second term of the construction restricts the meaning of the first one rather than extending it, as in ordinary additive coordination constructions.

A classical example of inclusory coordination is Russian *my s toboj* lit. 'we with you', to be interpreted as 'you and I': by itself, *my* 'we' can refer to any group including the speaker, and the second part of the construction restricts the reference of *my* by specifying that the only other member of the group is the addressee. A similar construction is found in some varieties of French, for example *nous deux ma femme* lit. 'we two my wife,' to be interpreted as 'my wife and I'.

Cross-linguistically, inclusory coordination constructions are common with speech act participants in the role of *I1*, and the examples discussed in the general literature on coordination are almost always of this type. It is therefore interesting to observe that Tswana has a construction that fully meets the definition of inclusory coordination formulated above, but in which the first term is a proper name combined with a class prefix (the prefix of class 2a *bó*) that expresses associative plural when used with proper names.

(34) Tswana
  a. *bó-kítsɔ́*
     CL2a-Kitso
     'Kitso and his companion(s)'
  b. *bó-kítsɔ́* *lí-m̀pʰɔ́*
     CL2a-Kitso with-(CL1)Mpho
     'Kitso and Mpho' lit. 'Kitso-and-others with Mpho'
     (pers. doc.)

For more details on this construction and on the associative plural marker of Tswana, see Creissels (2016b).

6.1.3. Argument structure and valency operations

6.1.3.1. Transitivity prominence

Languages differ in the extent to which they make use of transitive coding, in other words, in their degree of transitivity prominence. For example, like English or French, Wolof extends the transitive coding typically found with verbs such as *break* to a verb like *forget* (whose argument structure cannot be described in terms of agent/patient), whereas in Mandinka, *forget* has an extended intransitive construction in which one of the arguments is an oblique argument.

(35) Wolof

a. *Xale b-i toj na weer b-i.*
child CLb-D break PRF.3SG glass CLb-D
'The child has broken the glass.'

b. *Xale b-i fàtte na sama sant*
child CLb-D forget PRF.3SG my name
'The child has forgotten my name.'
(pers. doc.)

(36) Mandinka

a. *Díndíŋ-ò yè wéeróo tèyí.*
child-D CPL.TR glass.D break
'The child has broken the glass.'

b. *Díndíŋ-ó ñìná-tà ŋ́ kòntóŋ-ò lá.*
child-D forget-CPL.INTR 1SG name-D POSTP
'The child has forgotten my name.'
(pers. doc.)

It has long been known that English or French have a much stronger tendency to employ transitive verbs than for example German or Russian. Say (2014) provides a precise picture of the variation in transitivity prominence across European languages. As regards sub-Saharan Africa, some precise data are now available due to the Leipzig Valency Classes Project, whose database contains data from 36 languages worldwide, among which four languages of sub-Saharan Africa: Mandinka, N||ng, Yoruba, and Emai. Haspelmath (2015) discusses the classification of the 36 languages according to their degree of transitivity prominence on the basis of the sample of 80 verb meanings that were systematically collected for all the languages of the project.

Quite obviously, the four languages enumerated above do not constitute a representative sample of the languages of Sub-Saharan Africa. It is nevertheless interesting to observe that three of them are among the top five in terms of transitivy prominence: Emai (2), N||ng (3), and Yoruba (5). Mandinka occupies the 20th position of 36, immediately after Italian, which means that its moderate degree of transitivity prominence is comparable to that of West European languages.

In Creissels (2017b), I evaluated the rate of transitivity prominence in 17 genetically and areally diverse languages of Subsaharan Africa on the basis of a questionnaire including 30 verb meanings, and found the following ranking of the 17 languages in question:

1. Tswana (29.5/0.5)
2. Jola-Fonyi (29/1)
   Wolof (29/1)
4. Lingala (28.5/1.5)
5. Beja (27.5/2.5)
6. Kanuri (26/4)
7. Jamsay (25/5)
8. Gbaya (24/6)
9. Sar (23/7)
10. Yoruba (21/9)
11. Baule (20.5/9.5)
    Hausa (20.5/9.5)

Mandinka (20.5/9.5)
14. Soninke (18/12)
15. Gagnoa Bete (17.5/12.5)
16. Fon (17/13)
17. Korobo Senni (13/17)

This suggests that languages with a very high degree of transitivity prominence are common among the languages of Subsaharan Africa, whereas languages with a very low degree of transitivity prominence are not common, since the lowest rate of transitivity prominence observed in the sample is 13/17 (Koroboro Senni), to be compared to the rate of 3/27 found in Akhvakh (East Caucasian) with the same questionnaire. Note that my own evaluation does not confirm the very high degree of transitivity prominence found by Haspelmath for Yoruba. The explanation is simply that Haspelmath based his evaluation on an account of the valency properties of Yoruba verbs in which transitive coding proper is not distinguished from another type of coding frame found with some bivalent verbs whose second argument is not coded like adnominal possessors, which led to an over-evaluation of the proportion of verbs showing transitive coding.

6.1.3.2. Valency orientation

Nichols et al. (2004) define a typological parameter of valency orientation accounting for the formal treatment of verb pairs such as *die/kill*, *fall/drop*, *break (intr.)/break (tr.)*, etc. Individual languages make variable use of different strategies, among which the following ones are particularly common:

– Augmentation: the transitive member of the pair is derived from the intransitive member, as Mandinka *jăa* 'become dry' > *jà-ndí* 'make dry'.
– Reduction: the intransitive member of such pairs is derived from the transitive member, as Jola Fonyi *liw* 'wake s. o. up' > *liw-o* 'wake up (intr.), or Soninke *kárá* 'break (tr.) > *káré* (*kárá+i*) 'break (intr.).
– Ambitransitivity: the transitive and the intransitive members have the same form, as Mandinka *tèyí* 'break (tr. & intr.)', *kúníŋ* 'wake up (tr. & intr.)', *făa* 'die/kill'.
– Suppletion: the two members of the pair are formally unrelated, as Wolof *dee* 'die'/*rey* 'kill'.

As discussed by Nichols et al. (2004), some languages show a marked preference for a particular strategy, but this is not necessarily the case, and languages can therefore be classified as more or less 'transitivizing' or 'detransitivizing': typical transitivizing languages have a marked preference for the augmentation strategy, whereas typical detransitivizing languages show a marked tendency toward the reduction strategy. Russian is a typical detransitivizing language, whereas Japanese is a typical transitivizing language. Across the world's languages, transitivizing languages are common and have a wide geographical distribution, whereas detransitivizing languages are less common.

The language sample used by Nichols et al. (2004) includes ten sub-Saharan languages: Ewe, Acholi, Efik, Fula, Hausa, Maasai, Ngbandi, Naro, Somali, and Swahili. They find a marked preference for the transitivizing strategy in Fula and Swahili, and a marked preference for the detransitivizing strategy in Maasai. The other seven Sub-Saharan languages of the sample show no marked preference either for the transitivizing or detransitivizing strategy.

Further investigation will be necessary before putting forward a typology of Sub-Saharan languages with respect to the feature of valency orientation, and I would like to emphasize that this will not be an easy task, since quite obviously, this feature shows no stability within the limits of genetic units. For example, within the Mande family, Mandinka does not use the detransitivizing strategy at all and makes remarkably wide use of the ambitransitive strategy, whereas Soninke makes wide use of the detransitivizing strategy and has relatively few ambitransitive verbs. Similarly, within the Atlantic family, Wolof has a relatively high proportion of ambitransitive verbs, whereas ambitransitive verbs are exceptional in Joola.

6.1.3.3. Passives

6.1.3.3.1. Active / passive lability (zero-coded passives)

P-labile verbs are verbs that can be used in their underived form either transitively or intransitively with a subject representing the same patient-like participant as the object of the same verb used transitively.

Semantically, two varieties of P-lability must be distinguished: causative / anticausative lability, if the subject of the intransitive construction represents a participant undergoing the same process as the object of the transitive construction, but not necessarily as the result of the action of an agent, and active / passive lability, if the intransitive construction implies the participation of an unexpressed agent.

Cross-linguistically, causative / anticausative lability, illustrated by English *break*, is extremely common, and its existence is widely acknowledged in typological investigations of valency changes, whereas until not long ago, the very possibility of active / passive lability was either ignored or even explicitly denied by typologists working on valency-decreasing derivations (Haspelmath 1990). Arka and Kosmas (2005) on Manggarai (Autronesian) and Lüpke (2005) on Jalonke (aka Yalunka) (Mande) are to the best of my knowledge the first published works that have explicitly argued the case for the recognition of zero-coded passives (aka bare-passives), but this recognition was implicit in many previously published descriptions of languages belonging to various families, both within and outside Africa (for a review, see Cobbinah and Lüpke (2009); see also Hamlaoui (2014) for an analysis of zero-coded passives in Bantu and western Nilotic languages).

The Mande language family shows a particular concentration of languages with more or less productive zero-coded passives, or active / passive lability (Lüpke 2007; Cobbinah and Lüpke 2009). Manding languages illustrate the extreme case

of languages that have no strictly transitive verb, and a very restricted class of A-labile verbs, but in which all the verbs that have a transitive use can also be used intransitively in their underived form with a passive reading.

In language description, the analysis of lability is conditioned not only by the alignment properties of the languages, but also by the existence of a more or less clear-cut distinction between transitive and intransitive predications (Creissels 2014). In Mandinka and other Mande languages, the analysis of lability is facilitated by the rigidity of the Subject-Object-Verb-Oblique constituent order and the total ban on null subjects or objects: in Mande languages, a single NP in preverbal position in assertive or interrogative clauses can only be a subject. Morever, some TAM-polarity markers may have variants conditioned by the transitive vs. intransitive nature of the predicative construction.

For example, in (37b), the absence of any specific passive marking might suggest positing a null subject with an arbitrary reading. However, if *kúlúŋò* were the object in a transitive construction with a null subject, the TAM-polarity marker would be *yè* preceding *kúlúŋò* rather that *tá* suffixed to the verb, as in the ungrammatical sequence (37c).

(37) Mandinka
a. *Kèwóo yè kúlúŋ-ò dádâa.*
man.D CPL.TR boat-D repair
'The man repaired the boat.'
b. *Kúlúŋ-ò dádàa-tá.*
boat-D repair-CPL.INTR
'The boat was not repaired.'
c. **Ø yè kúlúŋ-ò dádâa.*
CPL.TR boat-D repair
(pers. doc.)

Consequently, (37b) is not a transitive construction with a null subject, but an intransitive construction whose subject (*kúlúŋò*) has the same semantic role as the object of the transitive construction (37a) – in other words, a zero-coded passive.

Decisive proof of the passive nature of the intransitive constructions involved in this active/passive alternation is their ability to include agent-oriented adverbs, such as *fèerèetòo* 'cleverly' in (38b), since agent-oriented adverbs are impossible in anticausative constructions with inanimate subjects.

(38) Mandinka
a. *Kàmbàanóo yè násóo fèerèetòo-bóŋ kòlóŋ-ò*
boy.D CPL.TR magic_water.D cleverly-pour well-D
kónò.
inside
'The boy cleverly poured the magic water into the well.'

b. *Násóo* *fèerèetòo-bôn-tá* *kòlóŋ-ò* *kónò.*
magic_water.D cleverly-pour-CPL.INTR well-D inside
'The magic water was cleverly poured into the well.'
(pers. doc.)

In spite of the absence of any specific passive morphology, the construction illustrated by sentences (37b) and (38b) is passive in the sense that the patient is the subject of an intransitive construction in which the agent is syntactically *demoted* without however being *deleted* from argument structure.

In Manding languages, the passive reading of such intransitive clauses is not bound to any particular condition on aspect, mood, or referentiality. Mandinka speakers use them in the same conditions, with the same freedom, and with the same semantic implications, as agentless passive clauses in languages that have canonical and fully productive passive constructions.

There is however an interesting difference between Mandinka and most other Manding languages in the syntactic properties of the zero-coded passive construction. In most Manding languages, intransitive clauses constituting the passive counterpart of a transitive clause may include an oblique representing the agent, as in (39).

(39) Bambara
a. *Wùlû* *má* *sògô* *dún.*
dog.D CPL.NEG meat.D eat
'The dog did not eat the meat.'
b. *Sògô* *má* *dún* *(wùlú* *fɛ̀).*
meat.D CPL.NEG eat dog.D beside
'The meat was not eaten (by the dog).'
(pers. doc.)

This possibility does not exist in Mandinka. Interestingly, the passive clauses of Mandinka may include obliques marked by the same postpositions as those used to encode the agent in the other Manding varieties (i. e., postpositions whose basic meaning is reference to the personal sphere of an individual), but in the passive clauses of Mandinka, such obliques are interpreted as referring to a person who has some link with the event but does not play an active role in it, or to an involuntary agent, as in (40).

(40) Mandinka
Kódòo *dómò-tá* *ŋ́* *fèe.*
money.D spend-CPL.INTR 1SG beside
'The money was spent without my knowing.'
or 'I spent the money, but I did not do it on purpose.'
(pers. doc.)

6.1.3.3.2. A rare type of oblique passive in Joola languages

By *oblique passive*, I mean a construction in which the verb shows the marking typically found in canonical passive constructions, but the subject corresponds to an oblique in the construction of the corresponding non-passive verb form. English *This bed has been slept in* is a classical example.

According to Pierre Sambou (pers. com.), Joola languages have a type of oblique passive, illustrated by (41b), which as far as I know has not been mentioned so far in the literature on passives. In (41b), *e-bool-yu* 'the bowl' in subject position governs verb agreement, but is also resumed by a pronoun in the position it would occupy in the corresponding active sentence.

(41) Kuwaataay

a. *Sana a-ñoofo-a-ñoofo ti e-bool-yu.*
Sana CLa-eat-VFOC-eat in CLe-bowl-CLe.D
'Sana has eaten in the bowl.'

b. *E-bool-yu e-ñoofo-ee-ñoofo ti e-yo.*
CLe-bowl-CLe.D CLe-eat-VFOC.PASS-eat in CLe-PRO
lit. 'The bowl$_i$ has been eaten in it$_i$.'
(Pierre Sambou, pers. com.)

Although this is not a common type of passive construction, it is not difficult to imagine a plausible grammaticalization path. Since impersonal passives (i. e., constructions in which the demotion of the subject is not accompanied by the promotion of any other term) are cross-linguistically very common, one can imagine that the source of this construction was an impersonal passive with an expletive subject marker, something like *EXPL-has been eaten in this bowl*, which in combination with the topicalization of the oblique phrase may have given something like *This bowl, EXPL-has been eaten in it*. Then the topicalized phrase was reinterpreted as a subject, and the expletive index of the impersonal passive construction was replaced by an index expressing agreement with the NP to its left: *This bowl$_i$ it$_i$-has been eaten in it$_i$*.

6.1.3.4. Atypical objects in Soninke

By atypical objects, I mean phrases coded like the P argument of transitive verbs in the basic transitive construction, which however do not refer to participants in the event encoded by the verbal lexeme. The analysis of atypical objects is often difficult in Subject-Verb-Object-Oblique languages with unflagged objects, since in such languages, the distinction between objects and unflagged obliques is not always easy to draw. By contrast, in Mande languages, the absolute rigidity of the Subject- Object-Verb-Oblique constituent order in verbal predication rules out any possible confusion between atypical objects as defined above and semantically

similar phrases in their canonical oblique position. In this section, the question of atypical objects is presented through the example of Soninke, but similar constructions have been described in Manding languages.

In Soninke, as in other languages, the syntactic notion of object can be defined with reference to the coding of the patient in the basic transitive construction. As in other languages, the basic transitive construction extends to many verbs that are not, semantically speaking, prototypical transitive verbs, and the participants encoded as the two core terms of a transitive construction are not necessarily a typical agent and a typical patient. For example, in the construction of *ŋàrí* 'see' (42b), the perceiver and the stimulus are encoded exactly like the agent and the patient of a typical transitive verb such as *kárá* 'break' (42a). By contrast, (42c) illustrates an "extended intransitive" construction in which one of the arguments is encoded like a typical adjunct (i. e., takes the form of an adpositional phrase whose postverbal position contrasts with the immediate preverbal position typical for objects).

(42) Soninke

a. *Lémínè-n dà qóllè-n kárá.*
child-D TR calabash-D break
'The child broke the calabash.'

b. *Lémínè-n dà sámáqqè-n ŋàrí.*
child-D TR snake-D see
'The child saw the snake.'

c. *Ń mùngú dò ké lémíné tòxó-n ŋà.*
1SG forget with DEM child name-D^{LH} POSTP
'I have forgotten the name of this child.'
(pers. doc.)

The position between the subject and the verb, which in Mande morphosyntax unambiguously characterizes objects, may however be occupied by *atypical objects* that do not represent a participant, and nevertheless are encoded in the same way as typical patients, for example phrases encoding the duration of an activity, as in (43b).

(43) Soninke

a. *Hàatú dà kónpè-n céllà.*
Fatou TR room-D sweep
'Fatou swept the room.'

b. *Hàatú dà kòotá-n mùumâ-n céllà.*
Fatou TR day-D whole-D^{LH} sweep
'Fatou spent the whole day sweeping.'
(pers. doc.)

In Ex. (43b), the atypical object referring to the duration of an activity replaces the canonical object representing the second argument of 'sweep'. The canonical object is absent, and could only be present as an incorporated object, as in (44). Interestingly, as a rule, incorporation requires detransitivization marking on the verb, as in (44b), but the detransitivization marker disappears when an atypical object referring to duration is added.

(44) Soninke
a. *Ń dà súwà-n kárá.*
1SG TR firewood-D break
'I broke firewood.'
b. *Ń cúwá-káré dáàrú.*
1SG firewood-break.DETR yesterday
'I did firewood-breaking yesterday.'
c. *Ń dà kòotá-n mùumâ-n cúwá-kárá.*
1SG TR day-D whole-D^{LH} firewood-break
'I spent the whole day breaking firewood.'
(pers. doc.)

(45) illustrates the behavior of an intransitive verb, which cannot be used transitively with an object referring to a participant, but can nevertheless be found in a transitive construction with an object expressing duration.

(45) Soninke
a. *Ń ŋàtí yérú.*
1SG be_sick last_year
'I was sick last year.'
b. *Ń dà qású-báané wàtí.*
1SG TR month-one be_sick
'I was sick during a whole month.'
(pers. doc.)

Interestingly, some intransitive activity verbs may show a different ending in their transitive construction with a duration phrase in object function.

(46) Soninke
a. *Ń kìsìmá bíré kàmé sìiné.*
1SG grandfather^{LH} live hundred year^{LH}
'My grandfather lived one hundred years.'
b. *Ń kìsìmá dà kàmé sìiné bírá.*
1SG grandfather^{LH} TR hundred year^{LH} live.TR
'My grandfather lived one hundred years.'
(pers. doc.)

(47) illustrates another semantic type of atypical object: intransitive verbs denoting manner of movement, such as *wùrú* 'run' or *tèré* 'walk' cannot only be used transitively with a duration phrase in object function, but also with an object denoting the interval covered. Here again, transitivization may be overtly expressed by a change in the final vowel.

(47) Soninke

a. *Ó dà Qàayí dò Ñóoró nàxá-n tèrá.*
1PL TR Kayes with Nioro interval-D walk.TR
'We walked from Kayes to Nioro.'

b. *Ó dà kílóméetàrá-nú sìkkì wùrá.*
1PL TR kilometer-PL three[L] run.TR
'We ran three kilometers.'
(pers. doc.)

A third type of atypical object that does not refer to a participant and can feature in the construction of otherwise strictly intransitive verbs is the noun *hó* 'thing', interpreted in this construction as expressing intensity of the activity, as in (48).

(48) Soninke

Lémínè-n ŋá hó qènqè-né.
child-D ICPL thing sleep-GER
'The child sleeps so much.'
lit. 'The child sleeps a thing.'
(pers. doc.)

Interestingly, as illustrated by (49), *hó* 'thing' as an atypical object expressing intensity (or more precisely, quantification over the patientive argument) can also occupy the object slot in the construction of transitive verbs. In this case, as illustrated by (49c), the patientive argument of the transitive verb can be expressed as an oblique phrase headed by the postposition *`dí* 'in'.

(49) Soninke

a. *Múusá wá máarò-n ñígá-ná.*
Moussa ICPL rice-D eat-GER
'Moussa eats/is eating rice.'

b. *Múusá wá hó yígá-ná.*
Moussa ICPL thing eat-GER
'Moussa eats so much.'

c. *Múusá wá hó yígá-ná máarò-n dí.*
Moussa ICPL thing eat-GER rice-D in
'Moussa eats so much rice.'
lit. 'Moussa eats a thing in rice.'
(pers. doc.)

For a more detailed presentation of the atypical objects of Soninke, see Creissels (2017[a]).

6.1.3.5. Experiencers, impersonality, and transitivity

As discussed in Creissels (2008b), across the world's languages, it is relatively common that clauses describing physiological of psychological states or events affecting animate beings have special constructions that depart more or less from canonical verbal predication, and are often described as impersonal constructions, or constructions with experiencers encoded as non-canonical subjects. Creissels (2008b) gives illustrations from Russian (Europe), Quechua (South America), Tamil (India), and Tobelo (New Guinea). In this respect, there is some evidence that the situation is different in sub-Saharan Africa.

After surveying various types of impersonal constructions in a sample of Atlantic and Mande languages, Creissels et al. (2015) conclude that all major functional types of impersonal constructions commonly recognized in the languages of the world are present in the languages of their sample, with however a notable exception: they came across no case of constructions that could be analyzed as affective impersonals, i. e., deviations from canonical predication related to the presence of an experiencer in argument structure. Although further investigation would be necessary before deciding to what extent this conclusion could be generalized to other areas or language families of sub-Saharan Africa, my impression is that the situation described in Creissels et al. (2015) is at least the most common situation across sub-Saharan Africa.

In sub-Saharan languages, verbs whose argument structure includes an experiencer tend to simply occur in plain transitive or extended intransitive constructions. Interestingly, affective verbs with a plain transitive construction in which the experiencer is encoded like a typical patient (i. e., as the object), whereas the stimulus is encoded like a typical agent (i. e., as the subject), are particularly common. For example, the Balanta-Ganja equivalent of *want* is a plain transitive verb (which interestingly is also used with the same construction to express *hurt*) with the stimulus in subject function and the experiencer in object function. The same situation can be illustrated by the Jola Fonyi equivalent of *like*.

(50) Balanta-Ganja
Gódì *râa-ní.*
(CLu)money tempt-1SG
'I want money.' (pers. doc.)

(51) Jola Fonyi
Kafɛ *e-suum-on-suum.*
(CLe)coffee CLe-please-1SG-please
'I like coffee.' (pers. doc.)

Interestingly, *be sick* and *be hungry* are often encoded by means of plain transitive constructions in which *sickness* and *hunger* are encoded as the subject of *catch* (in the case of sickness) or *kill* (in the case of hunger) and the experiencer is encoded as the object. Soninke expresses *I have insomnia* as lit. *Insomnia caught me*, Balanta-Ganja expresses *I have a headache* as lit. *The head eats me*, and similar idioms are common throughout sub-Saharan Africa.

(52) Baule
Àwê kùn mín.
hunger kill 1SG
'I am hungry.'
(pers. doc.)

(53) Mandinka
Kírikíròo yè ŋ́ mùtá.
fever.D CPL.TR 1SG catch
'I have fever.'
(pers. doc.)

(54) Soninke
Yáaxánkáawà-n dà ín lágà.
insomnia-D TR 1SG catch
'I have an insomnia.'
(pers. doc.)

(55) Balanta-Ganja
B-gɔ́ wɔ̃m-ní.
CLb-head eat-1SG
'I have a headache.'
(pers. doc.)

(56) provides some additional illustrations from the Kru language Newole.

(56) Newole
a. *Klē ɓlá mɔ́.*
hunger kill 1SG
'I am hungry.' lit. 'Hunger kills me.'
b. *Wɔ̄tlō ɓlá mɔ́.*
cold kill 1SG
'I am cold.' lit. 'Cold kills me.'
c. *Ylá ɓlá mɔ́.*
sleep kill 1SG
'I am asleep.' lit. 'Sleep kills me.'

d. *Ná* *sɔ̄ɔ́* *ɓlá* *mɔ́.*
POSS.1SG arm kill 1SG
'My arm is sore.' lit. 'My arm kills me.'
(Grah 1983: 255)

6.1.3.6. Antipassives in "accusative" languages

6.1.3.6.1. Introductory remarks

In the long-standing debate about the relationship between antipassive and accusativity/ergativity, a number of sub-Saharan languages belonging to various families and areas provide crucial evidence against the hypothesis of a privileged relationship between antipassive as a type of valency change and ergativity, and provide strong support to the view that accusative languages may have fully productive antipassive derivations. The languages in question have accusative alignment in core argument coding, and they also have antipassive derivations that only differ from the antipassive derivations found in ergative languages in that (a) they are less visible, since in an accusative language, the coding properties of an A noun phrase converted into the unique core argument S of an intransitive construction do not change,[8] and (b) one of the functions fulfilled by antipassive derivations in some ergative languages (making A's accessible to operations to which P's and S's only have access) has no possible equivalent in accusative languages.

(57) illustrates this situation in Tennet: Tennet uses the same "marked-nominative" case for all subjects (transitive A's and intransitive S's), and requires the addition of a special antipassive suffix to transitive verbs in unspecified-P constructions.

(57) Tennet
a. *Á-dáh* *do̲lé̲c* *áhát.*
IPF-eat child.NOM asida
'The child is eating asida.'
b. *Á-dáh-ye* *do̲lé̲c.*
IPF-eat-ANTIP child.NOM
'The child is eating.'
(Randal 1998: 245)

Gao Songhay aka Koyraboro Senni (Heath 1999: 166–167) has a detransitivizing suffix *a* that, depending on the individual verbs, may encode valency changes of

[8] A, P, and S must be understood as 'agent in the basic transitive construction,' 'patient in the basic transitive construction,' and 'single argument of monovalent verbs,' respectively.

the mediopassive or antipassive type. This latter possibility can be illustrated by *haabu* 'sweep (tr.)' > *haab-a* 'do the sweeping'.

Janic (2013) provides a general survey of antipassive constructions in accusative languages, and a general discussion of this question. In the remainder of this section, I briefly present some Bantu and West African illustrations.

6.1.3.6.2. Bantu antipassives

The reciprocal-antipassive syncretism, widely attested outside Africa (in particular among Austronesian and Turkic languages) is also typically found among Bantu languages, where the verbal suffix *an* traditionally designated as reciprocal extension has more or less productive uses that depart from the notion of reciprocal and rather fall under the notion of antipassive. In some of them (for example, Tswana), the antipassive uses of *an*, although unquestionably attested, have a very low productivity. In others (for example, Rundi), the reciprocal and antipassive uses of *an-* seem to have a comparable degree of productivity, resulting in a systematic ambiguity between the antipassive and reciprocal readings of *an*-forms with plural subjects, as in (58).

(58) Rundi

a. *Abanyéeshuúle* *baatukye* *umwarimu.*
students insulted teacher
'Students insulted the teacher.'

b. *Abanyéeshuúle* *baatukanye*
students insulted.RECIP/ANTIP
(a) 'Students insulted each other.' (reciprocal reading)
(b) 'Students insulted [people].' (antipassive reading)
(Ndayiragije 2006: 275)

6.1.3.6.3. West African antipassives

Antipassive derivations with a limited degree of productivity are common among Atlantic and Mande languages. For example, Balanta-Ganja has 11 transitive verbs that cannot be used in a null-object construction, and whose intransitive use with reference to no specific object requires the use of an antipassive form. Five of them involve a special suffix, whereas the antipassive form of the other six verbs is formed by means of a reciprocal or mediopassive suffix. (59) illustrates antipassive derivation with *wɔm* 'eat'.

(59) Balanta-Ganja

a. *À-wɔ̂m tîw.* vs. **À-wɔ́m-tɛ̀ tîw.*
CLha-eat (CLu)meat CLha-eat-ANTIP (CLu)meat
'He/she ate meat.'

b. *À-wɔ́m-t-ɔ̀.* vs. **À-wɔ́m-ɔ̀.*
CLha-eat-ANTIP-FV CLha-eat-FV
'He/she ate.'
(Creissels and Biaye 2016: 251–252)

The antipassive is more productive in Wolof. It involves a suffix *e* also used in reciprocal function. (60) illustrates the antipassive use of this suffix.

(60) Wolof

a. *Xaj a ko màtt.*
dog FOC 3SG bite
'A dog bit him/her.'

b. *Xaj b-i d-u màtt-e.*
dog CLb-D ICPL-NEG bite-ANTIP
'[You should not be afraid,] the dog doesn't bite.'
(Nouguier-Voisin 2002: 310)

Interestingly, in Wolof, antipassive *e* is particularly productive with ditransitive verbs. In that case, it invariably encodes the demotion of the recipient/beneficiary argument. This is consistent with the general tendency of this argument to act as the primary object in the ditransitive constructions of sub-Saharan languages.

A similar situation is described by Renaudier (2012) for Serer Sine.

Among Atlantic and Mande languages, Soninke distinguishes itself by the very high degree of productivity of its antipassive derivation. Moreover, in Soninke, the productivity of antipassive derivation relies essentially on the use of a dedicated antipassive suffix.

Soninke has a particularly clear-cut distinction between transitive and intransitive predication, even in comparison with other Mande languages, and very strict constraints on the intransitive use of transitive verbs. With the only exception of a handful of A-labile verbs, transitive verbs in their underived form cannot be found in constructions in which the P argument would not be expressed. The discourse frequency of antipassive constructions in which the verb is overtly marked as detransitivized follows from the fact that, in Soninke, they constitute the usual strategy to encode two-participant events lexicalized as transitive verbs without mentioning the patient. With the only exception of ten A-labile verbs or so, the Soninke verbs that can be used transitively have an antipassive form. A minority of transitive verbs have an antipassive form marked by a multifunction detransitivizing suffix *i* also found (sometimes with the same verbs) with an anticausative or passive function, but most transitive verbs use a dedicated antipassive suffix.

Soninke has no constraint restricting the use of the antipassive form of transitive verbs to stereotyped activities or habitual events. Antipassive verb forms can refer to specific events, provided no specific patient is mentioned; see (61) below. Most of the time, the participant that would be encoded as the object of the transitive construction is not mentioned at all, but as shown by (61c), constructions in which it is expressed as an oblique are also possible:

(61) Soninke

a. *Hàatú dà yúgó sàará.*
Fatou TR male give_birth
'Fatou gave birth to a boy.'
(transitive construction)

b. *Hàatú sàaré.*
Fatou give_birth.DETR
'Fatou had a baby.'
(antipassive construction with unexpressed P argument)

c. *Hàatú sàaré tì lénñúgó yì.*
Fatou give_birth.DETR with son POSTP
'Fatou gave birth to a son.'
(antipassive construction with demoted P argument)
(pers. doc.)

Interestingly, Soninke also has a productive mechanism of object incorporation which semantically triggers a non-specific reading of the incorporated object, and morphologically implies detransitivization marking on the verb. However, as a rule, incorporation requires the multifunction detransitivizing suffix *-i*, as in (62b), where *gáagè* < *gáagà+i* – even with verbs like *gáagà* whose antipassive form is otherwise formed by means of the dedicated antipassive suffix, as in (62c).

(62) Soninke

a. *À wá yìràamû-n gáagà-ná.*
3SG ICPL cloth.PL-D sell-GER
'(S)he sells (the) clothes.'

b. *À wá yìràn-gáagè-né.*
3SG ICPL cloth-sell.DETR-GER
'(S)he sells clothes.'
or 'She does cloth selling.'

c. *À wá gáagá-ndì-ní.*
3SG ICPL sell-ANTIP-GER
'(S)he sells things.'
or 'She does selling.'
(pers. doc.)

As regards the origin of the two suffixes involved in Soninke antipassivization, comparative evidence suggests that the multifunction detransitivizing suffix was originally a reflexive marker that developed anticausative/passive and antipassive uses, whereas the dedicated antipassive suffix might be the reflex of a former verb 'do' in an antipassive periphrasis ('do V-ing'); for more details, see Creissels (forthcoming).

6.1.3.7. Non-canonical applicatives: the case of Tswana

6.1.3.7.1. Introductory remarks

It is well-known that an important proportion of sub-Saharan languages makes wide use of the applicative strategy (in contrast to the cross-linguistically more common adpositional strategy) for the licensing of extra-valency NPs. In their canonical use, applicative derivations license the presence of an NP in the syntactic role of object (the *applied object*) referring to a semantic role that the non-applicative form of same verb cannot assign to an NP in the syntactic role of object.

Most Bantu languages have derived applicative verb forms with a remarkably wide range of uses meeting the standard definition of applicatives, but also have non-canonical uses of the same forms whose relationship to the standard definition of applicative verb forms is sometimes far from obvious. Unfortunately, with very few exceptions, these non-canonical uses of applicative verb forms are marginalized in Bantu grammars. One can imagine that a better knowledge of this aspect of Bantu morphosyntax might greatly contribute to a better understanding of argument structure in general, and of its interactions with other aspects of clausal syntax. This section, devoted to a discussion of non-canonical uses of Tswana applicatives, summarizes an unpublished paper of mine (Creissels 2004). On similar phenomena in other Bantu languages, see Jerro (2016) and references therein.

6.1.3.7.2. The canonical use of Tswana applicatives

Tswana canonical applicatives are obligatory applicatives in the sense that applied objects cannot be analyzed as promoted obliques: they always represent participants that cannot occur in the construction of the same verb in its non-applicative form, even through the mediation of a preposition.

Tswana has multiple-object constructions in which the asymmetry between the objects is minimal, and consequently Tswana applicative constructions do not significantly modify the status of an object already present in the construction of the same verb in its non-applicative form.

The applicative suffix of Tswana is semantically unspecified, in the sense that, by itself, it gives only negative indications about the semantic role of the

object it licenses: the applied object may assume any semantic role that the verb in its non-applicative form cannot assign to an object, and that cannot be coded by means of a preposition either. Practically, as illustrated by (63), this means that the interpretation of applicative constructions crucially depends on the lexical meanings of the verb and of the object NP whose presence is licensed by the applicative suffix. For additional illustrations of the semantic flexibility of Tswana canonical applicatives, see Creissels (2002: 409–410).

(63) Tswana

a. *Q^{h}ɔ́sí* *ˈí-átɬ^{h}ól-éts-í* *mò-ńná* *bó-χò:dù.*
(CL9)king CL9-condemn-APPL.PRF.FV CL1-man CL14-theft
'The king condemned the man for theft.'

b. *Q^{h}ɔ́sí* *ˈí-átɬ^{h}ól-éts-í* *mò-ńná* *lò:-só.*
(CL9)king CL9-condemn-APPL.PRF.FV CL1-man CL11-death
'The king condemned the man to death.'
(pers. doc.)

6.1.3.7.3. Applicative derivation and the promotion of instrumental adjuncts

In Tswana, participants usually treated in the construction of the non-applicative form of a verb as instrumental adjuncts, i. e., represented by a prepositional phrase headed by the instrumental preposition *ká*, cannot be encoded as applied objects. By contrast, if no agent is mentioned, they can be encoded as subjects of applicative verb forms, see (64).

(64) Tswana

a. *Ő-nè* *à-àpày-à* *q^{h}áká* *á-ʃàbà*
CL1-AUX CL1.SEQ-cook-FV (CL9)guinea-fowl CL1.SEQ-flavor-fin
bò-χɔ́bέ *ká* *námà* *y-á-y-ɔ̀:nέ.*
CL14-porridge with (CL9)flesh 9-LK-9- CL9.PRO
'He cooked the guinea fowl and flavored the porridge with its flesh.'

b. *Nàmà* *í-ʃáb-él-à* *bò-χɔ̂:bὲ.*
(CL9)meat CL9-flavor-APPL-FV CL14-porridge
'Meat is used to flavor the porridge.'
(pers. doc.)

This use of applicative derivation is clearly non-canonical, since in (64b), the subject of the non-applicative form of the verb is suppressed, and the instrumental adjunct is not promoted to the role of object, but to that of subject.

6.1.3.7.4. Applicative derivation and the semantic role of locative phrases: general remarks

The use of Tswana applicative verb forms examined in this section has in common with their canonical use that it licenses the presence of a term with a particular semantic role in the construction of the verb. It however departs from the canonical use in that the term in question is not an object NP, but a locative phrase showing no evidence of a syntactic status different from that of ordinary obliques: it cannot be represented by an object marker or converted into the subject of a passive construction, and, more generally, apart from the fact that it cannot be suppressed, it seems to have exactly the same syntactic behavior as locative phrases accompanying non-derived verbs.

In Tswana, locative phrases are not marked for the location vs. source vs. destination distinction, and their semantic role is regulated in the following way: any Tswana verb can combine with a locative phrase expressing the localization of the event, or of a participant in the event, as in (65a); in combination with some movement verbs, locative phrases are assigned the semantic role of destination, as in (65b); with some other movement verbs, locative phrases are assigned the role of source, as in (65c).

(65) Tswana

a.	*Kítsɔ́*	*ʻɔ́-bɛ́rɛ́k-à*	*kó*	*Kà:ɲɛ́.*
	(CL1)Kitso	CL1-travailler-FV	LOC	(CL1)Kanye
	'Kitso is working in Kanye.'			
b.	*Kítsɔ́*	*ɔ́-ìl-é*	*kó*	*Kà:ɲɛ́.*
	(CL1)Kitso	CL1-go.PRF-FV	LOC	(CL1)Kanye
	'Kitso went to Kanye.'			
c.	*Kítsɔ́*	*ʻɔ́-húdúχ-íl-è*	*kó*	*Kà:ɲɛ́.*
	(CL1)Kitso	CL1-move-PRF-FV	LOC	(CL1)Kanye
	'Kitso moved from Kanye.'			
	(pers. doc.)			

Interestingly, applicative derivation may modify the semantic roles that verbs assign to locative phrases. Three cases must be distinguished.

6.1.3.7.5. Verbs of movement that cannot assign the role of source or destination

Tábóχá 'run' is semantically a verb of movement, but in its non-derived form, it has no semantic role to assign to a locative phrase, which means that the only available interpretation for a locative term in the construction of *tábóχá* in its non-derived form is the default interpretation of location of the event. By contrast, the applicative form *tábóχélà* can assign the role of destination, see (66). The same behavior is observed with *àkòfà* 'hurry,' *fòfà* 'fly,' *fìtà* 'pass,' etc.

(66) Tswana
a. *Kì-tłàà-tábóχ-à kó tsìlê:-ŋ̀.*
1SG-FUT-run-FV LOC (CL9)road-LOC
'I will run on the road.'
b. *Kì-tłàà-tábóχ-él-à kó tsìlê:-ŋ̀.*
1SG-FUT-run-APPL-FV LOC (CL9)road-LOC
'I will run to the road.'[9]
(pers. doc.)

In this particular case (but not in those examined in the following sections), a canonical applicative construction, with *tsìlà* 'road' encoded as the object of a transitive construction, would be possible with the same meaning:

c. *Kì-tłàà-tábóχ-él-à tsì:là.*
1SG-FUT-run-APPL-FV (CL9)road
'I will run to the road.'

There is an obvious relationship with the fact that, in Tswana, non-derived verbs of movement that assign the role of destination (such as *yà* 'go') have an alternative construction in which the destination is encoded as the direct object of a transitive construction.

6.1.3.7.6. Verbs of movement that can assign the role of source

With verbs of movement whose non-derived form assigns the role of source to locative complements, the applicative form has the same formal valency as the non-derived form, but assigns to its locative argument the role of destination, as illustrated in (67) by *húdúχá* 'change one's residence'. Note that, in order to express 'move from A to B,' Tswana must use successively the non-derived form of *húdúχá* introducing the source of movement, and the applicative form of the same verb introducing the destination, see (67c). More generally, Tswana, like many languages of sub-Saharan Africa, cannot specify the source and the destination of a movement within the frame of a monoverbal construction.

(67) Tswana
a. *Kì-tłàà-húdúχ-à kó Kà:ŋɛ́.*
1SG-FUT-move-FV LOC (CL1)Kanye
'I will move from Kanye.'
b. *Kì-tłàà-húdúχ-él-à kó χàbórô:nì.*
1SG-FUT-move-APPL-FV LOC (CL1)Gaborone
'I will move to Gaborone.'

[9] See section 6.1.3.7.8 for another possible interpretation of this sentence.

c. *Kì-tɬàà-húdúχ-à* *kó* *Kàŋɛ́*
1SG-FUT-move-FV LOC (CL1)Kanye
kì-húdúχ-él-ì *kó* *χàbórô:nì.*
1SG-move-APPL-FV LOC (CL1)Gaborone
'I will move from Kanye to Gaborone.'
(pers. doc.)

6.1.3.7.7. Verbs that do not express movement

Verbs that do not express movement freely combine with locatives expressing the location of the event or of a participant, as already illustrated by (65a) above, but the use of the applicative form is obligatory to license the presence of a locative whose semantic role departs more or less form the mere indication of a location. For example, Tswana syntax is sensitive to the difference in the semantic role of *in the yard* and *in the big pot* in *She is cooking porridge in the yard* / *She is cooking porridge in the big pot*. In the first sentence, *in the yard* expresses nothing more than the location of the event, whereas in the event represented by the second sentence, the pot contains the porridge, which justifies coding it as a locative, but it also plays the role of an instrument in the cooking event. In other words, the spatial relation between the pot and the porridge is not accidental; it follows from the role they play in the cooking event. Consequently, in the Tswana equivalent of *She is cooking porridge in the yard*, the verb *cook* can remain in its non-derived form, whereas in the equivalent of *She is cooking the porridge in the big pot*, the verb *cook* must be in the same applicative form as when, for example, a noun phrase referring to a beneficiary is added to the construction of this verb, and the applicative derivation must be reiterated in order to make it possible to mention both the vessel used to cook the porridge and the beneficiary of the cooking event, see (68).

(68) Tswana
a. *Lòrátɔ́* *ˈó-tɬáá-àpày-à* *mò-tɔ̀:χɔ́.*
(CL1)Lorato CL1-FUT-cook-FV CL3-porridge
'Lorato will cook the porridge.'
b. *Lòrátɔ́* *ˈó-tɬáá-àpɛ̀-èl-à* *b-ànά* *mó-tɔ̀:χɔ́.*
(CL1)Lorato CL1-FUT-cook-APPL-FV CL2-child CL3-porridge
'Lorato will cook the porridge for the children.'
c. *Lòrátɔ́* *ˈó-tɬáá-àpɛ̀-èl-à* *mò-tɔ̀χɔ́*
(CL1)Lorato CL1-FUT-cook-APPL-FV CL13-porridge
mó *pìtsé-ŋ̀* *é* *ˈtô:nà.*
LOC (CL9)pot-LOC CL9.LK (CL9)big
'Lorato will cook the porridge in the big pot.'

d. *Lòrátɔ́* *ʼó-tɬáá-àpɛ̀-ɛ̀l-à* *b-àná* *mɔ́-tɔ̀χɔ́*
(CL1)Lorato CL1-FUT-cook-APPL-APPL-FV CL2-child CL3-porridge
mɔ́ *pìtsé-ŋ̀* *é* *ʼtôːnà.*
LOC (CL9)pot- LOC CL9.LK (CL9)big
'Lorato will cook the porridge for the children in the big pot.'
(pers. doc.)

(69) provides additional illustrations of the obligatory use of applicative verb forms of verbs that do not express movement combined with a locative phrase referring to a participant whose role implies a spatial relation with another participant, or more generally, a locative phrase whose semantic role is not reduced to mere location.

(69) Tswana
a. *Dì-qʰòmɔ́* *ʼdí-nʷ-él-à* *mɔ́* *mɔ̀-kórôː-ŋ̀.*
CL8/10-cow CL8/10-drink-APPL-FV LOC CL3-*mokoro*-LOC
'Cows drink from a *mokoro*.' (a tree trunk carved in the shape of a canoe)
b. *Rí-kʷál-él-à* *mɔ́* *pámpírîː-ŋ̀.*
1PL-write-APPL-FV LOC (CL9)paper-LOC
'We write on paper.'
(pers. doc.)

Instruments usually represented by locatives in this type of construction by virtue of the spatial relation they necessarily have with another participant share with more typical instruments (encoded by means of the instrumental preposition *ká*) the possibility of being encoded also as subjects of applicative verb forms, as illustrated by (70), to be compared with (64) above.

(70) Tswana
a. *Mɔ̀-sádí* *ɔ́-nɛ̀* *à-tsʰɔ̀l-ɛ̀l-à* *bɔ̀-χɔ́bɛ́*
CL1-woman CL1-AUX CL1-dish_out-APPL-FV CL14-porridge
mɔ́ *mì-χɔ́pôː-ŋ̀.*
LOC CL4-wooden_bowl-LOC
'The woman dished out the porridge into the wooden bowls.'
b. *Mɔ̀-χɔ́pɔ́* *ʼɔ́-tsʰɔ́l-él-à* *bɔ̀-χɔ̂ːbɛ̀.*
CL3-wooden_bowl CL3-dish_out-APPL-FV CL14-porridge
'The wooden bowl is used to dish out porridge.'
(pers. doc.)

Similarly, 'the *mokoro* used to water cows' is *mɔ̀kɔ́rɔ̀ ɔ́ ʼɔ́nʷélàŋ́ díqʰòmɔ́* lit. 'the *mokoro* that drinks.APPL cows,' 'coffee-cup' is *kópì é ʼínʷélàŋ́ ʼkófî* lit. 'the cup that drinks.APPL coffee,' 'room used to do the cooking' is *ǹtlò é ʼíápɛ́ɛ̀làŋ́* lit. 'the room that cooks.APPL,' etc.

6.1.3.7.8. Applicative derivation and the focalization of locative phrases

In constructions including a locative phrase that does not necessarily trigger the use of the applicative form of the verb, the applicative form of the verb can be used to focalize the locative phrase, without any change in the construction or in the semantic roles. Interestingly, this use of the applicative derivation is strictly limited to constructions including a locative phrase whose semantic role does not trigger the use of the applicative form of the verb. It constitutes an alternative to cleft constructions, which are in Tswana the standard way to express focalization.

For example, in (66) above, repeated here as (71), the second sentence is in fact ambiguous between an interpretation according to which the applicative suffix codes a change in the role-assigning properties of *tábóχá* ('I will run *to* the road [not *on* the road]') and another interpretation according to which the applicative suffix codes the focalization of a locative phrase without modifying its semantic role of location.

(71) Tswana
a. *Kì-tɬàà-tábóχ-à kó tsìlêː-ŋ̀.*
1SG-FUT-run-FV LOC (CL9)road-LOC
'I will run on the road.'
b. *Kì-tɬàà-tábóχ-él-à kó tsìlêː-ŋ̀.*
1SG-FUT-run-APPL-FV LOC (CL9)road-LOC
(a) 'I will run to the road.'
(b) 'I will run ON THE ROAD (and nowhere else).'
(pers. doc.)

This ambiguity is general with verbs of movement that must be used in the applicative form in order to be able to assign the role of destination to locative phrases: the same applicative form can always be used to focalize a locative phrase in the role of location. But with verbs whose applicative form cannot be used to assign the role of destination to a locative phrase that otherwise would be interpreted as expressing location, the focalization of a locative phrase is the only possible function of an applicative verb form used in a construction identical to that of the non-applicative form of the same verb. (72) illustrates applicative forms whose only possible interpretation is that they focalize a locative phrase expressing location. In Tswana, contrary to what could suggest the use of the applicative derivation with verbs such as *tábóχá*, an andative interpretation of the applicative form of verbs that do not express movement is not possible.

(72) Tswana
a. *Lòrátɔ́ ˈó-ápɛ́-èl-à mó dʒáràtêː-ŋ̀.*
(CL1)Lorato CL1-cook-APPL-FV LOC (CL9)yard-LOC
'Lorato does the cooking IN THE YARD.'

b. *Mò-ńnà w-á-mí ˈó-sw-éts-ì kó mò-ráfô:-ŋ̀.*
CL1-man CL1-LK-1SG CL1-die-APPL-PRF-FV LOC CL3-mine-LOC
'My husband died IN THE MINE.'

c. *Kì-tsál-éts-w-ì kó Kà:ɲé.*
1SG-give_birth-APPL-PRF-PASS-FV LOC Kanye
'I was born IN KANYE.'

d. *B-ànná b-á-tlàdí ˈbá-áɲ-él-á ló-ràtɬê:-ŋ̀.*
CL2-child CL2.LK-(CL9)thunder CL1-suck-APPL-FV CL11-noise-LOC
'The sons of the thunder suck IN THE NOISE.' (proverb)
(pers. doc.)

6.1.3.7.9. Concluding remarks

In Tswana (and also in many other Bantu languages, cf. Jerro 2016), the same applicative marker occurs both in contexts in which it fulfills valency-changing functions without any particular discursive implication and in contexts in which it has a purely discursive function, without triggering any change in valency. In the present state of Tswana, it seems difficult to propose a unified definition of the syntactic and pragmatic uses of this marker. It is particularly puzzling that the focalizing function of the applicative marker is strictly limited to locative phrases. There is however a possible connection between this duality in the uses of the applicative verb forms of Tswana and several other syntactic phenomena.

In Tswana, object NPs precede obliques, and in multiple-object constructions, objects relatively higher in the animacy hierarchy obligatorily precede those that stand lower, and violations of these constraints generally result in agrammaticality, with however an interesting exception: objects and obliques can be questioned *in situ*, but interrogative pronouns and adverbs can also be placed immediately after the verb, even if this contradicts the principles that govern the linear order of objects and obliques in the corresponding declarative clauses, see (73).

(73) Tswana

a. *Kì-bóɲ-í mò-ńnà y-ó máàbâ:nì.*
1SG-see.PRF-FV CL1-man CL1-DEM yesterday
'I saw this man yesterday.'

b. **Kì-bóɲ-í máàbání mò-ńnà: y-ó.*

c. *Ǒ-bóɲ-ì líń mò-ńnà: y-ó?*
2SG-see.PRF-FV when CL1-man CL1-DEM
'When did you see this man?'
(pers. doc.)

This variation in the constituent order in clauses including interrogative words has no semantic correlate, but it is reasonable to think that, given the inherent focality of interrogative words, it reveals a dual status of the immediate postverbal posi-

tion. This position is quite obviously the position normally assigned to NPs syntactically assimilated to the patient of prototypical transitive verbs, but its behavior in interrogative sentences suggests to recognize it also as (the vestige of) an IAV focus position:[10] in limited conditions, a constraint assigning the immediate postverbal position to a focalized constituent overrides the constraint assigning it to an object NP standing relatively high on the animacy hierarchy scale.

This possibility of using the IAV position for particular discursive purposes rather than assigning it automatically to a particular argument is confirmed by the existence of the inversion construction illustrated in (74).[11] Interestingly, interrogative subjects are ungrammatical in the canonical subject position, but can occur as inverted subjects, as in (74c) and (74d).

(74) Tswana

a. *Bà-símàní* *ˈbá-tɬáà-bîːn-à.*
CL2-boy CL2-FUT-dance-FV
'The boys will dance.'

b. *χó-tɬáà-bín-á* *bà-símàːní.*
EXPL-FUT-dance-FV CL2-boy
'There will be a dance performed by (the) boys.'
(lit. 'There will dance boys.')

c. *χó-tɬáà-bín-á* *ˈbó-mâːŋ̀?*
EXPL-FUT-dance-FV CL2-who
'Which persons will dance?'
(lit. 'There will dance which persons?')

d. **Bó-máŋ́* *ˈbá-tɬáà-bîːn-à?*
CL2-who CL2-FUT-dance-FV
(pers. doc.)

The function of the inversion construction with an expletive class 17 index in the verb form is subject detopicalization. This is a presentational construction encoding that the argument which otherwise would be encoded as a preverbal subject refers to new information. In Tswana, interrogative words cannot function as canonical subjects, because of a general ban on non-topical subjects, but the inversion construction can be used to get round this constraint.

A handful of Tswana verbs are attested with another inversion construction, clearly residual in Tswana (but productive in other Bantu languages), whereby the subject of the non-inverted construction moves to IAV position, and the role of subject is taken over by an NP referring to a participant encoded as a locative in the non-inverted construction.

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[10] The discussion on focus positions in Bantu syntax will be resumed in Section 6.1.6.1.

[11] For a detailed analysis of this construction, see Creissels (2011).

(75) Tswana

a. *Mà-dí* *á-ts^{w}-à* *mó* *ǹt^{h}ô:-ŋ̀.*
CL6-blood CL6-come from-FV in (CL9)wound-LOC
'The blood is flowing out from the wound.'

b. *Ǹt^{h}ɔ́* *ˈí-ts^{w}-á* *mà:-dí.*
(CL9)wound CL9-come_from-FV CL6-blood
'The wound is bleeding.' lit. 'The wound flows out blood.'
(pers. doc.)

(76) Tswana

a. *ƉàkÀ* *y-á-sì-ts^{w}ánÁ* *ˈí-áχ-íl-è*
(CL9)doctor CL9-LK- CL7-Tswana CL9-settle-PRF-FV
mó *mó-tsì-ŋ̀* *lí-bâ:-t^{h}ò.*
in CL3-village-LOC with-CL2-person
'The traditional doctor lives in the village with the people.'

b. *Lì-fáts^{h}ì* *l-é* *ˈlí-áχ-íl-é* *Bà-sâ:r^{w}à.*
CL5-territory CL5-DEM CL5-settle-PRF-FV CL2-San
'This territory is inhabited by San.' lit. 'This territory settles San.'
(pers. doc.)

Here again, as reflected in the translations, the demotion of the subjects of sentences (a) demoted to IAV position is motivated by a change in their discursive role.

To conclude, applicative derivation and placement of constituents in immediate postverbal position in constructions that trigger no morphological marking on the verb share an important particularity: both are crucially involved in the particular way the general notion of object is codified in Tswana morphosyntax, but both have uses that cannot be described adequately with reference to the notion of object only, and thus necessitate taking into account discursive notions. A clue to this puzzle must probably be sought in an ancient state of Bantu syntax in which constituent order was less grammaticalized and more sensitive to discursive variations than in modern Bantu languages, and in the following two principles governing the most basic aspects of the syntactic organization of languages:

(a) As a core term of transitive clauses, the direct object shares with the subject the property of representing a participant in the event that has intrinsically a certain degree of salience.
(b) As opposed to the subject, which in transitive clauses typically represents the initiator of the event, and consequently tends to be taken as the initial term from the point of view of communicative dynamism too, the object is characterized by a lesser degree of topicality. (cf. Dalrymple and Nikolaeva 2011).

However, before trying to evaluate the possible diachronic scenarios (the one according to which the use of applicative derivation as a focalizing device would

be an innovation of some Bantu languages, as suggested by current Bantu reconstructions, and the one according to which a suffix originally involved in the expression of information structure got syntacticized to a considerable extent), it would be crucial to gather more data on the focalizing use of applicative derivation across the Bantu language family, and possibly also in other language families having applicatives.

6.1.3.8. A rare type of valency operator: the possessive voice of Wolof

Wolof has a particularly rich and original system of valency changing derivations, described in detail by Nouguier-Voisin (2002). This system includes a suffix *le* encoding a type of valency change that had not been described before in any other language as encoded by a dedicated marker: by taking this suffix, intransitive verbs become transitive, the subject of the non-derived intransitive verb is demoted to object, and the subject in the construction of the derived verb represents the possessor of the object. To put it somewhat differently, an additional argument with the semantic role of possessor is introduced in subject position, whereas the object of the derived possessive verb cumulates the role of possessee and the semantic role assigned to the subject in the non-derived construction.

(77) Wolof

a. *Woto bi gaaw na.*
car CLb-D be_fast PRF.3SG
'The car is fast.'

b. *Sàmba gaaw-le na woto.*
Samba be_fast-POSS PRF.3SG car
'Samba has a fast car.'
(Voisin-Nouguier 2010: 383)

In (77a), the subject is the theme argument of the monovalent verb *gaaw*. In (77b), the possessive suffix *le* triggers the following change in argument structure: a new participant *(Sàmba)* with the semantic role of possessor takes the syntactic role of subject; the participant designated as *woto* 'car' occurs with the same semantic role of theme, but is demoted to object position and shows all the properties of an object (for example, the possibility of being pronominalized by means of an object clitic); moreover, it is assigned the additional semantic role of possessee. In other words, derived possessive verbs occur in a transitive construction Subject Verb-*le* Object that can be glossed as 'Subject is the possessor of an Object that has the property expressed by Verb'.

This derivation has a valency-increasing effect, which however differs from that induced by causative or applicative markers, cross-linguistically the commonest types of valency-increasing operators. The possessive derivation affects the semantic role assigned to the subject, which excludes analyzing it as a variety of

applicative, but the semantic role assigned to the subject in the derived construction cannot be characterized in terms of causation either.

The productivity of the possessive suffix *le* is limited to a class of intransitive verbs assigning non-agentive roles to their subject, such as *dee* 'die' or *réer* 'get lost'. It is particularly common with verbs expressing meanings that, cross-linguistically, tend to be encoded by adjectives, such as *rafet* 'be beautiful', *baax* 'be good'.

(78) Wolof

a. *Baax-le* *na* *ay* *téeré.*
be_good-POSS PRF.3SG INDEF-PL book
'He has good books.'

b. *Góor* *g-ii,* *moo* *dee-le* *jabar.*
man CLg-DEM SFOC.3SG die-POSS wife
'This man's wife is dead.'

c. *Maa* *réer-le* *xar.*
SFOC.1SG be_lost-POSS sheep
'My sheep got lost.'
(French: 'J'ai un mouton de perdu')
(Voisin-Nouguier 2010: 384)

Typologically, it is worth noting that other languages have derived verbs encoding a possessive relationship between subject and object. For example, Japanese has non-canonical passives expressing a possessive relationship between the participants encoded as the subject and the object of a passive verb form, as in (79), and Bantu languages use a combination of applicative and passive derivations, as illustrated by (80).

(79) Japanese
Watakushi-wa *hon-o* *tor-are-ta.*
1SG-TOP book-ACC take-PASS-PAST
'I had my book taken.' (lit. 'I was taken a book.')
(Martin 1956: 400–401)

(80) Tswana
Ba-tho *ba-š-el-w-a* *ke* *ma-ntlo.*
CL2-person CL2-burn-APPL-PASS-FV by CL6-house
'People's houses are burning.' (lit. 'People are burnt-for by houses.')
(pers. doc.)

What is particular in the case of Wolof is the use of a specific suffix that does not lend itself to any decomposition within the frame of a synchronic analysis.[12]

[12] See Nouguier-Voisin (2002) for the discussion of a possible diachronic analysis of possessive *le*.

6.1.4. Clause structure

6.1.4.1. Multiple transitive coding (symmetrical voices): The case of Uduk

In many languages, the coding of the core arguments of transitive verbs is not determined uniquely, but in most of the languages that have alternative constructions of transitive verbs, there is evidence supporting the analysis of this variation as an alternation between the *basic transitive coding* and one or more constructions involving detransitivization. This is particularly obvious in the case of constructions (irrespective of whether they involve morphological coding on the verb or not) that semantically imply that the agent is removed from the event structure: anticausative constructions, P-oriented resultatives. There are also less obvious cases in which the event structure is not affected, but the status of one of the alternative constructions as the basic transitive construction can nevertheless be established on the basis of the following two criteria: the basic transitive construction is less marked than the other(s) in terms of discursive or semantic conditioning (and consequently much more frequent in texts), and the morphosyntactic properties of the alternative construction(s) of core transitive verbs provide evidence of demotion of either the agent (passivization) or the patient (antipassivization).

There are, however, problematic situations in which no obvious candidate for the status of basic transitive construction emerges. I refer to them as *multiple transitive coding*. The case of the languages with the Philippine-type of voice system has been widely discussed in the literature, but other languages may have alternative constructions of transitive verbs expressing alternative perspectivizations of the event comparable to those expressed by passive or antipassive derivations, without however clear evidence that one of the alternative constructions should be considered as basic (or more "transitive") and the other(s) as detransitivized variant(s). This includes in particular the inverse systems with a direct/inverse alternation for interactions between third persons (Haude and Zúñiga 2016).

Uduk is a case in point. In this language, the unique argument of monovalent verbs (S) is invariably in immediate preverbal position, devoid of case marking and cross-referenced on the verb. Obliques follow the verb, or precede S in the case of topicalization.

(81) Uduk
à *'cí* *'kúṯ-úd.*
CL2 child cough.IPF-3SG
'The child is coughing.'
(Killian 2015: 218)

Transitive verbs have two alternative constructions, designated by Killian (2015) as "A-voice" and "O-voice". Although the choice between these two voices may be functionally similar to the choice between the basic transitive construction and

a detransitivized variant (passive or antipassive) in other languages, the position defended by Killian (2015) is that both are transitive.

In the A-voice, the agent of typical transitive verbs occupies the immediate preverbal position. It is in the same absolutive case as S in intransitive predication, whereas P in postverbal position is marked for the accusative case if it belongs to the gender designated by Killian as "class 2". Class 1 objects are in the absolutive case but trigger a change in the cross-referencing of A: A is cross-referenced for all persons with class 2 P's, whereas class 1 P's inhibit the cross-referencing of A in all persons except for 1SG, 1PL, and INCL.

(82) Uduk
Wàthíʔ *'cíth-í'd* *ā* *yí'd.*
man cut.PF-3SG ACC.CL2 skin
'The man cut the skin.'
(Killian 2015: 218)

In the O-voice, A is case-marked with the ergative case and is always in immediate postverbal position. There is no argument cross-referencing on the verb. P is usually found in immediate preverbal position, but its position is relatively flexible.

(83) Uduk
Tāshá *wò'c* *mà* *'ká.*
snake bite.IPF ERG.CL2 dog
'The dog bit the snake.'
(Killian 2015: 218)

Consequently, as regards case-marking, the A-voice shows accusative alignment with intransitive predication, whereas the O-voice shows ergative alignment. As regards argument indexation, no straightforward alignment relationship can be recognized between intransitive predication and either variant of transitive predication.

6.1.4.2. Core argument flagging and indexation

6.1.4.2.1. Co-argument sensitivity in core argument flagging: the case of Ik

Joint A/P coding (or co-argument-sensitivity in A/P coding) refers to transitive coding systems in which the coding characteristics of A and P cannot be described separately, because the nature of one of the core terms of the transitive construction conditions the coding of the other.

In this respect, there is a sharp contrast between flagging and indexation: joint A/P flagging is quite exceptional, whereas joint A/P indexation is relatively common.

In systems in which both A and P are indexed, disjoint indexation means that there is a dedicated slot for A indexes, another dedicated slot for P indexes, and that they are filled independently from each other. Quite obviously, many indexation systems do not meet this characterization. The notion of joint A/P indexation subsumes hierarchical A/P indexation, direct/inverse systems, and A/P indexation by means of portemanteau indexes. The joint indexation of A and P seems to be less common among sub-Saharan languages than in some other parts of the words. However, portmanteau indexes can be found in some of the languages that have P indexation, for example in Basari (aka Oniyan) (Perrin, forthcoming).

In contrast to joint A/P indexation, joint A/P flagging (i. e., situations in which the flagging of either A or P depends on the intrinsic characteristics of the co-argument) is extremely rare at world level. The two cases of joint A/P flagging I am aware of are Sahaptin (a language of the Pacific Northwest of the United States), with an ergative case used only when P is first or second person, and Ik.

Interestingly, Ik is so to say the mirror image of Sahaptin, since the joint A/P flagging system of Ik lies in the fact that the accusative case is used only when A is third person (König 2002).

6.1.4.2.2. Case-marked subjects or objects unexpected from a genetic or areal perspective

In this section and the following one, I briefly present some recently published or so far unpublished data that require emending some of the generalizations about core argument flagging and indexation put forward by Creissels et al. (2008).

It is well known that, in African languages, case-marked subjects or objects are not distributed similarly among different phyla. They are quite widespread in Nilo-Saharan and Afroasiatic languages, but uncommon in Niger-Congo and almost inexistent in Khoisan languages. In Niger-Congo as delimited by Greenberg, one can find case-marked subjects or objects in Kordofanian languages, in some Bantu languages with tone cases, in some Kwa languages, and in some Dogon languages, but until very recently, no case marking of subjects or objects had been mentioned in Atlantic and Mande languages.

As regards Atlantic languages, Renaudier (2012) describes a system of differential object marking in Serer Sine that is quite unexpected both genetically and areally, but in all respects conforms to the regularities observed in differential object marking systems cross-linguistically.

The case of Soninke (Mande) is even more interesting in that it illustrates the presence of a differential subject marking system (which is much less common typologically than differential object marking) in a language family in which no instance of case marking of subjects or objects has been signaled so far.

In Soninke, interrogative words and focalized NPs in subject function (in transitive as well as intransitive clauses) are obligatorily flagged by a special enclitic

n (glossed SBJF for 'subject flag'). This enclitic never occurs with subjects other than interrogative words or focalized NPs, and it cannot attach to interrogative words or focalized NPs in functions other than subject either. This is consequently a quite clear instance of differential subject marking. Moreover, its conditioning fully confirms the typological regularities observed by Fauconnier and Verstraete (2014) in differential subject marking.

(84) shows that non-focalized subjects or objects obligatorily remain unflagged (84a), whereas the introduction of the focus particle *yà´* triggers the use of *n* if the focalized NP fulfills the subject function (84b), but not if it fulfills the object or oblique function.

(84) Soninke

a. *Ó dà Múusá qírí.*
1PL TR Moussa call
'We called Moussa.'

b. *Ó yà-n dà Múusá qìrì.*
1PL FOC-SBJF TR Moussa call^{L}
'WE called Moussa.'

c. *Ó dà Múusá yà qìrì.*
1PL TR Moussa FOC call^{L}
'We called MOUSSA.'

d. *Ó dà Múusá qírí Dénbà yá dànŋá.*
1PL TR Moussa call Demba FOC for
'We called Moussa FOR DEMBA.'
(pers. doc.)

(85) illustrates the use of the subject flag *n* with interrogative words.

(85) Soninke

a. *Kó-n dà Múusá qìrì?*
who-SBJF TR Moussa call^{L}
'Who called Moussa?'

b. *Qá dà kó qìrì?*
2PL TR who call^{L}
'Whom did you call?'

c. *Qá dà Múusá qírí kó dànŋá?*
2PL TR Moussa call who for
'For whom did you call Moussa?'
(pers. doc.)

6.1.4.2.3. Differential object indexation

Creissels et al. (2008) propose a distinction between purely discourse-dependent object indexes (whose presence depends on the topicality of the object argument, and which normally do not co-occur with a co-referent NP) and object indexes whose presence may be obligatory, depending on some intrinsic characteristics of the object argument, even if a co-referent NP is present. I would like to add here that this second type of object indexation is common across Sub-Saharan Africa, and that, in such systems, the general trend is that animate objects tend to be obligatorily indexed, whereas the indexation of inanimate objects is either subject to discourse conditions or even impossible.

Basari is a typical illustration of this tendency: according to Perrin (forthcoming), in Basari, animate objects are obligatorily indexed, whereas inanimate objects cannot be indexed.

6.1.4.2.4. A typologically rare configuration in argument indexation: object indexation in Taa

In a general typology of core argument flagging, the predominant tendency across the world's languages that have some contrast in core argument flagging is quite clearly *unflagged A/S vs. flagged P*. Quite symmetrically, in a general typology of core argument indexation, the predominant tendency is *indexed A/S vs. unidexed P*. In other terms, languages tend to case-mark objects rather than subjects, and to cross-reference subjects rather than objects.

It is well known that the preference for case-marked objects is contradicted by a significant proportion of the sub-Saharan languages that have contrasts in core-argument flagging, since the so-called "marked-nominative" pattern of case-marking (in which case-marked A/S's contrast with P's devoid of case marking) is quite common in Africa (König 2008).

As regards core argument indexation, the indexation of objects only is an extremely rare pattern at world level, but interestingly, according to Kießling (2008), Taa aka !Xoon illustrates the typologically exceptional pattern in which A/S arguments (subjects) are not indexed, whereas P arguments (objects) are obligatorily indexed – Ex. (86).

(86) Taa

a. *Ǹ* *sí* *n|ā-è* *nǂàhrè* *!xā-ē* *ǂ'ú-ē.*
1SG IPF see-CL3 sheep.SG.CL3 big.SG-CL3 one-CL3
'I see one big sheep.'

b. *Ń* *sí* *n|ā-àn* *nǂàhnn* *!xām-ān.*
1SG IPF see-CL2b sheep.PL.CL2b big.PL-CL2b
'I see big sheep.'
(Kießling 2008: 226)

6.1.4.3. Uncommon types of constituent order and syntactically conditioned variations in constituent order

6.1.4.3.1. Introductory remarks

The proportion of languages with a syntactically flexible constituent order is much lower among African languages than at world level. Extreme cases of flexible word order as attested for example in Russian, Basque or Hungarian, are extremely rare (if attested at all) in sub-Saharan African. Some interesting cases of pragmatically conditioned alternations in constituent order will be commented in Section 6 on information structure, but the question dealt with in this section is that of alternations in constituent order that have no discourse function.

As rightly observed by Güldemann (2007), OV~VO alternations are relatively common in the languages of the Sudanic belt, but I would like to add that there are some interesting differences between the eastern and the western parts of this area. Güldemann (2007) reviews data from Benue-Congo languages, highlighting the role of information structure in VO~OV alternations. Objects preceding the verb can also be found in some Atlantic languages (such as Serer Sine) that have a clause-initial or pre-verbal focus position, but in Atlantic languages, the fronting of focalized objects is typically conditioned by the choice of special focalizing verb forms.

In this section, I concentrate on OV~VO alternations found in West African languages families, which are markedly different in that, in the languages in question, there is no evidence of a possible involvement of information structure, and all the available evidence points to strictly syntactic developments.

This question cannot be dissociated from that of the typologically uncommon Subject-Object-Verb-Oblique constituent order, since languages with a rigid and invariable Subject-Object-Verb-Oblique constituent order show a particular concentration in the very heart of the part of West Africa where TAM/polarity-driven OV~VO alternations are common. Heine (1976) argued that, typologically, they must be conflated into his "Type B," and the hypothesis of a historical link between these two phenomena has been widely accepted, most of the time without the slightest discussion. I'll try to show that things are less straightforward, and that the historical significance of the coexistence of these two phenomena within the same geographical area should be re-evaluated.

This section summarizes and updates Creissels (2005).

6.1.4.3.2. The Subject-Object-Verb-Oblique constituent order in Mande languages

Textbook accounts of constituent order typology suggest that the notion of SOV type of constituent order is more or less equivalent to the notion of verb-final language. It is true that, in most languages, objects and obliques tend to occupy

the same position either before or after the verb, and differ only in a tendency of objects to stand closer to the verb, so that SVO, SOV, VSO and VOS can generally be considered equivalent to Subject-Verb-Object-Oblique, Subject-Oblique-Object-Verb, Verb-Subject-Object-Oblique and Verb-Object-Oblique-Subject, respectively. This however does not hold for languages in which, in pragmatically neuter clauses, the core syntactic terms of the prototypical transitive construction precede the verb, and all obliques follow it (Subject-Object-Verb-Oblique constituent order), as illustrated by Soninke in (87).

(87) Soninke

a. *Fàatú dà tíyè-n qóbó sáxà-n ŋá.*
Fatou TR meat-D buy market-D POSTP
'Fatou has bought meat at the market.'

b. *Fàatú dà tíyè-n ñígá-ndí lémínè-n ŋá.*
Fatou TR meat-D eat-CAUS child-D POSTP
'Fatou had the child eat meat.'

c. *Ó dà qálìsí-n kínì à yí.*
1PL TR money-D give 3SG POSTP
'We gave him/her the money.'
(pers. doc.)

The Subject-Object-Verb-Oblique type of constituent order is admittedly one of the morphosyntactic features concerning a proportion of African languages significantly higher than that observed at world level. It shows a particular concentration in West Africa, where in addition to the whole Mande family, in which it is the only possible constituent order, it is found also in some languages belonging to the neighboring Gur and Songhay families. By contrast, the canonical variety of the SOV pattern (with the verb in clause-final position, and other features commonly associated with OV order) is extremely rare in West Africa, where its only representatives are Ijoid and Dogon. The OV order is found in many other West African languages, but always as a syntactically conditioned variant of VO. Before discussing this OV~VO pattern, let's have a look at the most salient characteristics of the Subject-Object-Verb-Oblique constituent order as found in Mande languages.

In Mande languages, the Subject-Object-Verb-Oblique constituent order is neither restricted to particular types of clauses nor conditioned by particular features of the object NP. Moreover, Mande languages are extreme "configurational" languages, in which changes in the position of the NP representing a given participant always imply a change in the construction. In cases when the same participant can optionally be represented by a term inserted between the subject and the verb or following the verb, as in (88), it is not difficult to convince oneself that the construction is different, and that the NP in question is in object function in a transitive construction when it precedes the verb, and in oblique function in an intransitive construction when it follows it.

(88) Mandinka

a. *Mŏo-lù* *yè* *báa* *tèyí.*
person.D-PL CPL.TR river.D cross
'The people crossed the river.'

b. *Mŏo-lù* *tèyí-tà* *bâa* *lá.*
person.D-PL cross-CPL.INTR river.D POSTP
'The people crossed the river.'
(pers. doc.)

In Mande languages, the object in the transitive construction occurs between the subject and the verb, but no additional term can be inserted between the subject and the verb, either as a second object in a double-object construction or in an oblique role. Similarly, in the intransitive construction, no additional term in an oblique role can be inserted between the subject and the verb. In this respect, there is a sharp contrast between Mande and most other language families of sub-Saharan Africa, in which multiple-object constructions tend to be common.

Most Mande languages have a very reduced verbal inflection and make a wide use of grammatical words expressing mainly TAM and polarity (called *predicative markers* in the Mandeist tradition) that obligatorily follow the subject, such as the transitivity marker *dà* in (87) above, or *yè* 'completive transitive' in (88). An important characteristic of the Mande predicative markers is that, for most of them, there is no evidence of a verbal origin, and for many of them, there is even evidence that they developed from categories other than verbs – in particular, from postpositions (see Bird and Kendall 1986; Bearth 1995; Creissels 1997; Kastenholtz 2003).

As regards the possible origin of this constituent order pattern, Claudi (1994) claimed that, originally, Mande languages had the Subject-Verb-Object-Oblique order at clause level, but the order GN (genitival dependent – head noun) in the noun phrase, and that the Subject-Object-Verb-Oblique order is an innovation resulting from the reanalysis of sequences 'auxiliary – nominalized verb' in which the NP that would have been the object of a finite verb form was encoded as a genitival dependent. This is undoubtedly a possible scenario, but Claudi's proposal is entirely speculative, since in Mande languages, the uniformity of word/constituent order patterns is total, and therefore cannot provide the slightest evidence of the previous existence of a constituent order other than Subject-Object-Verb-Oblique. Crucially, the auxiliarization processes postulated by Claudi can also operate within the frame of a constituent pattern already identical to that of present-day Mande languages without inducing any change in the linearization rules. Moreover, other equally plausible grammaticalization processes can lead to the same shift from Subject-Verb-Object-Oblique to Subject-Object-Verb-Oblique, among others the reanalysis of cleft constructions expressing object focalization, or the replacement of a transitive Subject-Verb-Object-Oblique construction by a serial

verb construction Subject-*take*-Object-Verb-Oblique, followed by the decategorialization of *take*, a process widely attested for example among Kwa languages.

Internal evidence from Mande languages does not make it possible to go beyond the default hypothesis that Proto-Mande had word/constituent order patterns identical to those attested in the modern Mande languages. At a time when virtually no one contested the Niger-Congo affiliation of the Mande family, there has been a lot of speculation about the significance of the Mande constituent order pattern for the reconstruction of Proto-Niger-Congo constituent order, but in the context of a growing skepticism about the possibility of proving the Niger-Congo affiliation of Mande, the reasonable conclusion is that nothing substantial can be said about this question. See however Nikitina (2011) for the discussion of a possible relationship between the Mande pattern of constituent order and some particularities of postpositional phrases in Mande languages.

6.1.4.3.3. Mande-style constituent order in non-Mande languages: Senufo and Eastern Songhay

The same pattern of constituent order is found in languages that have long been in close contact with languages of the Mande family. Senufo languages constitute the best known case. Carlson (1994) provides a detailed and precise description of the morphosyntax of Supyire, showing that this Senufo language shares with Mande, not only the absolute rigidity of the Subject-Object-Verb-Oblique constituent order but also the impossibility of having more than two nominal terms to the left of the verb. As in Mande, this applies even to the most typical ditransitive verbs, and whenever the second argument of a bivalent verb occurs in postverbal position, the presence of a postposition shows that it must be analyzed as an oblique in an extended intransitive construction. As illustrated in (89), Dombowsky-Hahn (2015) describes exactly the same constituent order pattern in Syer (aka Western Karaboro).

(89) Syer

a. *Ǹ ní la mêplɔ̃ kɛ̀ la' tãdyɔ yê.*
I REM my ram present my friend POSTP
'I have given my ram to my friend.'

b. *Mɛ mɛ' ndye jé cìnɛ̃̀ ǹ.*
You FUT person send market POSTP
'You will send somebody to the market.'

c. *Ǹ figa ki nì.*
I.PRF forget it POSTP
'I forgot it.' (extended intransitive construction)
(Dombrowsky-Hahn 2015: 486, 472, 537)

Contrary to Mande and Senufo, Songhay languages are not uniform in their constituent order patterns. Subject-Verb-Object-Oblique is the only possible constitu-

ent order in Western and Northern Songhay, but in Eastern Songhay, the Subject-Verb-Object-Oblique pattern has a marginal status. With typical transitive verbs, the Subject-Object-Verb-Oblique order is either the only possible order, as in Koyraboro Senni (Heath 1999), or the preferred order, as in Zarma (Oumarou Yaro 1993). Eastern Songhay has in common with Mande and Senufo that, in clauses with a constituent order of the Subject-Object-Verb-Oblique type, no additional NP can precede the verb, as illustrated by (90).

(90) Zarma

a. *Ábdù nà fèèjì wíí yàwòó sè.*
Abdou CPL.TR sheep kill guest.D POSTP
'Abdou has killed a sheep for the guest.'

b. *Múúsà nà ŋ́gà mòótàà nóó káynòó sè.*
Moussa CPL.TR 3SG car.D give younger_brother.D POSTP
'Moussa has given his car to his younger brother.'
(Oumarou Yaro 1993: 242)

The Subject-Object-Verb-Oblique pattern of Eastern Songhay is virtually identical to that of Mande, but a particularity that sharply distinguishes Eastern Songhay from Mande is the existence of a limited class of semantically bivalent verbs whose second argument must occur in postverbal position without however showing evidence of an oblique status, as illustrated by (91). Oumarou Yaro (1993: 120–127) argues that the behavioral properties of the second argument of such verbs do not differ from those of the second argument or prototypical transitive verbs, and that consequently it must be recognized as a variety of object.[13] The same analysis is proposed by Heath (1999) for Gao Songhay.

(91) Zarma

a. *Ábdù gá hìmá bààbò.*
Abdou ICPL resemble father.D
'Abdou resembles his father.'

b. **Ábdù gá bààbòó hìmà.*
Abdou ICPL father.D resemble

c. *Ábdù gà báá Hăysà.*
Abdou ICPL love Aïssa
'Abdou loves Aïssa.'

d. **Ábdù gá Hăysà bâ.*
Abdou ICPL Aïssa love

[13] Oumarou Yaro (1993: 126) gives the following list of transitive verbs whose object cannot occur in preverbal position: *máá* 'hear', 'feel', *díí* 'see', *dòònáá* 'be accostumed to', *dùù* 'get', 'have', *hín* 'surpass', *hìmá* 'resemble', *màànù* 'approach', *báà* 'like', *wáání* 'know'.

e. *Ábdù díí zànkày.*
Abdou see child.PL.D
'Abdou saw the children.'
f. **Ábdù nà zànkày dí.*
Abdou CPL.TR child.PL.D see
(Oumarou Yaro 1993: 126)

Moreover, in Zarma (but not in Gao Songhay), the Subject-Object-Verb-Oblique constituent order is not the only possible constituent order in clauses headed by a prototypical transitive verb. In Zarma, with prototypical transitive verbs, the Subject-Verb-Object-Oblique order is not frequent, but it is possible, and without any apparent conditioning, as illustrated by (92).

(92) Zarma
a. *À nà gòrŋòò wíí yàwòó sè.*
3SG CPL.TR chicken.D kill guest.D POSTP
'He killed the chicken for the guest.'
b. *À wíí gòrŋòó yàwòó sè*[14].
3SG kill chicken.D guest.D POSTP
'He killed the chicken for the guest.'
(Oumarou Yaro 1993: 125)

In this alternation, the absence of the transitive variant of the completive marker suggests analyzing (92b) as a zero-marked antipassive, but this analysis is contradicted by the absence of flagging of the P argument, and the question of the function of the alternation remains entirely open.

6.1.4.3.4. TAM-polarity-driven VO~OV alternations in West African languages

TAM-polarity-driven VO~OV alternations are widespread in the Gur, Kwa, and Kru families, i. e., in the central part of West Africa. Several Atlantic languages have a clause-initial or pre-verbal focus position typically conditioned by the use of special focalizing verb forms, but no Atlantic language has been signaled as having a TAM-polarity-driven VO~OV alternation, and such an alternation is attested in one Mel language only (Kisi).[15] I will argue below that some studies have overestimated the importance of VO~OV alternations in West Africa, but before examining this question, I would like to emphasize that the VO~OV alter-

[14] Note that, in Zarma, as in some West Mande languages (Manding, Soninke) the predicative marker of the completive positive occurs only in the Subject-Object-Verb-Oblique construction, not when the verb immediately follows the subject. The other predicative markers are not sensitive to this distinction.

[15] Mel languages were included by Sapir (1971) in the Atlantic family, but they are now considered as a distinct branch of Niger-Congo.

nations considered in this section are strictly conditioned by the TAM-polarity value expressed in verb morphology or by auxiliaries occurring immediately after the subject NP, allowing no room for the expression of information structure.

The most common situation in the VO~OV languages of the central part of West Africa is that the OV pattern is restricted to clauses including some overt TAM-polarity marker (auxiliary) immediately after the subject. But the details differ from one language to another, and no generalization is possible concerning the precise TAM-polarity values that require the OV pattern. There are also differences in the range of nominal terms involved in the alternation, with the result that treating them indistinctly as instances of a variation between the canonical Subject-Verb-Object-Oblique pattern and the Mande-style pattern (as often suggested in the literature) implies a considerable dose of oversimplification.

The three cases we are going to examine briefly are not intended to give a comprehensive view of the question, but only to illustrate the variation, and to emphasize the necessity to gather more detailed and more precise information on this question before any serious attempt at establishing a detailed typology of the constituent order patterns found in West Africa.

Kisi (the only Mel language in which the constituent order in plain assertive clauses is not uniformly Subject-Verb-Object-Oblique) has a VO~OV alternation triggered by the presence of an auxiliary immediately after the subject, and in which the OV pattern clearly differs from the Mande type of constituent order in several respects. Childs (2005) provides a detailed description of this alternative constituent order. A first difference with Mande languages is that Kisi has multiple object constructions, in which two (or even three[16]) NPs take part in the alternation, resulting in a Subject-Aux-Object1-Object2-Verb pattern that has no equivalent in Mande languages, as in (93).

(93) Kisi

a. *Ò* *ké* *yá* *tòòlúláŋ.*
3SG give 1SG support
'She gave me support.'

b. *À* *wá* *ndú* *kòówáŋ* *kìóó.*
3PL PAST.PROG 3SG medicine give
'They were giving him medicine.'
(Childs 2005: 8)

Moreover, in Kisi, the alternation is not limited to objects. As a rule, adpositional phrases are not involved in the alternation and remain in postverbal position; similarly, locative arguments are not considered objects, and invariably remain in post-

[16] In Kisi, constructions with three objects are possible with the applicative form of ditransitive verbs.

verbal position; but time adverbs can occur between the auxiliary and the object, as in (94). This again would be totally impossible in a Mande language.

(94) Kisi
Ò cò nîŋ yá mààlóŋ hùŋgùlló.
3SG ICPL now 1SG rice beat.APPL
'He is beating the rice for me now'.
(Childs 2005: 10)

Kisi is surrounded by Mande languages and is considered to have been heavily influenced by Mande languages, but in Kisi, terms that Mande languages would obligatorily put in postverbal position can be found between the auxiliary and the verb, which cannot be a straightforward calque from Mande. In another perspective, Kisi, like the other Mel languages, has the order noun – genitive in noun phrases, which is hardly compatible with a language-internal explanation along the lines of Claudi's (1994) reanalysis scenario.

In Attie, a Kwa language spoken in Ivory coast, the range of terms involved in the constituent order alternation includes not only the two objects of double object constructions, but also locative terms whose status as objects or adjuncts is not entirely clear. In sentence (95a), the two objects precede the verb, and a locative term follows it. By contrast, in sentence (95b), the locative term precedes the verb. According to Kouadio (1996), in Attie, oblique arguments take part in the alternation in the same way as objects, whereas adjuncts invariably remain in postverbal position. A more detailed description of Attie syntax would however be necessary in order to evaluate this hypothesis.

(95) Attie
a. *Mɛ̰̄ yī-ī Yàpí ʃìkā dzé yábò lø̄.*
1SG father-ICPL Yapi money give market there
'My father is giving money to Yapi at the market.'
b. *Yàpí-ī kpɔ̄ɛ̂ pyà ̄ nɛ̰̄.*
Yapi-ICPL forest-D in walk
'Yapi is walking in the forest.'
(Kouadio 1996: 402)

VO~OV alternations triggered by the presence of some auxiliaries are general in Kru languages. Much in the same way as in Kisi or Attie, the alternation may involve more than one nominal term, and is not restricted to objects. At least in some Eastern Kru languages, the alternative constituent order pattern can be characterized as Subject-Object-Oblique-Verb, i. e., as verb-final, but with an interesting particularity: in most verb-final languages, the default position of the object is immediately before the verb, but in Eastern Kru languages, the final position of the verb does not seem to affect the relative order OX. According to Grah (1983), in Newole (Eastern Kru), Subject-Object-Oblique-Verb is the canonical constituent

order triggered by six auxiliaries, but the Subject-Object-Oblique-Verb pattern is not rigid, and in OV clauses, it may happen that obliques precede the object or even occur in postverbal position, as in (96).

(96) Newole

a. *Kóní ní sáká jàlɛ́ lī.*
Koni CPL.NEG rice kitchen eat
'Koni has not eaten rice in the kitchen.'

b. *Làlí yā mágìtī kó līēplō yɛ́.*
Lali CPL market at scarf see
'Lali has seen a scarf at the market.'

c. *Wɔ̄wā níkā ɲú mlā zīmlɛ̄.*
Wowa FUT.NEG water drink today
'Wowa will not drink water today.'
(Grah 1983: 232, 259, 262)

6.1.4.3.5. Concluding remarks

In this section, I have tried to sketch a typology of the constituent order patterns found in West African languages that depart from those commonly recognized in typological studies of constituent order: the rigid and invariable Subject-Object-Verb-Oblique pattern found mainly in Mande languages, and the pattern characterized by TAM/polarity-driven VO~OV alternations. I leave entirely open the question of the possible historical connections between these two atypical constituent order patterns, and I want to emphasize that I am completely agnostic in this respect. Most of the previous studies of constituent order in West Africa have taken for granted that the two atypical constituent order patterns found in West Africa can be conflated in a typological account, and must lend themselves to some kind of unitary explanation diachronically. The desire to proove this at any price has often led to distortions in the presentation of the data and in their analysis.

For example, in the desire for proving that the Mande type of constituent order was once much more widespread than it is now, it has sometimes been suggested that otherwise strict Subject-Verb-Object-Oblique languages with object pronominal clitics occurring in preverbal position should be analyzed as having a constituent order pattern characterized by the Subject-Verb-Object-Oblique~Subject-Object-Verb-Oblique alternation, and that the position of pronominal objects can be assumed to reflect the position of object NPs in an ancient state of the language – see in particular Childs (2005) on Atlantic (and Mel). A brief look at the situation of Romance languages, whose history is particularly well known, immediately shows the unsustainability of this position. In modern Romance languages, object NPs invariably follow the verb, but in most of them (Portuguese being the main exception), weak object pronouns invariably attach to the left of finite verb forms.

Accepting the position of object clitics or affixes as evidence of the position previously occupied by object NPs would lead to the reconstruction of a Mande-style constituent order for Proto-Romance, which is certainly not correct. Latin had a flexible constituent order with the verb in final position as the less marked option, and modern Romance languages have more or less flexible patterns of constituent order with a clear predominance of Subject-Verb-Object-Oblique, but there is no evidence that Subject-Object-Verb-Oblique ever played a role as an intermediate stage in the shift from the Latin pattern of constituent order to that of modern Romance languages. Moreover, the history of Romance languages is well documented enough to establish that the position of pronominal objects in modern Romance languages results from evolutions that cannot be characterized as the straightforward maintenance of the position occupied by object NPs at some stage in the history of Romance languages, and that the so-called 'V2 constituent order' (i. e., a constituent order pattern similar to that attested in present-day German or Dutch) was probably predominant at the period when the position of Romance pronominal clitics stabilized. There is no reason to think that a reconstruction procedure that would lead to incorrect results for Romance languages could provide an interesting explanation of the constituent order patterns found in West Africa.

6.1.4.4. Interpositions

6.1.4.4.1. Definition

Several African languages having Subject-Verb-Object-Oblique as their basic constituent order have a grammatical word (or clitic) for which I propose to coin the term "interposition". This term is intended to capture a distribution that fits with none of the possible types of grammatical words proposed in general accounts of part-of-speech systems. Interpositions can be viewed as a variety of adposition that had gone unnoticed so far: they have in common with other types of adpositions the obligatory adjacency to NPs, but differ from them in that they must necessarily be adjacent to two NPs (or NP-equivalents) at the same time. This particularity has led some authors to designate them as "linkers," but this is not a satisfying solution, since the term "linker" is commonly used for various types of grammatical words occurring between two words or phrases that have a direct syntactic relationship and form a constituent, whereas interpositions occur between two NPs that do not form a constituent, each of them having its own function in the construction of the verb.[17]

[17] In the literature, in addition to "linkers" (Baker & Collins 2006), interpositions have also been designated "default prepositions" (Güldemann 2004), "transitive particles" (Dickens 2005), "transitive prepositions" (Vossen 2013) or "multipurpose oblique

In the languages that have this rare type of adposition, it never occurs when the verb is followed by a single object or oblique. It can only be found between two successive terms (objects or obliques) in the construction of the same verb. In this type of context, the use of an interposition may be obligatory, depending on language-specific rules.

Interpositions do not contribute to the recognition of the semantic role of the term they precede, which means that this term must be either an argument of the verb or an oblique whose semantic role is retrievable from its lexical meaning or marked independently in some other way.

Typically, in the languages that have interpositions, there is no fixed order of the nominal terms following the verb.

In one of the languages in which an interposition can be recognized (Nande), it expresses agreement with the NP that precedes it. In all the other cases I am aware of, the interposition is invariable.

6.1.4.4.2. The interposition of Ju|'hoan

In the Ju|'hoan dialect of the Kx'a language Ju (Dickens 2005), verbs divide into three classes (intransitive, transitive and ditransitive) according to the number of the non-subject terms that can be present without triggering the use of a verbal suffix *-a* encoding the presence of at least one term that does not belong to the valency of the verb in postverbal position. Independently of the use of this verbal suffix (glossed VE 'valency-external participant'), the interposition *kò* is used whenever a postverbal term is followed by another postverbal term. (97) and (98) illustrate this mechanism with the intransitive verb *!ái* 'die' and with the transitive verb ||*ohm* 'chop'. Note that, in these examples, there are at most two terms in postverbal position, but the presence of additional terms in postverbal position would require the repetition of *kò* before all postverbal terms not immediately adjacent to the verb.

(97) Ju|'hoan

a. *Mí* *!ú-n!a´àn* *!ái.*
1SG grand-father die
'My grandfather died.'

b. *Mí* *!ú-n!a´àn* *!ái-á* *|Aotcha.*
1SG grand-father die-VE |Aotcha
'My grandfather died at |Aotcha.'

c. *Mí* *!ú-n!a´àn* *!ái-á* *goàq=´àn.*
1SG grand-father die-VE yesterday
'My grandfather died yesterday.'

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markers" (Güldemann and Vossen 2000). None of these terms is consistent with the very particular distribution of interpositions as defined in this section.

d. *Ha !áí-á |Aotcha kò |ámà hè.*
3SG die-VE |Aotcha INTERP today
'He died in |Aotcha today.'

e. *Ha !áí-á |ámà hè kò |Aotcha.*
3SG die-VE today INTERP |Aotcha
'He died in |Aotcha today.'
(Dickens 2005: 37–39)

(98) Ju|'hoan

a. *Ha kú ||ohm !aìhn.*
1SG ICPL chop tree
'He was chopping the tree.'

b. *Ha kú ||ohm-a !aìhn kò g|úí.*
1SG ICPL chop-VE tree INTERP forest
'He was chopping the tree in the forest.'

c. *Ha kú ||ohm-a g|úí kò !aìhn.*
1SG ICPL chop-VE forest INTERP tree
'He was chopping the tree in the forest.'
(Dickens 2005: 37–39)

In Ju|'hoan, the verb *|a´àn* 'give' can be followed by two postverbal terms representing the recipient and the gift. According to the general rule, *kò* must occur between them. The order *|a´àn* – recipient – *kò* – gift seems to be usual, but according to Baker and Collins (2006), *|a´àn* – gift – *kò* – recipient is also possible, and valency-external terms may even be inserted between the NPs representing arguments, or precede them, as shown in (99).

(99) Ju|'hoan

Mi |'an Maria ko ambere ko tzi.
1SG give Maria INTERP bucket INTERP outside
~ *Mi |'an tzi ko Maria ko ambere.*
~ *Mi |'an Maria ko tzi ko ambere.*
~ *Mi |'an ambere ko Maria ko tzi.*
~ *Mi |'an tzi ko ambere ko Maria.*
~ *Mi |'an ambere ko tzi ko Maria.*
'I give Maria the bucket outside'
(Baker and Collins 2006: 54–55)

6.1.4.4.3. Interpositions in other Ju varieties?

Ju|'hoan belongs to the Ju aka !Xuun dialect cluster. Although this question is not explicitly addressed by Heine and König (2015), the examples they quote suggest that an interposition *kò* with the same distribution as in Ju|'hoan can be found in

the other Southeastern dialects. By contrast, the "linker" *ke* found in the other Ju dialects is clearly nothing other than an ordinary preposition with just an unusually broad distribution and no semantic content. The point is that, contrary to *kò*, *ke* can flag NPs in immediate post-verbal position, as in (100).

(100) Northwestern Ju
Mí m -ē tīín tí kē hà̀.
1SG TOP PAST ask PASS PREP CL1.PRO
'I was asked by him.'
(Heine and König 2015: 193)

6.1.4.4.4. Interpositions in other Khoisan languages?

It has been claimed that grammatical words similar to Ju|'hoan *kò* constitute a common feature of non-Khoe South African Khoisan languages. However, not only in Northwestern and Central Ju, but also in N‖ng aka N|uuki (Collins and Namaseb 2011) and the ǂHoan dialect of ǂ'Amkoe (Collins and Gruber 2014), it turns out that the so-called "linkers" are simply prepositions with just a somewhat unusual distribution and a very low degree of semantic specificity.

Crucially, N‖ng *ŋ* and ǂHoan *kì*, contrary to Ju|'hoan *kò*, must not necessarily be adjacent to two NPs at the same time. As illustrated by (101) and (102), like typical prepositions, they can be found in immediate postverbal position.

(101) N‖ng
a. *Ku !ũ ke xa |ʔaa ŋ g!ari.*
3SG grandfather DECL PAST die PREP Upington
'His grandfather died in Upington.'
b. *Ku-a si |qhõˤo ŋ !haeka.*
3SG-DECL IRR dance PREP tomorrow
'He will dance tomorrow.'
(Collins and Namaseb 2011: 45–46)

(102) ǂHoan
a. *Cì 'a kyxái kì !kôa na.*
3PL PROG dance PREP house in
'They are dancing in the house.'
b. *Ma 'a 'ám kì ǐ-ǂà̀m.*
1SG PROG eat PREP spoon
'I am eating with a spoon.'
(Collins and Gruber 2014:141–142)

Cross-linguistically, prepositions with a very broad range of uses and a very low degree of semantic specificity are not uncommon. This is a question of degree, and there is no justification for treating prepositions like N‖ng *ŋ* or ǂHoan *kì* as a

special type of grammatical words. In other words, the question of whether interpositions that are really comparable to Southeastern Ju *kò* can be found in other Khoisan languages remains open.

6.1.4.4.5. The interposition of Lamba

According to Aritiba (1988), in Lamba (a language belonging to the Gurunsi branch of the Gur family), much in the same way as in Ju|'hoan, the NPs representing the recipient and the gift in the construction of *give* do not have a fixed order, but the first NP is immediately juxtaposed to the verb, and the interposition *kà´* must be inserted before the second one. In the absence of the interposition, the first NP could only be interpreted as the genitival modifier of the second one, as in (103).

(103) Lamba

a. *Yàl* *há* *húlò* *ká* *ˈÚrò.*
woman.SG give.CPL hat.SG INTERP Uro
'The woman gave a hat to Uro.'

b. *Yàl* *há* *Úrò* *ká* *ˈhúlò.*
woman.SG give.CPL Uro INTERP hat.SG
'The woman gave a hat to Uro.'

c. *Yàl* *há* *Úrò* *húlò.*
woman.SG give.CPL Uro hat.SG
'The woman gave Uro's hat (to someone else).'

d. **Yàl* *há* *húlò* *Úrò.*
woman.SG give.CPL hat.SG Uro
(Aritiba 1988: 8–9)

More generally, Lamba *kà´* has distributional characteristics essentially similar to those of the interposition of Ju|'hoan. It occurs not only in the construction of verbs whose argument structure is similar to that of *give*, but also in other constructions in which two unflagged NPs constitute two distinct terms in the construction of the same verb, as in (104). This led Aritiba to designate it as a "disjunctive marker". By the choice of this term, he aimed at underscoring its demarcative function.

(104) Lamba

a. *Càmà* *mà* *hɔ̃́* *kà* *rávììr.*
Cama hit.CPL dog.SG INTERP stick.SG
'Cama hit the dog with a stick.'

b. *Càmà* *mà* *rávììr* *ká* *ˈhɔ̃̀.*
Cama hit.CPL stick.SG INTERP dog.SG
'Cama hit the dog with a stick.'
(Aritiba 1988: 8)

Interestingly, Lamba has a homophonous *kà´* used as an optional linker between nouns and numerals (as in *hásə́ nàsə̂l ~ hásə́ kà ná↓sə̂l* 'two dogs), and another *kà´* occurring in some clause sequences. It is however difficult to imagine a plausible connection between these three items.

To the best of my knowledge, nothing similar has been reported to exist in any other Gurunsi language, and more generally in any other West African language.

6.1.4.4.6. The interposition of Nande

The Bantu language Nande has a grammatical word which, like the Ju|'hoan interposition *kò* or the Lamba interposition *kà´*, can only be found between two successive terms in the construction of the same verb.

Baker and Collins (2006) briefly describe its use and put forward a formal analysis aiming at a unified account of the Nande interposition and of the "linkers" found in non-Central Khoisan languages. This analysis is basically flawed by the vagueness of their notion of "linker," which includes ordinary prepositions that have just a relatively broad range of uses and a very low degree of semantic specificity.

In a series of recently published papers (Schneider-Zioga 2014a, 2014b; Schneider-Zioga and Nguessimo Mutaka 2015a, 2015b, 2015c), Patricia Schneider-Zioga and Philip Ngessimo Mutaka provide a much more precise description of the Nande interposition, rectifying some errors in Baker and Collins's description, and making it possible to put forward a diachronic scenario responsible for the emergence of this interposition.

The main differences between Nande and Ju|'hoan are as follows:

(a) In a construction involving more than two successive terms in postverbal position, the interposition of Nande can occur only once, between the first and the second postverbal terms.
(b) The interposition of Nande agrees in class with the NP it immediately follows.

With respect to the linear order of postverbal terms, Nande has possibilities of variation similar to those of Ju|'hoan, as in (105) and (106).

(105) Nande
a. *Kámbale ágúlira ekitábú kyo Nadíne.*
(CL1)Kambale CL1.bought.APPL CL7.book CL7.INTERP (CL1)Nadine
'Kambale bought a book for Nadine.'
b. *Kámbale ágúlira Nadíné y(o) ekitábu.*
(CL1)Kambale CL1.bought.APPL (CL1)Nadine CL1.INTERP CL7.book
'Kambale bought Nadine a book.'
(Schneider-Zioga and Ngessimo Mutaka 2015(c): 101)

(106) Nande

a. *Kambale* *moasenyire* *olukwi* *l(o)*
(CL1)Kambale AFF.CL1.chopped CL11.wood CL11.INTERP
omo-mbasa.
CL18-CL9.axe
'Kambale chopped wood with an axe.'

b. *Kambale* *moasenyire* *omo-mbasa* *m(o)*
(CL1)Kambale AFF.CL1.chopped CL18-CL9.axe CL18.INTERP
olukwi.
CL11.wood
'Kambale chopped wood with an axe.'
(Baker and Collins 2006: 309)

To the best of my knowledge, Nande is the only Bantu language in which a similar phenomenon has been observed. However, taking into consideration (a) language-internal data on the homonymy between the interposition and other items, (b) typological data on the relationship between copulas and focus marking, and (c) the particularities of East Bantu languages in the expression of focus, it is not difficult to elaborate a plausible grammaticalization scenario accounting for the emergence of this interposition.

Schneider-Zioga (2014b) rightly emphasizes that the interposition is phonologically indentical to two other items in Nande: a copula – in (107a) – and a focus marker found in cleft constructions – in (107b) – and is very similar to a third item: the enclitic object pronoun, in (107c).

(107) Nande

a. *Omúkali* *yó* *mwami*.
CL1.woman CL1.COP CL3.chief
'It is the woman who is the chief.'

b. *Ekitábu* *kyo* *Kámbale* *ágúla.*
CL7.book CL1.FOC (CL1)Kambale CL1.bought
'It is the book that Kambale bought.'

c. *Nadíne* *ágúlá-kyô.*
(CL1)Nadine CL1.bought-CL7.PRO
'Nadine bought it (the book).'
Schneider-Zioga 2014[b])

Pronouns consisting of a class prefix and a stem *o* are common across Bantu languages. Since pronouns are widely attested as the source of either equative copulas or focus markers,[18] there is no difficulty in accepting the hypothesis that the Bantu

[18] Among many others, Balanta-Ganja (Creissels and Biaye 2016: 123, 142–143, 261) is a case in point.

pronoun CL-*o* is the common source, not only of the enclitic pronoun illustrated in (107c) but also of the copula illustrated in (107a) and of the focus marker illustrated in (107b).

As regards Nande CL-*o* as an interposition, it is not difficult to imagine a grammaticalization path from CL-*o* as a copula or focus marker. The point is that IAV focus positions are common in eastern Bantu languages, and in many cases (for example, in Makhuwa), nouns in IAV focus position are overtly marked in the same way as nouns in equative predicate function. Consequently, the hypothesis I would like to propose is that the interposition in Nande started as a focus marker making explicit the focus function of the NP in IAV position (remember that, in Nande, if more than two phrases follow the verb, the interposition can only occur after the first one!). Subsequently, the use of the former focus marker generalized in this position when the verb was followed by more than one term, so that it lost its initial function and became a purely syntactic marker.

6.1.4.4.7. An emerging interposition in Baule?

In Baule (a Kwa language spoken in Ivory Coast) *man* 'give' has two possible constructions: a serial construction in which the NP representing the gift is introduced by *fa* 'take', whereas the NP representing the recipient follows *man* 'give', and a monoverbal construction. In the monoverbal construction, the sequence formed by the NPs representing the recipient and the gift has the appearance of a genitival construction:

(a) When the recipient is represented by a personal pronoun, there is no morphological evidence that this pronoun is syntactically the object of the verb it follows rather than the genitive modifier of the noun it precedes, since Baule uses the same set of pronouns in both roles.
(b) In other cases, a resumptive pronoun appears between the recipient and the gift in the same conditions as in the genitival construction, see (108).

(108) Baule
a. *Màn Kòfí (í) bólí!*
give Kofi (3SG) goat
'Give Kofi a goat!'
(compare with *Kòfí (í) bólí* 'goat belonging to Kofi')
b. *Màn blā mùn bé bólí!*
give woman PL 3PL goat
'Give the women a goat!'
(compare with *blā mùn bé bólí* 'goat belonging to the women')
(Creissels and Kouadio 2010: 179)

This strongly suggests a monotransitive analysis according to which *man* is followed by a single NP including a genitival modifier interpreted as a future possessor: 'Give [a goat intended for Kofi]'. However, if constituency tests are to be taken seriously, in particular those relying on extraction, this analysis must be abandoned. The point is that Baule has a focalizing construction that can be described as follows:

– the focalized term occurs in sentence initial position, followed by the focalizing particle *yɛ̂*;
– resumption of the focused element by an overt pronoun in situ is obligatory if the focalized term is the subject; in other roles, the presence of a resumptive pronoun depends on conditions that have not been fully established;
– in all cases, a particle *ɔ̀* obligatorily occurs in sentence final position, as in (109).

(109) Baule
a. *Ákísí tò-lì juê.*
Akissi buy-CPL fish
'Akissi bought fish.'
b. *Ákísí yɛ̂ ɔ̀ tò-lì juê ɔ̀.*
Akissi FOC 3SG buy-CPL fish FOC
'It is Akissi that bought fish.'
c. *Juê yɛ̂ Ákísí tò-lì ɔ̀.*
fish FOC Akissi buy-CPL FOC
'It is fish that Akissi bought.'
(Creissels and Kouadio 2010: 180)

When the object of a transitive verb includes a genitival modifier, the entire object NP can be extracted, but it is impossible to extract the head of the genitival construction only, leaving the genitival modifier in situ, as in (110).

(110) Baule
a. *Bè bù-lì Kòfí suă'n.*
3PL demolish-CPL Kofi house-D
'They demolished Kofi's house.'
b. *Kòfí suă'n yɛ̂ bè bù-lì ɔ̀.*
Kofi house-D FOC 3PL demolish-CPL FOC
'It is Kofi's house that they demolished.'
c. **Suă'n yɛ̂ bè bù-lì Kòfí ɔ̀.*
house-D FOC 3PL demolish-CPL Kofi FOC
intended: 'They demolished Kofi's HOUSE.'
(Creissels and Kouadio 2010: 180–181)

If the monoverbal construction of *man* 'give' were a monotransitive construction with the NP representing the recipient in genitive role, it would be expected to follow the same pattern, but this is not the case: as shown in (111), it is perfectly possible to extract the gift NP, leaving the recipient NP in situ.

(111) Baule

a. *Kuàkú màn-nìn Kòfí (í) bólí.*
Kouakou give-CPL Kofi 3SG goat
'Kouakou gave Kofi a goat.'

b. *Bólí yê Kuàkú màn-nìn Kòfí ɔ̀.*
goat FOC Kouakou give-CPL Kofi FOC
'It is a goat that Kouakou gave Kofi.'
(Creissels and Kouadio 2010: 181)

Another piece of evidence against the monotransitive analysis is that the sequence formed by the NPs representing the recipient and the gift is not always homonymous with a genitive – noun sequence, since the NP representing the gift can include a genitive expressing a part-whole relationship, giving rise to sequences, such as *mín í sîn* in (112), which in Baule cannot constitute viable genitival constructions.

(112) Baule
Màn mín í sîn.
give 1SG 3SG half
'Give me half of it.'
(Creissels and Kouadio 2010: 181)

The acceptability of (112) contrasts with the unacceptability of pronoun sequences in constructions in which both pronouns should be interpreted as genitives, for example in nominalizations, as illustrated by (113).

(113) Baule

a. *Wɔ́ Kòfí (í) flè-lê'n fù-lì mín nún.*
2SG Kofi 3SG call-NMLZ-D climb-CPL 1SG in
'The fact that you called Kofi (lit. 'your Kofi's calling') surprised me.'

b. **Wɔ́ mín flè-lê'n fù-lì mín nún.*
2SG 1SG call-NMLZ-D climb-CPL 1SG in
intended: 'The fact that you called me …'
OK: *Mín flè-lê'n mɔ̀ à flè-lì mín'n ...*
1SG call-NMLZ-D REL 2SG call-CPL 1SG-D
lit. 'My calling that you called me …'
(Jérémie Kouadio, pers.com.)

The only analysis compatible with these data is therefore that, in spite of the homonymy with the genitival construction, the NPs representing the recipient and the gift constitute distinct terms in the monoverbal construction of *man* 'give'. Consequently, the resumptive pronoun does not mark agreement of a nominal head with a genitive, but of the second object (representing the gift) with the first object (representing the recipient), which constitutes a typologically unusual type of agreement. The agreement mechanism in the construction of *man* is identical with the agreement of nominal heads with genitive modifiers, but the controller and the target are the first and second object of a ditransitive construction, respectively.

Diachronically, the origin of this agreement mechanism is probably the grammaticalization of constructions such as English *Give John his money* interpreted as 'Give John the money due to him', which in Baule resulted in sequences object 1 – object 2 homonymous with sequences genitive – noun.

Additional evidence supporting this analysis comes from the occurrence of resumptive pronouns marking agreement between the two non-subject terms following the verb in the construction of trivalent verbs other than *man*. At least in some cases, a "possessive" interpretation of the resumptive pronoun is excluded, and it can only have a purely syntactic function.

Resumptive pronouns similar to that found in the monoverbal construction of *man* 'give' occur in particular in the construction of transfer verbs, between the NP representing the transferee and the postpositional phrase representing the destination, as illustrated by (114). In some cases, the resumptive pronoun can be semantically justified by the nature of the destination and its relation to the transferee (the fridge has been made to put things like milk in it, the fire has been lit to cook food on it), but (114c) is a particularly clear case in which no semantic motivation can be imagined for the presence of the resumptive pronoun: there is no possible motivation for characterizing the sun as 'the sun of the clothes'.

(114) Baule

a. *Wlà nɔ́nnɔ́n'n í flìgô'n nún.*
put milk-D 3SG fridge-D in
'Put the milk into the fridge.'

b. *Siè duô'n í sèmlên'n sú.*
put yam-D 3SG burning_charcoal-D on
'Put the yam on the fire.'

c. *Sɛ̀ tánnìn mùn bé wiá nún măn bè wú.*
spread cloth PL 3PL sun in so that 3PL dry
'Spread the clothes in the sun so that they dry.'
(Jérémie Kouadio, pers.com.)

Note in particular the two possible readings of sentences such as those of (115), depending on the interpretation of the third-person pronoun as a genitive referring to a discursively salient entity or as an agreement mark.

(115) Baule

a. *Gwà nzân'n í vélì'n nún!*
pour wine-D 3SG glass-D in
'Pour the wine into the glass!' (*í* interpreted as an agreement mark)
or 'Pour the wine into his/her glass!' (*í* interpreted as referential)

b. *Ǹ yàcì-lì lòtô'n í klɔ̌ lɔ̀.*
3SG leave-CPL car-D 3SG village there
'I left the car in the village.' (*í* interpreted as an agreement mark)
or 'I left the car at his/her place.' (*í* interpreted as referential)
(Jérémie Kouadio, pers.com.)

In the case of transfer verbs, it is particularly tempting to analyze the resumptive pronoun, whatever its origin, as having grammaticalized as marking the agreement of a secondary predicate, since semantically, the locative expression in the construction of transfer verbs can be viewed as a predication about the transferee. Moreover, it is conceivable to extend this analysis to the verb 'give':

X_{agent} *puts* $Y_{transferee}$ $Z_{location}$ ⇒ X *makes* [Y *be located at* Z]

X_{agent} *gives* $Y_{recipient}$ Z_{gift} ⇒ X *makes* [Y *have* Z]

The possibility of analyzing a resumptive pronoun introducing the third term of a three-place construction, and agreeing with the second term, as a marker of secondary predication, is particularly obvious when the third term of the construction is an adjective in predicate function, as in (116).

(116) Baule

a. *B'à yò suă mùn bé dăn.*
3PL-PRF make house PL 3PL large
'They have enlarged the houses.'

b. *Màn yò kpàngɔ̂ í kpâ.*
1SG.PRF make bicycle 3SG good
'I have repaired the bicycle.'

c. *B'à yò bé àwlô í klànmăn.*
3PL-PRF make 3PL compound 3SG beautiful
'They have embellished their compound.'
(Jérémie Kouadio, pers.com.)

To conclude, there are some striking similarities between the interpositions of Ju|'hoan or Nande and the resumptive pronouns in the Baule constructions examined above. This suggests that perhaps these resumptive pronouns represent an early stage in a grammaticalization process whose result could be the emergence of an interposition. Starting from cases in which possessive marking of the second object in a double-object construction is semantically motivated, the reanalysis of

this possessive marking as secondary predicate agreement may constitute a crucial move in such an evolution. The final stage could be the emergence of an interposition devoid of any semantic content, but required to license verb dependents that are not contiguous to their head.

6.1.4.5. Existential predication in the languages of the Sudanic belt

The Sudanic belt (Clements and Rialland 2008), aka Macro-Sudan belt (Güldemann 2008), is a large belt of northern sub-Saharan Africa from the Atlantic Ocean to the Ethiopian plateau. Some important structural characteristics are particularly frequent among languages spoken in this area irrespective of their genetic affiliation (Westermann 1911; Greenberg 1959) and are not found with a comparable frequency in the genetically related languages outside of this region, which suggests an important role of language contact. Recent areality hypotheses dealing with the Sudanic belt have focused on features such as labial-velar stops, labial flaps, implosives and other "nonobstruent" stops, nasal vowels and lack of contrastive nasal consonants, ATR vowel harmony, tone, "lax" polar question markers, logophoricity markers, S-(Aux)-O-V-X and V-O-Neg order patterns. In this section, I discuss an areal feature of the Sudanic belt not mentioned so far in the literature: the particularly high frequency of a type of existential predication that is relatively rare at world level.

Existential predications (*There is a book [on the table]*) provide an alternative way of encoding the prototypical figure-ground relationships also denoted by plain locational sentences (*The book is on the table*), from which they differ in the perspectivization of figure-ground relationships (Borschev and Partee 2002; Partee and Borschev 2004, 2007).

Probably less than half of the world's languages have a special predicative construction encoding the existential perspectivization of figure-ground relationships (Creissels 2016c), but in many cases (for example, Finnish, in [117]), variation in constituent order provides a rough equivalent of existential perspectivization.

(117) Finnish

a. *Poika* *on* *piha-lla.*
boy is yard-in
'The boy is in the yard.'

b. *Piha-lla* *on* *poika.*
yard-in is boy
'There is a boy in the yard.'
(Huumo 2003: 464)

However, some of the languages devoid of a morphologically distinct predicative construction encoding the existential perspectivization of figure–ground relationships also have a rigid constituent order in locational predication. In such lan-

guages, in the absence of indications provided by definiteness marking or focus marking, the same locational clauses are used indiscriminately in contexts that would trigger a choice between locational and existential predication in other languages:

(118) Mandinka
Wùlôo bé yíròo kótò.
dog.D is tree.D under
'The dog is under the tree.' or 'There is a dog under the tree.'
(pers. doc.)

Languages with rigid order in locational clauses and no possible contrast with an existential construction morphologically distinct from plain locational predication are particularly common in the Sudanic belt. The database I am compiling for a worldwide survey of existential predication includes so far 110 languages of the Sudanic belt, among which 73 (about two-thirds) have a rigid figure–ground order in locational predication and no possible contrast with a morphologically marked construction encoding the existential perspectivization of figure-ground relationships, whereas elsewhere in the world (including the rest of the African continent), this configuration is either rare or not attested at all. Among the languages of the Sudanic belt, this pattern is particularly predominant in the Mande and Gur families. Interestingly, among the major language families found in the Sudanic belt, the only ones in which it is not predominant are Atlantic (characterized by a strong predominance of existential constructions derived from *have*-possessive constructions) and Chadic (characterized by a strong predominance of existential constructions involving dedicated predicators).

6.1.4.6. Impersonal constructions: generalizing *you* with overt antecedents

It is cross-linguistically very common that second-person pronouns or indexes, which canonically represent the addressee of the speech act, can also express generalizations over sets of human beings whose delimitation is generally left implicit and can only be inferred from the context, as in *It is so smoggy in Los Angeles that you can barely breathe*, where *you* expresses a generalization over human beings present in Los Angeles.

This generalizing use of second-person pronouns or indexes, usually termed 'impersonal', is particularly widespread among West African languages. Moreover, in some West African languages at least, the second-person pronoun or index used in this function exhibits coreference properties that are somewhat unexpected, given what is known about the generalizing use of second-person pronouns or indexes in more familiar languages, in which generalizing *you* can introduce generic referents but cannot refer back to generic referents already introduced by a noun phrase.

Creissels (2013) on the generalizing use of Mandinka *í* 'you' constitutes as far as I know the first mention of this phenomenon in the literature. Creissels et al. (2015) show that it constitutes a common feature of the Atlantic and Mande languages spoken in Senegal.

In the Serer Sine example (119) the generalizing relative clause *oxu warna okiin* 'whoever kills a person' includes no mention of second person, and could be resumed by a third-person pronoun or index without any change in the meaning. However, in this context, it is also possible (and very common) to use a second-person index.

(119) Serer Sine

Oxu	*warna*	*o-kiin,*	*o-damel*	*ɓisel*	*o*
whoever	kill.SBD	CLox-person	2SG-arrest.PASS	bring.PASS	to

Jaxaaw.
Jaxaaw
lit. 'Whoever$_i$ kills a person, you$_i$ are arrested and brought to Jaxaaw.'
> 'Whoever kills a person is arrested and brought to Jaxaaw.'
(Creissels et al. 2015: 48)

In the Wolof example (120), *ku* 'whoever' is resumed by a second-person possessive within the generalizing relative clause and by a second-person object clitic in the matrix clause.

(120) Wolof

Ku	*yar*	*sa*	*kuuy,*	*yow*	*la-y*	*jëkka*	*daan.*
Whoever	raise	your	ram	2SG	FOC-ICPL	begin	attack

lit. 'Whoever$_i$ raises your$_i$ ram, it is you$_i$ that it attacks first.'
>'The one who raises a ram is the first to be attacked by it.'
(Creissels et al. 2015: 49)

(121) shows that, in Mandinka, *í* 'you (sg)' resuming a generic noun phrase can be substituted by *à* 'he, she, it' without any difference in meaning. In any other context, this substitution would change the meaning.

(121) Mandinka

a.

Nîŋ	*míŋ*	*yè*	*ŋ́*	*sòosóo,*
if	REL	CPL	1SG	contradict

í	*sì*	*táa*	*jĕe*	*í*	*yè*	*à*	*jùubée.*
2SG	POT	go	there	2SG	SUBJ	3SG	look

lit. '[Anyone who contradicts me]$_i$, you$_i$ should go there and look at it.'
> 'Anyone who does not believe me should go there and have a look at it.'

b. *Nîŋ míŋ yè ŋ́ sòosóo,*
if REL CPL 1SG contradict
à sì táa jěe à yè à jùubée.
3SG POT go there 3SG SUBJ 3SG look
same meaning as (a), lit. '[Anyone who contradicts me]$_i$, he/she$_i$ should go there and look at it.'
(Creissels et al. 2015: 49)

In (122), generalizing *í* resumes *mànsàdíŋ wóo mànsàdìŋ* 'any prince'.

(122) Mandinka
Mànsàdíŋ wóo mànsàdìŋ,
prince INDEF prince
níŋ í ñân-tá mànsàyâa-lá Màndíŋ,
if 2SG must-CPL reign-INF Mande
Sùusúu Súmáŋkúrù bé í fǎa-là dóróŋ.
Suusuu Sumankuru COP 2SG kill-INF only
lit. '[Any prince]$_i$, if you$_i$ were doomed to reign over Mande, Suusuu Sumankuru would just kill you$_i$.' > 'S.S. would kill any prince who was doomed to reign over Mande.'
(Creissels et al. 2015: 49–50)

In (123), the antecedent of generalizing *í* is an ordinary relative clause in topic position. Such a relative clause is not inherently generic, and in other contexts, it could have a specific reading: 'the person whom love has killed'. It is interpreted here as generic because of the coreference relation with second-person *í*, which (in contrast with third-person *à*) can only refer back to generic antecedents.

(123) Mandinka
Kànú yè méŋ fǎa, í mâŋ jífà.
love CPL REL kill 2SG CPL.NEG die_miserably
lit. '[The person whom love has killed]$_i$, you$_i$ did not die miserably.' > 'If one is killed by love, one does not die miserably.'
(Creissels et al. 2015: 50)

In (124), the antecedent of generalizing *í* is *mòô*, definite form of *mǒo* 'human being'. In Mandinka, any noun in the definite singular form can be interpreted as generic, depending on the context.

(124) Mandinka
Wŏo tùmôo, mòô búká mànsàyáa sòtó jăŋ,
DEM time.D person.D ICPL.NEG kingship.D get here
fó ní í táa-tá Màndíŋ.
unless if 2SG go-CPL Mande
lit. 'In those days, [the man]$_i$ did not become king here unless you$_i$ went to Mande.' > 'In those days, one did not become king here without first going to Mande.'
(Creissels et al. 2015: 50)

In (125), the antecedent *mòo wóo mòo* 'anyone' is the subject of the clause to which the first occurrence of generalizing *í* belongs.

(125) Mandinka
Mòo wóo mòo láa-tà í fâŋ ná,
person INDEF person trust-CPL 2SG self POSTP
í sí bùlá ñĭŋ túlúŋ-ò tó.
2SG POT take_part DEM game-D LOC
lit. '[Anyone]$_i$ trusting in yourself$_i$, you$_i$ may take part in this game.'
> 'Anyone trusting in themselves may take part in this game.'
(Creissels et al. 2015: 51)

In (126), the antecedent of generalizing í in genitive function is *mòô* 'the person' in subject function in the same clause.

(126) Mandinka
Mòô ñân-tá í lá mùsóo màrá-là báakè.
person.D must-CPL 2SG LK wife.D look_after carefully
lit. [The man]$_i$ must look after your$_i$ wife carefully.'
> 'One must look after one's wife carefully.'
(Creissels et al. 2015: 51)

And finally, (127) illustrates the same syntactic configuration, but with generalizing *í* included in a topicalized noun phrase preceding *mòô* 'the person' in subject position.

(127) Mandinka
Í báadíŋkéw-òo, mòô sì sílá à lá.
2SG brother-D person.D POT be_afraid 3SG POSTP
lit. 'Your$_i$ brother, [the man]$_i$ may be afraid of him.'
> 'One may be afraid of one's own brother.'
(Creissels et al. 2015: 51)

To summarize, in Mandinka, generalizing *í* may refer back to non-specific noun phrases making explicit the domain within which the generalization applies (either

the whole set of human beings, or a proper subset thereof), and there is no obvious syntactic restriction on such coreference chains. Generalizing *í* may even precede the co-referent generic NP.

In the generalizing use of *í* with a discourse antecedent, the selection of a particular semantic type of antecedent (non-specific noun phrases or relative clauses) seems to be the only thing that distinguishes generalizing *í* from third-person pronouns. When *í* 'you' introduces a non-specific human referent, it is of course not equivalent to *à* 'he/she/it', which in the absence of an overt antecedent is interpreted as referring to some specific entity whose identity is recoverable from the context. By contrast, when it resumes a non-specific noun phrase or relative clause, second-person *í* can be replaced by third-person *à* without any difference in meaning.

Further investigation would be necessary to determine whether the generalizing use of second-person pronouns with overt antecedents is limited to the languages of Senegal reviewed in Creissels et al. (2015) or perhaps extends to a wider area.

For the discussion of a possible grammaticalization path, see Creissels (2013).

6.1.5. Complex constructions

6.1.5.1. Relativization

A considerable amount of books and articles dealing with the typology of relativization has been published since Keenan and Comrie's (1977) seminal paper on the Accessibility Hierarchy. As regards more specifically sub-Saharan Africa, Kuteva and Comrie (2005) put forward some generalizations about relative clause formation in African languages on the basis of a sample of 54 languages covering all major genetic families.

In this section, I briefly present two recent discoveries in the domain of relativization in sub-Saharan Africa that are of interest for a general typology of relativization.

6.1.5.1.1. Relative clauses and the stage level vs. individual level property distinction

Creissels et al. (2015) constitutes as far as I know the first mention of languages having grammaticalized such a distinction in the noun – relative clause construction. This phenomenon is related to the generalizing use of second-person pronouns.

In the Atlantic and Mande languages spoken in Senegal, one commonly finds relative clauses beginning with 'which you know that …', where quite obviously

which you know that must not be taken in its literal meaning. At first sight, one may have the impression that adding *which you know that* at the beginning of relative clauses is just a kind of verbal tic that does not add or change anything in the meaning. However, a closer look at the contexts in which this expression occurs shows that it does have a meaning, and its meaning has to do with the generalizing use of second-person pronouns: 'which one knows that'.

The point is that, in the Atlantic and Mande languages examined by Creissels et al. (2015), *which you know that* is never used to introduce relative clauses that specify the identity of an individual with reference to a particular situation in which this individual is episodically involved. By contrast, it regularly occurs in relative clauses that characterize an individual or a kind with reference to a stable property. As illustrated by (128b), relative clauses introduced by *which you know that* are particularly common in sentences formulating definitions.

(128) Mandinka

a. *Sĕejò mú bèn-dúlàa lè tí, mîŋ í*
Sédhiou COP meet-place.D FOC POSTP REL 2SG
yé à lôŋ kó síi jámáa lè bé jĕe.
CPL.TR 3SG know that race many FOC COP there
'Sédhiou is a crossroads in which many ethnic groups live.'
(lit. 'which you know that many ethnic groups are there')

b. *Kòolêe, wŏ lè mú dùlâa tí,*
kòolêe.D DEM FOC COP place.D POSTP
dâa mîŋ í yé à lôŋ kó
place.D REL 2SG CPL.TR 3SG know that
kòo-báŋk-òo lè bé jĕe.
salt-soil-D FOC COP there
'A *kòolêe* is a place where the soil contains salt.'
lit. 'a place which you know that there is salted soil there'
(Creissels et al. 2015: 52)

(129) to (131) illustrate the grammaticalization of *which you know that* as a relativizer impliying reference to a stable/essential property of the referent of the head noun in Wolof, Keerak, and Gubëeher.

(129) Wolof

ab dëkk-u kow boo xam ne
INDEF.CLb village-CSTR countryside REL.2SG know that
am mbey doŋŋ la dunde
INDEF.CLm farming only FOC.3SG live-APPL
'a remote subsistance farming village'
lit. 'a remote village which you know that it lives on farming only'
(Creissels et al. 2015: 53)

(130) Kerak
ma-łłus-am *mɔ-nʊ-haasʊm* *kaanakʊ* *m-ɔmɔ* *mʊ-hʊrʊm*
CLm-sand-D.CLm REL.CLm-2SG-know that CLm-COP CLm-salty
'the sand which contains salt' (lit. 'sand which you know that it is salty')
(Creissels et al. 2015: 53)

(131) Gubëeher
Ə-den *a* *taabl* *ə-gəni* *u-na* *buyɛnka* *ə-dej-i.*
3SG-put PREP table CLa-REL 2SG-know that 3SG-be_high-CPL
'She puts it on a high table.' lit. 'a table which you know that it is high'
(Creissels et al. 2015: 53)

6.1.5.1.2. Generalized noun-modifying clauses

Comrie (1998) argued that, in some languages, relative clauses as commonly defined do not occur in a dedicated construction, but constitute rather a particular case of a more general 'noun + modifying clause' construction that does not imply identifying the head noun with a given position in the construction of the modifying clause. The modified noun in the generalized 'noun + modifying clause' construction is identified with an element of the scenario evoked by the modifying clause, without any syntactic constraint on the interpretation of its relationship to the event in question. For example, in such languages, sentences that could be rendered literally as 'the sound that trees are falling' are possible with the interpretation 'the particular type of sound typically associated with situations that can be described as *trees are falling*'.

Lovegren and Voll (forthcoming) is to the best of my knowledge the first mention of an African language with a generalized 'noun + modifying clause' construction in the sense of Comrie (1998).

(132) Mungbam
ì-ʤī *ì-nī* *[bű* *gbà* *ɲà* *kə̄-tɔ̄* *kə̄]*
CL5-sound CL5-REL CL2 cut.IPF stay.IPF CL12-tree CL12.D
nɔ̀ *bâŋ* *ɲà* *mə̄.*
make.IPF block.IPF stay.IPF 1SG
lit. 'The sound that they cut the tree disturbs me.'
> 'The sound of them cutting the tree disturbs me.'
(Lovegren and Voll, 2017)

Interestingly, Lovegren and Voll (2017) deal with two closely related languages, Mungbam and Mundabli, and it turns out that generalized relativization illustrated by (132) is productive in Mungbam, but rejected by speakers of Mundabli.

Moreover, it is interesting to observe that in all other respects, the typological profile of Mungbam is very different from that of the languages in which general-

ized relativization has been signaled so far. This suggests that generalized relativization is probably not conditioned by a particular type of syntactic organization that would characterize the languages in which this type of construction can be found.

6.1.5.2. Clause chaining

Givón (2001) proposed a typology of clause-chaining systems that divide them into two major types: the OV-type chaining, with the chain-final clause as the most finite clause, and the VO-type chaining, with the chain-initial clause as the most finite clause. He further illustrated the VO-type chaining by Swahili and Akan examples. In the remainder of the literature on clause chaining, the type with the initial clause as the most finite clause is often marginalized (Payne 1997: 321), and sometimes even claimed to be inexistent (Longacre 1985: 264).

Data from sub-Saharan languages support Givón's proposal, but at the same time oblige to reconsider the relationship between the two basic types of clause chaining and constituent order patterns at clause level.

Not surprisingly, clause chaining with the chain-final clause as the most finite clause is common across the verb-final languages of sub-Saharan Africa. It is found not only in the verb-final languages of East Africa, but also in Kanuri, the Khoe family, and Dogon. Clause chaining with the chain-initial clause as the most finite clause is common across the SVO languages of the Niger-Congo phylum and is also found in many Chadic languages.

Interestingly, Mande languages, which are clearly not SVO languages but are not verb-final languages either (see Section 4.3.2.), have clause chaining with the initial clause as the most finite clause, like SVO languages. In Bambara (133), clause chaining is characterized by the reduction of non-initial clauses to infinitival VPs.

(133) Bambara
Fàtú táa-rá súgû lá, kà sògó sàn, kà sègín só,
Fatou go-CPL market.D LOC INF meat.D buy INF return house
'Fatou went to the market, bought some meat, returned home,
kà sògô tóbí dúnân-ú yé.
INF meat.D cook visitor.D-PL for
and cooked the meat for the visitors.'
(pers. doc.)

The behavior of Mande languages in clause chaining suggests that the relevant parameter in the choice between the two basic types of clause chaining is not OV vs. VO, but rather verb-final vs. verb-medial.

6.1.6. Information structure

6.1.6.1. Focus positions in Bantu languages

Focus-marking strategies often involve deviations from the pragmatically-unmarked constituent order, and many languages have been analyzed as having a dedicated focus position in the structure of the clause (either clause-initial, pre-verbal (IBV), post-verbal (IAV), or clause-final). The contribution of sub-Saharan languages to the typology of focus marking is particularly important as regards the possible involvment of verb morphology in the expression of focus, but they also provide interesting data about IBV and IAV focus positions. In particular, the situation observed across Bantu languages raises the question of the possible correlations between IBV vs. IAV focus position and other typological parameters.

Watters (1979) analyzed Aghem as having an IAV focus position, and many subsequent studies have demonstrated the existence of an IAV focus position across eastern and southern Bantu languages. In this context, it is interesting to observe that an IBV focus position has been described in some western Bantu languages whose typological profile is in other respects not markedly different from that of the Bantu languages that have an IAV focus position: Mbuun (aka Mpuono) (B87, Bostoen and Mundeke 2012), Nsong (aka Songo) (B85, Koni Muluwa and Bostoen), and Kisikongo (aka San Salvador Kongo) (H16, De Kind 2014).

6.1.6.2. Conjoint and disjoint verb forms in Bantu languages

6.1.6.2.1. Introductory remarks

In the context of Bantu studies, a conjoint verb form is a verb form that cannot be found in sentence-final position and cannot be separated from the following phrase by a pause. A disjoint verb form does not have this limitation, but is not excluded from non-final contexts either, and when in non-final sentence position, is not necessarily separated from the following word by a perceptible pause. Consequently, in the languages that have a distinction between conjoint and disjoint verb forms, they contrast in non-final contexts but not in final position. This distribution restricts the possible functions of the *conjoint vs. disjoint* distinction, leaving however some space for cross-linguistic variation.

Although the morphological distinction between conjoint and disjoint forms has long been acknowledged in Bantu grammars, serious discussions of its function began not earlier that 20 years ago. The most important reference on this aspect of Bantu syntax is the volume edited by van der Wal and Hyman (2017).

6.1.6.2.2. The function of the conjoint vs. disjoint distinction in Tswana

Creissels (1996) showed that the choice between conjoint and disjoint forms in Tswana is straightforwardly determined by the distinction between phrases in post-verbal position that form part of the verb phrase and contribute to the comment expressed by the verb, and phrases in post-verbal position that fulfill the discourse function of afterthought (alias antitopic):

– The disjoint form is used whenever the comment/verb phrase includes no other element than the verb itself (which implies that a disjoint verb form can only be followed by extraposed phrases that do not form part of the comment).
– The conjoint form is used whenever the comment/verb phrase includes at least one element other than the verb itself (which implies that a conjoint verb form is followed by at least one phrase forming part of the comment, since the verb phrase is strictly head-initial).

In Tswana, topical object NPs must be cross-referenced by an object index, whereas cross-referencing is ungrammatical with non-topical objects. Consequently, when a verb form is immediately followed by an object NP, there are just two possibilities: either the verb form is marked as conjoint, and the object NP is not cross-referenced (if the object NP forms part of the comment), or the verb form is marked as disjoint, and the object NP is cross-referenced (if the object NP in in afterthought function).

(134) Tswana
a. *Rì-tʰús-á ˈKî:tsɔ̀.*
1PL-help-FV(CJ) (CL1)Kitso
'We help / are helping Kitso.'
b. *Rì-à-mɔ̀-tʰús-á ˈKî:tsɔ̀.*
1PL-DJ-CL1-help-FV (CL1)Kitso
'We help / are helping him, Kitso that is.'
c. **Rì-mɔ̀-tʰús-á ˈKî:tsɔ̀.*
1PL-CL1-help-FV(CJ) (CL1)Kitso
d. **Rì-à-tʰús-á ˈKî:tsɔ̀.*
1PL-DJ-help-FV (CL1)Kitso
(pers. doc.)

Note that conjoint forms including an object index are ungrammatical if the phrase in post-verbal position is an object NP coreferent with the object index (since the presence of the object index implies that the coreferent phrase does not form part of the comment), but are grammatical if the verb is followed by an adjunct forming part of the comment, as in (135).

(135) Tswana
Rì-mò-tʰús-à *ká* *mà:-dí.*
1PL-CL1-help-FV(CJ) with CL6-money
'We help him financially.'
(pers. doc.)

When verbs are followed by adjuncts, the use of a disjoint form is equivalent to the presence of a pause signaling that the phrase following the verb fulfills the discourse function of afterthought. A first difference with the case of objects is that the choice of a disjoint form is not redundant with another mechanism carrying the same information, such as the insertion of an object index in the case of objects. Another difference is that, a priori, objects can always be conceived as forming part of the comment or as afterthoughts, whereas different semantic types of adjuncts behave differently in this respect.

As illustrated by (136), adjuncts that can be found at the left edge of the sentence in the role of framing topic can also follow verbs in the disjoint form, in the role of afterthought.

(136) Tswana
a. *Kítsɔ́* *ʼó-bó-à* *χómpíè:nó.*
(CL1)Kitso CL1-come_back-FV(CJ) today
'Kitso is coming back today.' ('today' forms part of the comment)
b. *χómpíènó* *ʼKítsɔ́* *ó-à-bô:-à.*
today (CL1)Kitso CL1-DJ-come_back-FV
'Today Kitso is coming back.' ('today' fulfills the role of framing topic)
c. *Kítsɔ́* *ó-à-bó-á* *χómpíè:nó.*
(CL1)Kitso CL1-DJ-come_back-FV today
'Kitso is coming back, today.' ('today' fulfills the role of afterthought)
(pers. doc.)

By contrast, as illustrated by (137), some adjuncts are inherently non-topical, and can only follow conjoint verb forms.

(137) Tswana
a. *Lòrátɔ́* *ʼó-bú-à* *tʰâ:tà.*
(CL1)Lorato CL1-speak-FV(CJ) much
'Lorato speaks much.'
b. * *Lòrátɔ́* *ó-à-bú-à* *tʰâ:tà.*
(CL1)Lorato CL1-DJ-speak-FV much
c. *Lòrátɔ́* *ʼó-bín-á* *sí-ǹ:tɬɛ̀.*
(CL1)Lorato CL1-speak-FV(CJ) CL7-good
'Lorato dances well.'

d.	** Lòrátɔ́*	*ó-à-bín-á*	*sí-ǹ:tɬɛ̀.*
	(CL1)Lorato	CL1-DJ-speak-FV	CL7-good
	(pers. doc.)		

Analyzing the distribution of conjoint and disjoint verb forms in Zulu, which is quite similar to that found in Tswana, Buell (2006) asks the question: focus or constituency? He rightly concludes that the relevant notion is not focus, but his second conclusion that the relevant notion can only be constituency is problematic, since it suggests that the conditioning of the conjoint/disjoint alternation in languages such as Zulu or Tswana has no direct link with information structure and must be analyzed in strictly syntactic terms. However, since we are dealing with languages characterized by a straightforward isomorphism between the morphosyntactic subject – verb phrase articulation and the topic – comment articulation, opposing an explanation based on the position of the verb in the verb phrase to an explanation based on the discourse function of the phrase in post-verbal position does not make any sense. Buell (2006) does not provide any evidence that an analysis dealing exclusively in terms of explicitly defined and consistently applied constituency tests might explain aspects of the distribution of conjoint and disjoint forms that would be problematic for an analysis in terms of information structure. Consequently, an analysis in which morphosyntactic phenomena are viewed as evidence of distinctions at the level of information packaging is more interesting, because of the insights it provides into the nature of the conjoint vs. disjoint distinction.

6.1.6.2.3. The conjoint vs. disjoint distinction in other Bantu languages

A conjoint vs. disjoint distinction functionally identical to that found in Tswana has been recognized in other Bantu languages of zone S, in particular, in several Nguni varieties – see among others Buell (2006) for Zulu.

Outside zone S, a conjoint vs. disjoint distinction has also been identified in Bantu languages of zones J (Haya, Rundi, Kinyarwanda), G (Sambaa), M (Bemba, Tonga), N (Matengo), and P (Ngindo, Ndengereko, Matumbi, Makonde, Makwe, Makhuwa) – Güldemann (1996: 159–187), van der Wal (2011).

Jenneke van der Wal's works provide a very detailed description and thorough analysis of the conjoint vs. disjoint distinction in Makhuwa. As she puts it in the abstract of her 2006 paper, in Makhuwa, "1) The verb appears in its conjoint form when a focal element occupies the Immediate After Verb (IAV) position; 2) the verb appears in its disjoint form when the IAV position is empty."

Consequently, the conjoint vs. disjoint distinction of Tswana and Makhuwa have in common the exclusion of the conjoint form from prepausal contexts, and a conditioning involving exclusively information structure, but are very different in that the conjoint vs. disjoint distinction of Makhuwa encodes the *presence vs. absence* of a focal element in an IAV focus position, whereas in Tswana, the

conjoint form is not restricted to the presence of a phrase interpretable as a focal element in post-verbal position, and simply encodes that the verb is followed by at least one word or phrase that must not be interpreted as topical. An obvious manifestation of this difference is that the conjoint form has a much wider distribution (and the disjoint form a much more restricted distribution) in Tswana than in Makhuwa. For example, in the inversion construction of Makhuwa, the inverted (and de-topicalized) subject can be preceded by a disjoint verb form, which would be absolutely ungrammatical in Tswana.

As suggested by Jenneke van der Wal in several of her works (van der Wal 2006, 2009, 2011, 2017), this contrast between conjoint verb forms marking focality and conjoint verb forms marking non-topicality can probably be generalized to hold for all the languages of zones P and S that have a conjoint vs. disjoint distinction, since the available data do not include anything that would contradict the hypothesis of a functional similarity between Tswana and the other zone S languages, or between Makhuwa and the other zone P languages.

This difference in the function of the conjoint vs. disjoint distinction must probably be related to the fact that, in Makhuwa at least, the choice between conjoint and disjoint forms is redundant with a tonal modification affecting nouns occupying the IAV focus position. By contrast, in Tswana, the interactions between conjoint forms and the word that follows them result in tonal alternations affecting the final syllable of the verb, but trigger no tonal modification of the following word.

6.1.6.3. Presentational focus constructions in West African languagues

In languages with a basic Subject-Verb-Object constituent order, intransitive verbs often have an alternative construction in which the argument canonically encoded as a preverbal subject occurs in postverbal position (i. e., in the canonical position for the object of transitive verbs). These so-called inverted subjects may maintain the other properties characteristic for subjects (for example, control of verb agreement), or lose (some of) them, as in French *Trois femmes sont venues* vs. *Il est venu trois femmes* (lit. *It came three women*). In this alternative construction of French intransitive verbs, the argument encoded as a preverbal subject in *Trois femmes sont venues* occurs in post-verbal position and does not control verb agreement, which invariably expresses the default value "third-person singular masculine". A subject index (*il*) is present, but its role is purely formal, since it invariably expresses the value *third-person singular masculine*, whatever the person-gender-number characteristics of the inverted subject.

Such constructions, often designated as "presentational," or "thetic," are very common among Bantu languages – see Creissels (2011) on Tswana, and Marten and van der Wal (2014) for a general typology of Bantu subject inversion. By contrast, judging from the available descriptions, they seem to be absent from West African languages, which is *a priori* the expected situation, given the general

rigidity of constituent order patterns in West African languages – see Section 4.2. However, this is not entirely accurate. As discussed in Creissels et al. (2015), they do exist in many languages of West Africa, but their use is restricted to very small sets of verbs (most of the time, just one verb), and this explains why they have passed unnoticed so far. Interestingly, among the West African languages that have been recognized as having inverted subjects in a presentational construction, the sets of verbs attested in this construction always include *remain*, and in many of them, *remain* is the only verb that lends itself to subject inversion.

This situation can be illustrated by Mandinka. No other Mandinka verb accepts a construction similar to that of *tú* 'remain' in (138b), where the canonical subject position to the left of the verb is occupied by an expletive third-person singular pronoun, and the semantic role normally assigned to the preverbal subject is assigned to an NP occupying the position to the right of the verb, which is in Mandinka the canonical position for obliques. In this position, the inverted subject is optionally flagged by the postposition lá.

(138) Mandinka

a. *Mùsù-kéebáa fùlá tú-tá sàatéwòo tó.*
woman-old two remain-CPL.INTR village.D LOC
'Two old women remained in the village.'

b. *À tú-tá jěe mùsù-kéebáa fùlá (là).*
3SG remain-CPL.INTR there woman-old two POSTP
'There remained two old women.'
(Creissels et al. 2015: 69)

Interestingly, the languages mentioned so far in the literature as having presentational inversion constructions are SVO languages in which the position occupied by the inverted subject can be analyzed as the object position, but Mandinka contradicts this generalization. In the Subject-Object-Verb-Oblique pattern of Mandinka, the position of the inverted subject in the presentational construction is clearly not the object position, but the oblique position. This suggests that the position that is really relevant for presentational inversion is not the position canonically occupied by objects, but rather the postverbal position.

The other languages surveyed by Creissels et al. (2015) are SVO languages, and their inversion construction is therefore of the common type.

In Wolof, a noun class language that does not express class distinction in subject indexation, *des* 'remain' has a construction in which its argument is in postverbal position (which is in Wolof the canonical position for objects), the preverbal position normally occupied by a subject NP remains empty, and the verb is invariably in the third-person singular form, see (139b). No other Wolof verb can be used in a similar construction.

(139) Wolof

a. *Maa-y* *des* *ci* *kër* *g-i.*
1SG.FOC-ICPL remain at house CLg-D
'It's me who will remain at home.'

b. *Des* *na* *ñaari* *fan.*
remain PRF.3SG two day
'There remain two days.'
(Creissels et al. 2015: 69)

Not surprisingly, in the languages that express class distinctions in subject indexation and have an expletive subject index in the inversion construction, this expletive subject index belongs to the class typically used to express vague reference. This is in particular the case of the class Ↄ index in Papel. In (140), it is clear that this subject index does not express agreement with the inverted subject, since the inverted subject belongs to class P.

(140) Papel
Ↄ-dʊkɔ *problema* *pə-loŋ.*
CLɔ-remain (CLp)problem CLp-one
'There remains one problem.'
(Creissels et al. 2015: 70)

In Balanta-Ganja, the exceptional character of the inversion construction is reinforced by the fact that no subject index is present, as in (141). The general rule in Balanta-Ganja is that, if no NP in subject position is present, a subject index must be prefixed to the verb, and Balanta-Ganja has no noun class that could be analyzed as having a zero subject index.

(141) Balanta-Ganja
Ŋátɛ̀ *hálá* *à-wɔ́dà.*
remain person CLha-one
There remains one person.'
(Creissels et al. 2015: 70)

In most of the languages surveyed by Creissels et al., *remain* is the only verb found in the inversion construction. However, they note that Sambou (1979) provides an example with the verb *gush* in Jola Kasa, see (142). Note that Joola languages have obligatory subject indexation, with however a phonologically empty subject index for class R, typically used to encode vague reference.

(142) Jola Kasa

a. *Maa* *mʊ-hʊwʊlɔ* *taatɛr.*
(CLm)water CLm-gush here
'Water is gushing here.'

b. *Hʊwʊlɔ* *maa* *taatɛr.*
(CLr)gush (CLm)water here
'There is water gushing here.'
(Sambou 1979: 178)

In Balanta-Ganja, in addition to *ŋatɛ* 'remain', as in (141), a presentational construction with an inverted subject is found with *gi* 'be', as in (143). In contrast to the inversion construction of *ŋatɛ* 'remain', in which no subject index is present, the inversion construction of *gi* 'be' includes an expletive subject index of class U. Not surprisingly, in Balanta-Ganja, as can be seen from the second part of this sentence, class U is typically used to express vague reference.

(143) Balanta-Ganja
Wì-ìg-gí *f-lɛ̌y,*
CLu-HYP-be CLf-day
'Sooner or later, (lit. 'There may be a day)
fɔ̄ *ù-núm-ná-tɛ̀* *ò-bɔ́ɔñj-ɛ̀.*
OBLIG CLu-bring-2SG-CTRP CLu-be_good-RES
this will certainly bring you happiness.'
(Creissels et al. 2015: 71)

Interestingly, presentational inversion constructions limited to the verb *remain*, or to a small set of verbs that always includes *remain*, are not limited to the Senegambian languages investigated by Creissels et al. (2015), and I would not be surprised if further investigation revealed that the same situation is relatively common elsewhere in the Sudanic belt:

– Among Mande languages, the inversion construction of *remain* is found not only in Mandinka, but also in the Manding varieties of Mali, Ivory Coast, and Burkina Faso (Bambara, Jula), and in Soninke.
– A similar situation is signaled by Soubrier (2013) for the Uwi variety of Ikposo, a Kwa language spoken in Central Togo.
– Lovestrand (2012) observes an inversion construction with the verb *remain* in Barein (Chadic) and explicitly notes that he has found no other verb in a similar construction.

In the Uwi variety of Ikposo, Soubrier (2013: 229–230) describes an inversion construction in which the obligatory slot for subject agreement is occupied by a third-person expletive index, and the subject NP moves to postverbal position. In addition to *nè* 'remain' (144), this construction is possible with *kú* 'pass', *sí* 'arrive (time)', and *kpɔ̄* 'arrive (hour)'.

(144) Ikposo Uwi
Mé *á-nè* *bèkò-é* *nó* *útí.*
then 3SG-remain lees-D LOC bottom
'Then there remain the lees at the bottom (of the pot).'
(Soubrier 2013: 230)

(145) illustrates the inversion construction of *remain* in Barein.

(145) Barein
Íl:à *āt:ē* *mìɟ:ó.*
except remain.CPL person
'Only the man was left.'
(Lovestrand 2012: 264)

This particularity of the verb *remain* in the languages of West Africa raises an interesting theoretical problem. In the languages that have a presentational inversion construction, the ability of verbs to occur in this construction is an instance of split/fluid intransitivity (Creissels 2010), and in the literature on so-called *unaccusative vs. unergative* intransitive verbs, the presentational inversion construction is commonly presented as a possible unaccusativity diagnostic (Creissels 2008a). In this perspective, the data presented in this section suggest that *remain* must be semantically the most typical 'unaccusative' verb, since it can be the only verb for which such a construction is possible in languages characterized by a particular rigidity of constituent order patterns and drastic lexical restrictions on the use of the presentational inversion construction. However, I am aware of no proposal in the unaccusativity literature that would predict this particularity of *remain*, and this can be viewed as a serious shortcoming in the discussions about the semantic basis of split intransitivity.

6.1.7. Conclusion

My first concern when writing this paper was to present some recent advances in the documentation and understanding of the morphosyntactic diversity of the languages spoken in sub-Saharan Africa, in relationship to their geographical position and genetic affiliation, and to place these advances into the broader context of current discussions about the morphosyntactic diversity of the world's languages.

The comparison with the state-of-the-art proposed almost ten years ago by Creissels et al. (2008) shows that, roughly speaking, the generalizations we proposed still hold true. However, given the increasing number of the available descriptions and the improvement in their average quality, it is not surprising that many of these generalizations can be formulated now in a much more precise way, and some of them can only be retained with some emendation. Moreover, current trends in

typological investigation have led to consider issues that were not traditional in African linguistics, and to raise awareness about the interest of these questions for a better understanding of both the internal diversity of sub-Saharan languages and their contribution to a general typology of morphosyntactic systems.

Until recently, in comparison with other continents, the documentation on sub-Saharan languages was characterized by a blatant lack of reference descriptions bringing together the following qualities: precision, exhaustiveness, reliability, and typological awareness. Fortunately, in this respect, things are changing very rapidly, and one can wish this trend to continue, so as to make the present overview obsolete as soon as possible.

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6.2. African languages and formal linguistics frameworks

Jeff Good

6.2.1. African morphosyntactic typology and formal theories

Data from African languages has had a significant impact on the development of a number of formal linguistic theories, with Bantu languages figuring especially prominently in the literature. In this part of the chapter, the African contribution to formal work on morphosyntax is considered across the areas of noun and noun phrase syntax (section 6.2.2); reference tracking and argument indexation (section 6.2.3); argument structure, including valency-changing affixes and serial verbs (section 6.2.4); word order alternations (section 6.2.5); and information structure encoding (section 6.2.6).

This review of the literature is selective and emphasis is placed on work which does not merely analyze a given African language using some formal framework but, rather, where the data from African languages played a significant role in the development of the framework or morphosyntactic theory more generally.

Following patterns seen in most formal linguistic work, the analyses to be described below mostly make use of constructed, rather than naturalistic, data and often focus on only a narrow aspect of the usage of some set of constructions that is most theoretically relevant. Nevertheless, formal linguistic analysis has sometimes emphasized aspects of the grammar of languages that have not been carefully considered in more traditional work, meaning that formal work has made significant contributions to our descriptive understanding of African languages, even if the descriptive insights are sometimes difficult to extract for those lacking the relevant theoretical background.

While Bantu languages have played a significant role in theoretical discussions, it should be emphasized that theoretical work has generally focused on Bantu languages of the eastern and southern regions of the Bantu-speaking area, which hardly represent the full morphosyntactic diversity of the family. Northwest Bantu languages, in particular, are poorly represented in theoretical work, and these are known by Bantuists to diverge from "canonical" Bantu in important respects (Nurse and Philippson 2003: 5).

The last decade or so has seen a rise in the number of junior scholars who are engaged in significant theoretical work on African languages that has also involved a greater degree of consultant work and/or fieldwork than was often the case previously, following general trends in linguistics where the documentation of linguistic diversity has seen increasing attention. Many of these scholars are

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cited below, and their work, can be expected, in the coming years, to result in further impact of African language data on formal linguistic theories than what is described here.

6.2.2. Nominal morphosyntax

6.2.2.1. Issues in the syntax of nouns and noun phrases

In this section, formal work on the structure of Bantu nouns will be considered, along with some consideration of the properties of noun phrases. This work has focused on the Bantu noun class system and how it is encoded, which is hardly surprising given the relative accessibility of the data and the striking ways in which Bantu languages diverge from European languages.

This focus leaves out much else that is of interest in the grammar of nouns and noun phrases simply because it has not seen as much theoretical attention. For instance, adjectives will not be a topic of consideration, despite the fact that classic data from Igbo (Welmers and Welmers 1969) has played an important role in the development of theories of the semantic typology of adjectives (see, e. g., Dixon 2006: 3–5). There is also the important topic of ideophones in the languages of Africa, which constitute a separate class of "descriptive" words. Dingemanse (2011) provides the most thorough recent study on this topic. Similarly, there are reports in the literature of Bantu and Bantoid languages showing surprising flexibility in order of elements in the noun phrase, which merits further investigation (see, e. g., Van de Velde 2005; Rugemalira 2007; Nchare 2012: 113–245). Finally, the focus on Bantu noun class systems in the formal literature has meant other types of gender systems seen on the continent (see, e. g., Güldemann 2000) will not be considered (though see Kramer (2015) for a recent formal study of gender making use of data from a number of non-Bantu African languages, especially Amharic). The discussion of these Bantu systems here will also emphasize relatively idealized characterizations rather than cases where they do not behave "canonically" (see Grinevald and Seifart 2004; Good 2012).

6.2.2.2. Noun and noun class structure in Bantu

The central theoretical issue regarding the analysis of nouns in Bantu has been whether noun class prefixes are best treated formally as morphological prefixes or as syntactic words, along the lines of determiners. The most forceful advocates of the traditional view in the theoretical literature have been Bresnan and Mchombo (1995) (see also Mchombo [2004: 6–8]), while the position that the noun class prefixes are determiners has been suggested by, for example, Myers (1987: 95–110) and Carstens (1991).

Myers (1987: 95–98) considers, for example, the fact that, even though the infinitival class 15 prefix forms a clear phonological word with a following verb stem in Shona, data like that in (1) can be used to support a syntactic analysis of this prefix along the lines of a complementizer taking a verb phrase complement, much like English infinitival *to*.

(1) Shona
ku-dá *vánhu*
15-love 2.person
'to love people'
(Myers 1987: 96)

Because infinitival phrases like the one seen in (1) can serve as verbal arguments, Myers treats them as a kind of noun phrase. However, at the same time, infinitival verbs can take arguments and appear to head full verb phrases, as also seen in (1). He, therefore, treats the prefix *ku-* as a free syntactic word (regardless of its morphophonological properties) taking a verb phrase consisting of *-dá vánhu* 'love people' as its complement. Carstens's (1991) study of the noun class prefixes of Swahili presents a roughly comparable analysis, though the formal details are more complex due to the fact that she analyzes the Bantu noun class system as a gender system, dissociating number features of a noun from a grammatical gender feature. Taraldsen (2010) also offers a syntactically oriented analysis of noun class markers involving a high degree of syntactic abstraction. The general focus of these works is to show how well-known patterns can be given a formal analysis within a particular framework, and they do not generally provide major new descriptive insights.

In contrast to the above works, Bresnan and Mchombo (1995), working within the framework of Lexical Functional Grammar (LFG), argue that, in most cases, the Bantu noun class markers should be treated as true prefixes. They present a wide range of evidence, primarily from Chewa, to establish that Bantu nouns fail to exhibit properties that would be expected of them if their syntactic structure were phrasal rather than "atomic". They further argue that their study of the Bantu noun class prefixes provides important general support for the so-called *lexical integrity hypothesis*. This holds that words are compositionally and structurally distinct from phrases and, therefore, formal models of grammar must maintain a clear-cut distinction between word structure and phrase structure, contrary to work like Myers (1987).

The data in (2) exemplifies the kind of evidence Bresnan and Mchombo (1995) use to support their arguments.

(2) Chewa
a. *ka-mu-ndá* *k-ánga*
12-3-field 12-my
'my small field'

b. **ka-mu-ndá w-ánga*
12-3-field 3-my
Intended: 'my small field'
(Bresnan and Mchombo 1995: 198)

As can be seen in (2), in some kinds of morphological structures, Chewa allows multiple prefixes to appear on the same noun stem. In this particular case, the diminutive class 12 prefix appears "stacked" on top of the class 3 prefix, which is the usual prefix for the noun root *-ndá* 'field'. As seen in (2a), the diminutive noun form *kamundá* 'small field' triggers the presence of class 12 concord on the possessive pronoun *kánga* 'my', while (2b) shows that class 3 concord on this element is impossible. Bresnan and Mchombo (1995: 198–201) interpret these facts as showing that the class 3 marker *mu* must not be a separate syntactic element or else it would be able to trigger, at least optionally, class 3 concord on the possessive pronoun. They further view this pattern as supporting the traditional analysis of noun class markers as being purely morphological elements that are "invisible" to the syntax.

In making their arguments, Bresnan and Mchombo (1995) present a set of useful tests for wordhood than can be applied to Bantu languages generally. These involve phenomena not typically discussed in descriptive grammars (e. g., involving so-called extraction and ellipsis phenomena), but which are of more than pure theoretical interest. In this respect, even though the primary goal of the analysis was to make a specific theoretical argument, in so doing, their work provided new tools to reveal structural properties of Bantu languages.

6.2.2.3. Mixed category constructions involving nouns

The rich agglutinative morphology of Bantu languages has also allowed them to play a significant role in the development of models of "mixed" categories in LFG. Relevant data was already presented in (1), where an infinitive structure was analyzable as having a mix of verbal and nominal properties, and this can be seen as an instance of a more general class of morphosyntactic "category mismatches" (see Bresnan 1994b).

Mugane (1997) uses data from Kikuyu to develop an analysis of nominalizations within LFG. Of particular interest is its description of a productive nominalization process in Kikuyu in which a nominalized verb has a clearly derived meaning, in the form of an agentive, but still retains a number of verbal properties that are surprising given its semantic and morphosyntactic shift.

(3) Kikuyu
mũ-thĩĩnj-ir-i andũ mbũri ũyũ
1-slaughter-APPL-NMLZ 2.person 10.goat 1.DEM
'This slaughterer of goats for people.'
(Mugane 1997: 113)

The phrase in (3) is headed by an agentive nominalization 'slaughterer' derived from the verb root *-thĩĩnj-* 'slaughter'. The root appears with an applicative suffix that would normally be associated with verbs. At the same time, the presence of a class 1 noun class prefix *mũ-*, as well as a nominalizing suffix, suggests the word should be classified as a noun. Moreover, the "inner" phrase structure, where two arguments appear following the head, appears verbal, while the "outer" phrase structure, where a final demonstrative is found, appears nominal.

From a semantic perspective, this nominalization strategy appears to be an instance of derivation, not inflection. However, as discussed by Bresnan and Mugane (2006) (borrowing from work by Haspelmath [1996]), the syntax of words formed by derivational morphology tends to assimilate to the syntax of non-derived words of the class to which the derived word belongs. Thus, a derived agent noun, for example, should have completely nominal syntax and no verbal syntax, contrary to what is seen in Kikuyu. Bresnan and Mugane (2006) (see also Mugane [2003]) discuss various challenges that Kikuyu data like that in (3) raises with respect to syntactic analysis, concluding that LFG can handle the data better than transformationalist alternatives.[1,2]

A well-known cases of a similar kind of category mismatch in Bantu is found with the nominal behavior of apparent "prepositional" phrases.[3] Specifically, nouns preceded by the class 16, 17, and 18 locative markers (see Katamba 2003 for overview discussion) behave as though they are syntactically nominal despite their adpositional phrase semantics (4).

(4) Chewa

a.	*Chi-tsîme*	*chi-li*	*ku*	*mu-dzi.*
	7-well	7-be	17	3-village

'The well is in the village.'

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[1] See also Bresnan (1997) for related discussion drawing on data from a number of languages including Kikuyu and Dagaare, and Creissels and Godard (2005) for a critique of that approach relying on comparable data from Tswana taking on a Head-driven Phrase Structure Grammar perspective.

[2] Another interesting feature of certain kinds of Bantu nominalizations, also discussed by Mugane (2003), is the interspersing of elements associated with noun phrases (e. g., determiners) with elements associated with verb phrases (e. g., objects) within a phrase headed by a nominalized verb (in this case, however, not an agent nominalization but, rather, a form marked with the class 15 "infinitive" prefix). As pointed out by Mugane (2003: 262) this class of nominalizations is theoretically interesting because they "pose difficulties for theories arguing for lexical and phrasal coherence because they allow interleaving of constituents appearing to violate phrasal constituency".

[3] In the present context, it is worth mentioning Machobane (1995), who discusses comparable kinds of category mismatches in Southern Sotho locatives (though with some interestingly different properties from Chewa locatives), from a transformationalist perspective.

b. *Ku mu-dzi ku-li chi-tsîme.*
17 3-village 17-be 7-well
'In the village is a well.'
(Bresnan 1994a: 77)

The phrase *ku mudzi* 'in the village' in the examples in (4) is composed of a noun *mudzi* with its own (class 3) noun class prefix preceded by a class 17 locative marker. When this phrase appears in preverbal position (in the so-called locative inversion construction), as in (4b) it triggers locative class 17 subject agreement on the verb, not class 3 agreement. Therefore, while *ku mudzi* would appear to be a prepositional phrase on semantic grounds, it behaves as though its noun class is determined by the "prepositional" element *ku*.

Data like that seen in (4) is of interest in the present context is because it has been used specifically to argue that LFG is superior to transformationalist formalisms (specifically those assuming so-called X-bar theory; see Fukui 2001 for an overview) because it can straightforwardly capture not only the similarities between "nominal" locative expression in languages like Chewa and "pure" prepositional expression in languages like English but also their differences, in particular their different syntactic categorization (Bresnan 1994a: 199–125). The main reason why LFG is better equipped to handle such phenomena is due to its explicit dissociation of the functional properties of elements from their categorial and phrasal structure (see Bresnan 2001: 44–72 for an overview).

Bresnan (1994a) relies heavily on Bresnan and Kanerva's (1989) analysis of locative inversion in Chewa – also used to support LFG over transformationalist approaches. Even though this work is formal in orientation, it is noteworthy in the present context for containing what is probably the most thorough *description* of the properties of locative inversion of any African language.

6.2.3. Reference tracking and formal approaches

6.2.3.1. Logophoricity and agreement

In this section two topics that fall under the broad domain of reference tracking will be discussed. The first of these is logophoricity, and, in particular, logophoric pronouns, which will be considered in 6.2.3.2. The second are verbal argument cross-reference markers. The first topic has been primarily influenced by data from West African languages, and the second by data from Bantu languages. However, Afro-Asiatic data has also played a notable role in the formal study of verbal argument cross-reference markers, as will be seen in 6.2.3.3.

6.2.3.2. Logophoricity

The presence of logophoric marking in many West African languages is now quite well-known (see Stirling 1993: 252–267; Culy 1994; and Huang 2000: 176–189 for descriptively-oriented overviews and Reuland 2006 for a formally-oriented one). It involves dedicated morphosyntactic encoding of "the person whose words, thoughts, knowledge, or emotions are being reported in a stretch of discourse" (Culy 1994: 1055), and is most typically associated with the presence of special third-person pronouns which indicate coreference of an argument of an embedded clause with the subject of a verb of speaking or reporting. Illustrative examples are given in (5).

(5) Donno Sɔ

a. *Oumar Anta inyemɛñ waa be gi.*
Oumar Anta LOG.ACC seen AUX said
'Oumar$_i$ said that Anta had seen him$_i$.'

b. *Oumar Anta woñ waa be gi.*
Oumar Anta 3S.ACC seen seen AUX said
'Oumar$_i$ said that Anta$_j$ had seen him$_k$.'
(Culy 1994: 1056)

In (5a) a logophoric object pronoun appears in the complement clause of a verb meaning 'say', forcing an interpretation where that pronoun is coreferential with the subject of 'say'. In (5b) the regular third-person singular pronoun is used in the same context, and it is interpreted as referring to someone other than the subject of 'say'. The precise conditions under which logophoric marking has been observed to occur can be quite varied, and the data in (5) are only meant to give a basic illustration of the phenomena.

Given the important role intraclausal coreference phenomena have played in the development of generative grammar (most famously in the context of so-called Binding Theory; see Büring 2005 for an overview), it is not surprising that logophoricity has been fairly widely discussed in the formalist literature. While the concept of logophoricity is now used in the formal study of grammatical phenomena relating to the interpretation of pronouns in "logophoric" contexts generally – whether or not a given language employs special logophoric forms – it was first developed and named specifically in the context of the description of African languages (Hagège 1974). Thus, the impact of data from African languages on formal linguistics is quite conspicuous in this case (see also Sells 1987: 445), and logophoricity continues to be a significant object of theoretical investigation into today.

The earliest well-known formal study of the syntax of logophoricity is Koopman and Sportiche's (1989) analysis of the aspects of the pronominal system of Abe.[4]

[4] See also Adéṣọlá (2005: 161–235, 2006) and Pearson (2015) for recent detailed analy-

As summarized by Safir (2004: 126–133), Koopman and Sportiche introduced to the analysis of logophoric pronouns the idea that their interpretation as coreferential with a matrix clause subject is mediated by the presence of an abstract null operator in a structural position "above" the embedded clause.[5]

Sells (1987) proposes an extension to Discourse Representation Theory (see Geurts et al. [2015]) designed to account for the semantics of logophoric phenomena. Specifically, he enriches the discourse representation of verbs of speaking and reporting to include the notions of *self*, *source*, and *pivot*, corresponding to the source of the report, the person with respect to whose speech or consciousness the report is made, and the person from whose point of view the report is made, respectively. This separation of the factors underlying logophoricity into various subcomponents would seem to make this model potentially useful for semantic description even for linguists without a formal orientation. Stirling (1993: 268–307) also offers a thorough discussion of logophoricity in the context of Discourse Representation Theory, including an extensive critique of Sells' (1987) approach.

While too formally oriented to be accessible to a generalist audience, recent work by Schlenker (1999, 2003) on the semantics of indexicals – i. e., linguistic elements whose interpretation can shift depending on context, such as speech act participant pronouns and adverbs like *today* – has brought Amharic data to bear on the general issue of logophoricity to justify a somewhat radical analysis of indexicals generally.[6]

(6) Amharic

ǰon	*ǰəgna*	*nə-ññ*	*yɨ-l-all*
John	hero	COP.PFV-1S.SUBJ	3S.MASC-say-AUX.3S.MASC.SUBJ

'John$_i$ says that he$_i$ is a hero.'
(Schlenker 2003: 68)

The crucial fact about the sentence in (6) is that the embedded clause is coded with a first-person marker that is interpreted as being coreferential with the subject 'John'. Thus, we might literally translate the sentence along the lines of: *John$_i$ says that I$_i$ am a hero*. Schlenker (2003: 68–69) interprets the sentence in (6) as

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ses of logophoricity in Yoruba. Like Koopman and Sportiche (1989), these also make use of null operators and address various other proposed formal analyses.

5 Another work by Koopman and Sportiche (1983) also makes noteworthy claims involving operators drawing on data from Vata, involving resumptive pronouns, to support its claim that operators must be in a one-to-one relation with an associated "variable" (i. e., the element whose interpretation is determined by the operator, e. g., a logophoric pronoun). This claim, known as the Bijection Principle, has gained prominence in the transformationalist literature as offering a possible account for so-called weak crossover phenomena.

6 Aspects of the glossing and data presentation in (8) are borrowed from LaTerza et al. (2015: 158).

encoding reported speech, not a direct quote. Based on such data, he suggests that first-person marking in Amharic shares a crucial property with logophoric pronouns in that its interpretation is sensitive to its syntactic context.

Schlenker further argues that the Amharic facts support an analysis of *all* first-person markers, even English first-person pronouns, as having their interpretation contingent on, in an abstract sense, their syntactic context as opposed to the more usual assumption that their interpretation is dependent on the discourse context (see Safir 2004: 133–137) for detailed discussion). This requires the creation of a special analysis of first-person pronouns in a language like English, since verbs of speaking and reporting never shift their interpretation in indirect discourse, and Schlenker ultimately suggests such an analysis can be given in what he considers to be semantic terms (Schlenker 2003: 99).

Schlenker's work on matters of logophoricity specifically, and indexicals more generally, is quite technical, and there is little within it that would be of interest to descriptive or comparative Africanists who would be much better served by examining works taking on a broader African perspective – such as Güldemann (2008a) in this case.[7] It is worth mentioning it here, however, as a rare instance in the formalist literature where English data is assimilated to the "African" pattern, as opposed to the much more frequent situation where African language data is assimilated to the English one. That being said, the extent of Schlenker's actual engagement with Amharic grammar is quite limited, making the use of African language data appear more opportunistic than systematic.

6.2.3.3. Argument cross-reference markers

6.2.3.3.1. Verbal agreement and linguistic theory

The analysis of argument cross-reference markers in African languages – e. g., subject agreement markers – has played an influential role in the formal linguistics literature (see Creissels (2005) for a descriptively-oriented overview). As with other domains, Bantu languages have played an outsized role in this regard. However, data from Afroasiatic has also been influential in the development of the theory of Distributed Morphology, a currently prominent formal approach. Each of these is discussed turn.[8]

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[7] The same should be said as well about Anand (2006), which also discusses data from African languages, including Amharic and Yoruba, concluding among other things that logophoric pronouns (in the traditional sense) should be analyzed distinctly from "shifted indexicals" of the sort Schlenker examines from Amharic.

[8] Though not directly related to argument-referencing prefixes, in the present context, it is worth noting that Koopman's (1992) analysis of various aspects of the syntax of Bambara (aka Bamanankan) in a transformationalist framework contains the proposal

6.2.3.3.2. Bantu subject and object prefixes

A well-known feature of Bantu languages is the appearance of both subject and object markers as verbal prefixes.[9] From a descriptive standpoint, the subject markers can generally be treated as agreement markers since they are typically obligatory, appearing whether or not an overt subject nominal is also present in the sentence. However, the object markers, in most Bantu languages, do not behave like agreement markers in this sense since they are not required when an overt object nominal follows the verb. Both classes of markers do, however, show agreement in the sense that their form is sensitive to the noun class of the subject or object being referred to. The data in (7), from Kinyarwanda illustrates the typical Bantu pattern.

(7) Kinyarwanda

a. *Yohani* *y-a-kubis-e* *abagore.*
1.John 1-PST-strike-FV AUG.2.woman
'John struck the women.'

b. *Y-a-ba-kubis-e.*
1-PST-2-strike-FV
'He struck them.'
(Gary and Keenan 1977: 88)

In (7a) both subject and object nominals are present and only one argument marker, showing concord with the subject, appears in the verbal prefix zone. In (7b), there are no nominals present, and two argument markers appear in the verbal prefix zone, one marking the subject and another marking the object.

While the data in (7) exemplifies the most well-known pattern for Bantu cross-reference markers, it does not at all exhaust the range of their behavior, especially with regard to the use of the object markers. For example, one often noted parameter of variation is the fact that some languages allow multiple object markers on a single verb while other languages allow only one. The data in (8) illustrates a case where two object markers appear in Haya. (Chewa is an example of a Bantu language only allowing one object marker in the verbal prefix zone [Bresnan and Moshi 1993: 89].)

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that overt agreement "is always and only a relationship between a Spec [i. e. the aunt of a head position in a syntactic tree] and a head" (Koopman 2000: 7; see, e. g., Koopman [1992, fn. 2]). This proposal has had some impact on the development of various theoretical aspects of contemporary transformationalist syntax (Koopman 2000: 7).

9 The focus of this section is models of agreement on verbs. Less attention has been paid to the formal modeling of agreement within noun phrases in African languages, though see Tamanji (1999) for a detailed study of Bafut.

(8) Haya
a. *A-ka-h'* *ébitook'* *ómwáana*
1-DPST-give AUG.8.banana AUG.1.child
'He gave bananas to the child.'
b. *A-ka-bi-mú-h-a.*
1-DPST-2-1-give-FV
'He gave them to him.'
(Hyman and Duranti 1982: 220–221)

Another way in which Bantu languages can differ with respect to the use of object markers is that, in some cases, their use can be sensitive to discourse conditions (see also section 4.2.3 of the first part of this chapter). This is the case in Swahili, for example, where definite nominals obligatorily appear with the object marker, whereas indefinite nominals do not, as illustrated by the data (9).

(9) Swahili
a. *u-me-let-a* *chakula?*
2s-PERF-bring-FV 7.food
'Have you brought (some) food?'
b. *u-me-ki-let-a* *chakula?*
2s-PERF-7-bring-FV 7.food
'Have you brought the food (which I told you to bring)?'
(Creissels 2000: 235)

The questions that have been considered in the most detail, from a formal perspective, with respect to cross-reference markers in Bantu have been whether their grammatical status is more like that of agreement markers or closer to that of pronouns and how to analyze the differing behavior of the subject markers and object markers.[10] A secondary question, in this regard, has been whether they are best treated as instances of "morphology" or "syntax" (though the debates in this area have not been as central to their analysis as the debates on the status of the valency-changing morphemes discussed in section 4.2).

The most important work taking on these two questions is Bresnan and Mchombo (1987), who use data from Chewa both to show how Lexical Functional Grammar (LFG) offers a natural account for two different types of agreement, *grammatical* and *anaphoric*, and how this allows the framework to insightfully analyze Chewa grammatical patterns. They use the term grammatical agreement for cases where the presence of a particular argument in a clause triggers the appearance of an agreement marker on the verb in that clause. Their term ana-

[10] See Kramer (2014) for recent discussion of this question with respect to cross-reference markers in Amharic.

phoric agreement is used for "non-local" agreement of a pronoun with its referent, for example the use of *he* to refer to a male entity that has already been introduced in the discourse.

Bresnan and Mchombo (1987) consider various aspects of the relationship between cross-reference markers and topic-focus relations in Chewa sentences (see 6.2 for further discussion of formal analyses of topic-focus relations in African languages). Among other things, they suggest that, in cases where one encounters both an object marker and an apparent nominal object in a sentence in Chewa, the nominal is not a true object but, rather, a topic (Bresnan and Mchombo 1987: 746). They take this to explain the distinction illustrated by the contrasting data in (10) and (11).

(10) Chewa
a. *Njûchi zi-ná-lum-a alenje.*
10.bees 10-PST-bite-FV 2.hunter
'The bees bit the hunters.'
b. **Alenje njûchi zi-ná-lum-a.*
2.hunter 10.bees 10-PST-bite-FV
'The bees bit the hunters.'
(Bresnan and Mchombo 1987: 744–745)

(11) Chewa
a. *Njûchi zi-ná-wá-lum-a alenje.*
10.bees 10-PST-2-bite-FV 2.hunter
'The bees bit them, the hunters.'
b. *Alenje njûchi zi-ná-wá-lum-a.*
2.hunter 10.bees 10-PST-2-bite-FV
'The hunters, the bees bit them.'
(Bresnan and Mchombo 1987: 745)

When no object marker is present on the verb in Chewa, the nominal object must be immediately postverbal, as illustrated in (10). However, when an object marker is present, a nominal with the same reference as the object is free to appear in other positions in the clause, as seen in (11). Bresnan and Mchombo (1987) analyze the freedom of the positioning of the nominal in (11b) as a result of the fact that the object marker is itself fulfilling the role of the required verbal object in these sentences, with the nominal simply being coreferential with the object—acting as a kind of topic phrase—and not the object itself, giving it freedom of positioning not found for true nominal objects, like the one in (10a).

Building on this analysis, they develop a formal account of subject markers and object markers in Chewa wherein subject markers are ambiguous, sometimes representing grammatical agreement and sometimes representing anaphoric agreement, while object markers are never ambiguous, always representing anaphoric

agreement. For example, in (7a) the subject marker would represent grammatical agreement with the nominal subject, but in (7b), where there is no nominal subject, it would represent anaphoric agreement. In sentences like those in (11), however, the object marker would never be interpreted as representing grammatical agreement, at least in Chewa, even when a corresponding nominal is present. The situation, however, is less clear in a language like Swahili (see [9]), however, where the object marker is obligatory in certain discourse contexts (Bresnan and Mchombo 1987: 777).

Many variations in the analysis of the argument markers can be found in other work with the central questions revolving around whether these argument markers are best interpreted as agreement markers, "incorporated pronouns" (a. k. a., anaphoric agreement), or something in between.[11] Myers (1987: 71–74), for example, who takes a syntactic approach to the analysis of the verbal prefixes, suggests that the subject marker in Shona is a true agreement marker but the object marker is a morpheme affecting verbal argument structure. Demuth and Johnson (1989) accept Bresnan and Mchombo's (1987) conclusions for Chewa but argue that in Tawana (a northern dialect of Tswana) subject markers only show anaphoric agreement, not grammatical agreement and are, therefore, closer to incorporated pronouns. Baker's (2003) (see also Baker [2008]) analysis of Nande suggests that both subject markers and object markers are agreement markers but nevertheless exhibit an agreement relationship of a fundamentally different type from that found in European languages. In more recent work adopting Minimalist versions of transformational grammar (see Hornstein, Nuñes, and Grohmann 2005), there is similar variation in formal treatments. Letsholo (2002: 84–156) analyzes Kalanga subject markers as exclusively indicating agreement and object markers as pronominal clitics. Visser (1985, 1986) argues that in Xhosa both subject and object markers are agreement markers, and Buell (2005: 51–52) takes a similar position with respect to Zulu. Henderson (2006: 167–181) takes the position that there is variation in Bantu languages as to whether object markers are agreement markers or incorporated pronouns (also arguing that the object markers in Chewa are agreement markers, contra Bresnan and Mchombo [1987]). Woolford (2000), adopting a transformational approach also borrowing on aspects of Optimality Theory (see

[11] With respect to subject markers in Bantu in particular, another phenomenon of interest, which cannot be covered in detail here, but which has been the subject of work in formal syntax, is so-called subject-object reversal wherein a sentence surfaces with OVS word order instead of canonical SVO word order and the verb shows "subject" agreement with the object. See Bokamba (1976: 69–78) for early discussion on the topic, Bokamba (1985) for discussion of the relevance of this pattern to early versions of transformational grammar, and Morimoto (2000) for a thorough discussion of the topic in the context of an Optimality Theory formalization of LFG. See also Ndayiragije (1999).

Kager 1999), argues that all object markers in Rimi (aka Nyaturu) should be analyzed as agreement markers. The formal analysis of Bantu cross-reference markers has continued to be relevant to work in transformational grammar as evidenced by its consideration in dissertations such as Henderson (2006), Riedel (2009) and Diercks (2010), among others.

As with much of the theoretical literature, many of these works are based around a perspective where it is considered necessary to pose key analytical questions along either/or lines (though see Zeller [2012] for a more nuanced approach). From a descriptive perspective, it is not clear that such rigid characterization is of particular interest. However, as with many cases above, this line of work has examined the properties of Bantu cross-reference markers at a much more fine-grained level of detail, across many languages, than is found in more traditional descriptive work, and it has greatly enhanced our understanding of variation in the properties of these markers.

While not relevant only to cross-reference markers, it is worth noting here a range of work that considers the shape of the whole prefix complex (in some cases along with inflectional suffixes, like the final vowel) to develop a general analysis of the structure of the Bantu verb. Such work ranges from Stump's (1992, 1993) position class analysis of the verbal prefixes to Barrett-Keach's (1986), Myers's (1987), and Kinyalolo's (1991) phrasal analyses which treat the Bantu verb as a kind of "miniature" sentence where the TAM markers are interpreted along the lines of auxiliary verbs. Also noteworthy in this context is Perez (1985), which examines data from Shona, Kikuyu, and Rundi involving the presence of finite verbs, as evidenced by, among other things, the appearance of subject agreement on them, as the complements of raising verbs which take infinitival complements in languages like English.

Before moving on, it is worth pointing out that various researchers (see, for example, Henderson 2006: 194–201) have noted similarities between the Bantu argument markers and Romance subject and object clitics, which themselves have been the subject of fairly intense investigation in formal frameworks (see Heggie and Ordóñez [2005] for overview discussion). The fullest discussion of these similarities presently available can be found in the collected papers in De Cat and Demuth (2006).

6.2.3.3.3. Afroasiatic agreement

Though cross-reference marking in Afroasiatic languages has not been subject to nearly as much theoretical discussion in the morphosyntactic literature as in Bantu, it merits a brief mention here for the role it has played in the development of Distributed Morphology (see Harley and Noyer 1999 for an overview), a theory of the relationship between morphology and syntax enjoying contemporary popularity, particularly among those adopting the syntactic framework of Minimal-

ism.[12] On the basis of data from a number of Afroasiatic languages, Noyer (1997: 3–104) argues that a process he labels *fission* is needed in Distributed Morphology's formal model of morphological phenomena.[13] Much of the data that Noyer (1997) discusses comes from Afroasiatic languages including Arabic, Beja, Saho, and Central Atlas Tamazight.[14] Relevant data from Noyer (1997) (originally citing Abdel-Massih [1971]) from Central Atlas Tamazight is given in (12). An agreement paradigm (specifically the so-called Prefix Conjugation) based on the verb *dawa* 'cure' is given.

(12) Central Atlas Tamazight

	SINGULAR	PLURAL
1ST	*dawa-ɣ*	*n-dawa*
2ND MASC	*t-dawa-d*	*t-dawa-m*
2ND FEM	*t-dawa-d*	*t-dawa-n-t*
3RD MASC	*i-dawa*	*dawa-n*
3RD FEM	*t-dawa*	*n-dawa*

(Noyer 1997: 88)

According to Noyer (1997), agreement marking in Central Atlas Tamazight can either consist of one morpheme (as in the first-person plural form *n-dawa*), two morphemes (as in the second-person plural masculine form *t-dawa-m*), or three morphemes (as in the second-person plural feminine form *t-dawa-n-t*). Noyer takes this pattern as indicating the need for a formal model of morphology wherein morphosyntactic categories, like agreement, can in some cases be "split" (hence the term *fission*) into multiple morphological positions of exponence in a given language. Thus, in a language like Central Atlas Tamazight, we have words like *n-dawa* realized according to a kind of default strategy wherein the category agreement is expressed as one morpheme, while words like *t-dawa-m* and *t-dawa-n-t* show the non-default strategy wherein fission has taken place and agreement marking is spread out over multiple positions.

This Distributed Morphology analysis represents a clear case of African data being of importance to the development of a formal theory. The Berber data in

[12] See 6.3 for a discussion of Kandybowicz (2006) which, while being primarily Minimalist in orientation, also adopts some aspects of Distributed Morphology in its analysis of verb copy phenomena in Nupe.

[13] The actual term *fission* does not seem to appear in the discussion of the Afroasiatic data itself but can be found elsewhere, for example, Noyer (1997: xxx–xxxi), and it is clear that the analyses of these Afroasiatic languages involve the process described by the term.

[14] Tosco (2007) also looks at agreement in Cushitic from a formal perspective, specifically applying Harley and Ritter's (2002) feature-geometric formalization of pronominal systems in a study of the diachronic evolution of a specific class of subject markers found in some East and South Cushitic languages.

(12) is, in fact, used in Harley and Noyer's (1999: 5) overview of this theory to illustrate the concept of fission. By contrast, neither this particular analysis nor Distributed Morphology generally appear to have had any significant impact on descriptive and comparative work on African languages. It is true that one can find analyses of other African languages making use of formal devices drawn from work done within Distributed Morphology (see, for example, Lecarme's [2002] analysis of nouns in Somali), but this kind of work largely formalizes African data within the framework rather than using the framework to create a more informed analysis than would otherwise be possible.

6.2.4. Argument structure

6.2.4.1. Valency changing suffixes and serial verb constructions

Not surprisingly, given its general significance for linguistic theory, the expression of verbal arguments has been an area where considerable formal work has been done on the languages of Africa. As above, Bantu languages, in particular, have again been especially prominent in this regard, especially their system of verbal valency-changing suffixes. West African languages showing serial verb constructions, in particular of the "core" type (see Foley and Olson 1985) showing VOV word order where objects can intervene between the two verbs, have also seen considerable attention in the theoretical literature for the challenges they pose to models of clauses which assume that they should be headed by a single verb. Each of these topics is discussed in turn below.

6.2.4.2. Valency coding on the verb with special reference to Bantu

6.2.4.2.1. Overview of issues in valency coding

The proper analysis of argument structure – i. e., the relationship of a verb to its associated arguments – has been among the more prominent debates in the formalist literature where data from African languages, in particular Bantu languages again, has played an important role. Core data in these debates has involved the properties of so-called verbal extensions, which alter a verb's default valency. Examples like those given in (13) and (14), wherein verbs based on the same verb root, namely, *-gw-* 'fall' in (13) and *-gul-* 'buy' in (14), offer an introduction to the kinds of data that have been of interest. In each case, the verbs show different argument structures depending on whether or not the root is followed by a derivational suffix.[15]

[15] Tone marking in the examples in (13) and (14) follows what is found in the original sources.

(13) Chewa
a. *Mtsuko* *u-na-gw-a.*
3.waterpot 3-PST-fall-FV
'The waterpot fell.'
b. *Mtsikana* *a-na-gw-ets-a* *mtsuko.*
1.girl 1-PST-fall-CAUS-FV 3.waterpot
'The girl made the waterpot fall.'
(adapted from Baker [1988a: 10])

(14) Chewa
a. *Chitsîru* *chi-na-gúl-á* *mphâtso.*
7.fool 7-PST-buy-FV 9.gift
'The fool bought a gift.'
b. *Chitsîru* *chi-na-gúl-ír-á* *atsíkána* *mphâtso.*
7.fool 7-PST-buy-APPL-FV 2.girl 9.gift
'The fool bought a gift for the girls.'
(Alsina and Mchombo 1993: 18)

Descriptively speaking, the alternating argument structure patterns found in the sentences in (13) can be attributed to the presence of a causative suffix in (13b). The verb root in (13a) is not followed by the causative suffix, and the verb, therefore, retains the characteristic one-argument valency pattern of an intransitive verb. In (13b) the causative suffix *-ets-* appears after the verb root, adding causative semantics to the verb's basic meaning and shifting its valency from intransitive to transitive. Furthermore, in this case, the argument that served as the subject of the verb when it was not marked with the causative in (13a) is realized as an object and the added argument serves as the derived verb's subject.

The alternating argument structure patterns found in (14) are somewhat similar, except, in this case, an applicative suffix is involved. Unlike the causative, the applicative does not notably change the semantic interpretation of a verb root to which it is added. However, it does change the verb's argument structure, here allowing a verb to appear with an extra unflagged object, *atsíkána* 'girls' in (14b). This extra argument can, in principle, have a range of semantic interpretations with benefactive and recipient interpretations being quite typical (though see section 3.7 of the first part of this chapter for discussion of other uses of the applicative).

Four argument-structure altering, or *valency changing*, suffixes found widely distributed in Bantu have been the subject of detailed formal studies. These are the causative, exemplified in (13b), the applicative, exemplified in (14b), the passive, exemplified below in (15b), and the reciprocal, also exemplified below, in (16b).

(15) Xhosa

a. *ÚMamalí* *ubúza* *útítshala* *úmbúzo*
1.Mamali 1.ask.FV 1.teacher 11.question
'Mamali asks the teacher a question.'

b. *Úmbúzo* *ubúzwa* *útítshala* *ngúMámalí*
11.question 11.ask.PASS.FV 1.teacher with.1.Mamali
'The question is asked from the teacher by Mamali.'
(Satyo 1985: 138–139)

(16) Chaga (aka Mochi)

a. *Wàchàkà* *wǎ-i-kòṛ-í-à* *wànǎ* *shĩ̋míì*
2.Chaga 2-PRS-burn-APPL-FV 2.child 8.firebrand
'The Chagas are burning the children with firebrands.'

b. *Wàchàkà* *wǎ-i-kòṛ-í-àn-à* *shĩ̋míì*
2.Chaga 2-PRS-burn-APPL-RECP-FV 8.firebrand
'The Chagas are burning each other with firebrands.'
(Bresnan and Moshi 1993: 54)

Superficially at least, the addition of the passive suffix onto a verb root results in a verb form with comparable syntax to what is found in the analytic passive construction in English as seen in (15b). An argument which would appear as an object if a verb were not marked with the passive is "promoted" to subject, and the argument that would have normally had the subject role, if it is expressed, appears as some sort of oblique argument, often formally similar to an instrumental or comitative.

The reciprocal suffix, as seen in (16b), gives a verb an interpretation where the referents of a semantically plural subject are acting on each other. From the perspective of verbal argument structure, this means that a direct object that would be expressed if the verb were not marked with the reciprocal is not found and the argument corresponding to the "missing" object is interpreted as coreferential with the subject.

The data in (16b) illustrates another relevant point about the Bantu valency-changing suffixes: in many languages, multiple such suffixes can appear on a single verb root. There, the verb appears both with an applicative suffix and a reciprocal suffix. In this particular case, the applicative is allowing the instrumental *shĩ̋-míì* 'firebrands' to be expressed as an unflagged object while the reciprocal results in the direct object not being expressed.

Formal approaches to morphosyntax have primarily focused on the questions given below with respect to these verbal suffixes:

– Given that they are formally suffixes but have significant effects on syntax, should they be analyzed primarily as morphological or syntactic phenomena?
– How should the interaction among multiple suffixes appearing on a single verb root be analyzed?

– What is the status of arguments that have been "promoted" or "demoted" as a result of the use of these suffixes? In particular, how "object-like" are those objects that can only be expressed as unflagged objects if an applicative suffix appears on the verb?

Each of the questions just raised above will be discussed in turn in the following sections. It is important to emphasize that formal treatments have been somewhat limited in the grammatical patterns they have examined. The discussion in sections 3.7 and 3.8 of the first part of the chapter makes this clearer by considering data from valency constructions that have yet to see serious attention, even though they are hardly grammatically marginal. Much of that discussion is devoted to applicativization in Tswana, also a Bantu language, but data from a language outside of Bantu, the Niger-Congo language Wolof, is also considered.

6.2.4.2.2. Morphology or syntax?

From a descriptive perspective, the question as to whether or not the Bantu valency affixes are "morphological" or "syntactic" in nature is not of obvious interest. The evidence for their morphological status as suffixes is clear (see Hyman [1993] for an overview of the morphological structure of the Bantu verb), even if they also play a role in encoding clausal syntax.[16] However, from the point of view of formal approaches to morphosyntax that seek to construct restrictive models of morphology and syntax, modeling the syntactic impact of these apparently morphological elements has presented a number of theoretical problems. Bantu's rich set of valency-changing suffixes, along with its relatively accessible morphology, has, therefore, made languages of the family a good testing ground for formal models of morphology–syntax interaction.

Broadly speaking, there are two schools of thought represented in the literature regarding the analysis of these suffixes. The first, well exemplified by Baker (1988a), argues that they are primarily syntactic in nature, with their realization as bound morphemes being a relatively superficial aspect of their behavior. The second, well exemplified by Alsina (1993), argues that they are primarily morphological in nature and that the addition of these suffixes onto verb roots in the "lexicon" alters the verb's basic argument structure in a way which has signifi-

[16] Despite the fact that, as we shall see, many formal accounts of the verbal suffixes treat them as having primarily syntactic functions, it is not completely obvious that this is the case. Applicatives, for example, clearly have both syntactic and discourse functions (see, for example, Marten [2002: 178–208, 2003] and Peterson [2007: 83–122]), and it is not *a priori* clear that one of these functions is more central than the other. See also section 3.7 of the first part of the chapter.

cant syntactic consequences but is not itself a truly syntactic phenomenon.[17] In the larger context of generative grammar, the second position is associated with "lexicalism", a theoretical position that holds that "words are built out of different structural elements and by different principles of composition than syntactic phrases (Bresnan and Mchombo 1995: 181)". Each of these two approaches is further discussed in the following section.

6.2.4.2.3. Baker's (1988a) incorporation approach

It will be useful here to start with the work of Baker (1988a), which makes use of a transformational syntax approach, since it, broadly speaking, represents the beginning of the theoretical discussion. Moreover, Baker's work has been especially influential within transformational syntax in its development of a formal model of the morphology–syntax interface, making it a clear case where African data has had a significant impact on morphosyntactic theory. The leading idea behind Baker's approach is that the same basic analytical apparatus used to analyze syntactic phenomena should also be used to analyze morphological phenomena which have significant interactions with syntax. As a useful illustration, we can compare the two Chewa sentences in (17). The sentence in (17a) gives an analytic causative construction in Chewa, and the sentence in (17b) gives its synthetic counterpart where the causative suffix appears on the verb encoding the caused event.

(17) Chewa

a. *Mtsikana* *a-na-chit-its-a* *kuti* *mtsuko* *u-gw-e.*
1.girl 3-PST-make-CAUS-FV that 3.waterpot 3-fall-FV
'The girl made the waterpot fall.'

b. *Mtsikana* *a-na-gw-ets-a* *mtsuko*
1.girl 1-PST-fall-CAUS-FV 3.waterpot
'The girl made the waterpot fall.'
(adapted from Baker [1988a: 148])

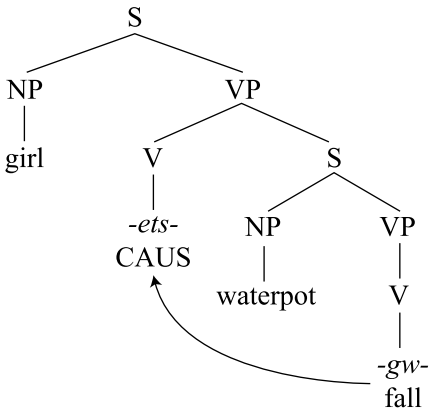
Under Baker's approach, the existence of paraphrases like those in (17) is viewed as evidence for the claim that there is no clear division between morphology and syntax, but, rather, the two must be part of the same basic grammatical system. He further argues that this system is primarily syntactic in nature and then develops

[17] A variant of this second position can be found in Dubinsky and Simango (1996), who do treat the suffixes as primarily morphological but believe that an examination of the differences between the morphosyntactic behavior of the passive and another common Bantu suffix, the stative, necessitates a model wherein there are two different classes of morphological valency-changing operations, one operating on a verb's lexical semantic structure and another affecting how a verb's argument structure relates to grammatical functions like subject and object.

an analysis of three of the Bantu verbal extensions, the causative, applicative, and passive, wherein they are taken to be autonomous syntactic elements at an underlying level of representation which are "incorporated" (a technical term in Baker's approach adapted from its use as a label for so-called noun incorporation constructions) into a verb as a result of abstract syntactic operations. For example, the causative suffix *-its-* in (17b) would be treated as an incorporated form of a verb meaning something along the lines of 'make', like the verb *-chit-* in example (17a).

The tree in (18), adapted from the trees in Baker (1988a: 149) and based on (17b), illustrates the basic scheme of his analyses, which build on conventions typical of transformational grammar of the time. In this case the causative suffix *-ets-* is analyzed underlyingly as a verb which takes a sentential complement corresponding to the caused action, but, over the course of the derivation of the sentence, the verb found in this sentential complement "moves" (via syntactic transformations) upwards in the tree to become affixed to the causative via what Baker terms incorporation. This produces the morphologically complex verb stem *-gw-ets-* and gives the surface form of the sentence a monoclausal structure where underlyingly it had a biclausal structure.

(18)



Baker assumes that this same basic mechanism of incorporation can account for the behavior of other Bantu valency-changing suffixes, though the analytical details are distinct in each case. Whereas causatives are interpreted as resulting from a kind of verb incorporation, applicatives are interpreted as resulting from preposition incorporation into the verb (Baker 1988a: 229–304), and passives are interpreted, roughly speaking, as a kind of noun incorporation wherein the passive morpheme is treated as an incorporated subject (Baker 1988a: 305–361).

There is a good deal of other work, all within transformational grammar covering various Bantu languages, that takes a broadly similar approach to that of Baker. These include Marantz (1984: 223–291, 1993) (notable, in the present context, is that Marantz [1984] also discusses data from Fula), Machobane (1989) (a detailed study of Southern Sotho), Hoffman (1991) (considering Mwiini, Chewa, Kinyar-

wanda, and Sotho), Ngonyani (1996) (focusing on Ndendeule and Swahili), Pylkkänen (2002) (considering data from various Bantu languages), McGinnis and Gerdts (2004) (focusing on Rwanda), and Buell (2005) (focusing on Zulu), among others.

6.2.4.2.4. LFG and the lexicalist approach

In contrast to Baker's (1988a) incorporation approach, practitioners of Lexical Functional Grammar (LFG) have maintained something close to the more traditional position that the Bantu valency-changing morphemes are best analyzed largely morphologically. Specifically, they treat them as coding *morpholexical* operations. This term reflects the fact that, in the context of LFG, the lexicon is not construed to consist solely of a listing of arbitrary form–meaning pairings but also encompasses many of the phenomena falling under the general rubric of "morphosyntax". These morpholexical operations are understood to formally affect a verb's argument structure. Work making use of morpholexical operations to analyze the Bantu valency-changing morphemes in LFG includes Alsina (1993, 1999), Alsina and Mchombo (1993), Bresnan and Moshi (1993), and Harford (1993).

A relatively simple example of such a morpholexical operation is the one associated with the Bantu passive. It can be formalized as in (19) (Alsina and Mchombo 1993: 28).

(19) Passive morpholexical rule

$$\begin{array}{c}\hat{\theta}\\ |\\ \emptyset\end{array}$$

The sparse formalization in (19) analyzes a morpheme like the Bantu passive as "suppressing" the highest thematic role of a verb. This notion of a thematic role is borrowed from work like Fillmore (1968) which proposes that it is possible to classify the semantic roles verbs can assign to their arguments into a relatively limited set of categories. For example *agent*, *patient*, *theme*, etc. The symbol consisting of a theta with a "hat" diacritic is reserved within LFG to refer to the highest thematic role of a verb as interpreted with respect to the hierarchy of thematic roles, ranked according to their "prominence" (see Alsina and Mchombo [1993: 24], among others; the idea of a thematic hierarchy, of course, extends beyond LFG). The symbol Ø in (19) represents "nothing". In this schematization of a morpholexical operation, the top can be informally understood as the input to a rule-like operation and the bottom as the output. Thus, it says that, in the passive, the highest thematic role becomes nothing—that is, it is unrealized or suppressed. This, in turn, results in the promotion of an object argument to the subject role.

A more complex morpholexical operation, associated with the causative, is given in (20) (adapted from Alsina [1999: 26]). Unlike the passive, this formal-

ization of the causative requires somewhat detailed description of the argument structure relations of the verbs participating in the causative construction. Specifically, it involves two argument structures (both represented as lists surrounded by angle brackets), one embedded in the other. In addition, one of the roles in the outer argument structure list, the patient, is linked to an (unspecified) role in the inner list, meaning those two arguments will both be expressed by a single syntactic element. This linked argument corresponds to what is traditionally known as the causee, and would be the argument *mtsuko* 'waterpot' in (17b). This formalization is, therefore, expressing the intuition that, in a causative construction, the causee simultaneously serves as the patient affected by the causing action as well as having a role in the caused action itself.

(20) ⟨ag pt ⟨...θ...⟩⟩

It is clear that, conceptually, the analysis of the causative in (20) bears important similarities to the one given by Baker (1988a) schematized in (18). Both treat the causative as a type of "bieventive" structure, (18) capturing this within a syntactic tree and (20) capturing this via one argument structure embedded in another, and both treat it as also involving the sharing of an argument between the two events, (18) by utilizing a structure in which the causee is simultaneously the object of one verb and the subject of another within this phrase structure, and (20) by using the device of argument structure linking. Where the two analyses most crucially differ is that the LFG approach formalizes the behavior of the causative as deriving from a purely morphological operation, whereas the transformational analysis formalizes it as deriving ultimately from a syntactic operation.

The same basic mechanism of argument structure manipulation is also used within LFG to formalize the applicative and the reciprocal affixes. Various formalizations of the applicative have been proposed (see, for example, Alsina and Mchombo [1993: 28] or Alsina [1999: 26]) All of these involve, in one way or another, the addition of an extra "object" to a verb's argument structure. At least one formalization of the reciprocal, like the passive, involves argument suppression (again, of an object argument) (Alsina 1993: 26).

6.2.4.2.5. Evaluation: Extensions and verbal valency

There is no question that data from Bantu valency-changing suffixes has been influential in the development of new formal devices both within transformationalist approaches and within LFG (as well as Relational Grammar; see section 2.7). Within transformational grammar, as we have seen, these suffixes have been taken as evidence for a model of syntax wherein the division between the traditional domains of morphology and syntax was quite deliberately blurred. Within LFG, these suffixes have been influential in the development of models of argument

structure relations. The import of these analyses for the description and typology of Bantu languages in particular, and African languages in general, is less clear to the extent that much of the debate centers around formal modeling rather than descriptive interpretations of the data. That being said, it is certainly the case that debates among formal linguists of differing persuasions have had the effect of unearthing interesting new descriptive generalizations. Consider, for example, the data involving contrasting possibilities for the interpretation of reflexives and reciprocals from Chewa given in (21).

(21) Chewa

a. *Alenje* *á-ma-dzi-nyóz-a* *kupósá* *asodzi.*
2.hunter 2-HAB-REFL-despise-FV exceeding 2.fisherman
'The hunters despise themselves more than they despise fishermen.'
or
'The hunters despise themselves more than the fishermen despise themselves.'

b. *Alenje* *á-ma-nyoz-án-a* *kupósá* *asodzi.*
2.hunter 2-HAB-despise-RECP-FV exceeding 2.fisherman
'The hunters despise each other more than the fishermen despise each other.'
(Mchombo 1993: 195)

Despite having comparable semantics, the Chewa reflexive and reciprocal are morphologically quite distinct, with the reflexive being coded with a prefix and the reciprocal a suffix. (This contrast is not unusual in Bantu.) Furthermore, they are distinct in the interpretations that they allow in elided comparative constructions. The reflexive structure in (21a) is comparable to the English sentence *the hunters despise themselves more than the fishermen*, in that the second half of the comparison is reduced to only the element contrasting with the first half of the comparison. As can be seen, the reduced structure in Chewa is ambiguous with regard to whether it should be interpreted as contrasting with the subject or the object of the preceding clause. However, a comparable reciprocal structure in (21b) allows no such ambiguity, and the one element in the second half of the comparison can only be interpreted as contrasting with the subject of the first clause. It seems unlikely that the Bantu descriptive tradition, on its own, would have uncovered facts like these due to its emphasis on morphological facts and comparative linguistic concerns.

We can conclude this discussion by noting the various debates on the issue of whether or not the valency-changing suffixes are morphological or syntactic have not resulted in any clear analytical resolution. Pylkkänen (2002), for example, examining data from Bemba, Chaga (aka Mochi), Ganda, and Venda, among others, adopts a syntactic approach that is largely similar to Baker's, though theoretically updated, while work within LFG still assumes morpholexical analyses of the sort discussed above (Bresnan 2001: 30).

6.2.4.2.6. Morpheme ordering

Work like that just described in the preceding sections has also looked into the issue of accounting for the surface order of the Bantu valency-changing suffixes on verbs where multiple such suffixes appear.[18] Baker's (1985) "Mirror Principle", for instance, suggests that there should be a consistent relationship between the order of morphemes and their semantic scope, wherein morphemes having narrower scope with respect to a verb root should appear closer to it than morphemes having wider scope.[19] The example in (22) can help to exemplify the predictions of the Mirror Principle.

(22) Chewa

Mtsikana	*a-na-perek-er-edw-a*	*mpiringidzo*	*ndi*	*mbidzi.*
1.girl	1-PST-hand-APPL-PASS-FV	3.crowbar	with	9.zebra

'The girl was handed the crowbar by the zebras.'
(Baker 1988a: 14)

In (22) the applicative suffix *-er-* introduces the benefactive argument *mtsikana* 'girl'. Since this argument is also the subject of this passive sentence, applicativization must have, in some sense, logically "preceded" passivization – otherwise the benefactive argument would not have been available to be promoted to subject position. This is correlated with the fact that the passive suffix *-edw-* follows the applicative suffix on the verb *-perek-* 'hand' rather than appearing before it. For Baker (1985, 1988a), this correlation is not accidental but, rather, evidence that morphology, in general, obeys the Mirror Principle, which in the case of (22) does, in fact, predict that the applicative would appear closer to the root than the passive.

However, as extensively documented by Hyman (2003) (see also Good [2005]), while the Mirror Principle does appear to be valid for certain cases of valency-changing suffix combinations, there are systematic exceptions to its applicability in Bantu. The most striking kind of exception is that certain morpheme orders are, in fact, ambiguous with regard to semantic scope. Consider, for example, the data in (23) from Chewa (originally drawn from Hyman [2001], see also Good [2003: 222]), involving sentences containing verbs marked with both the causative and the applicative, in that order.

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[18] See also Alsina (1999) on morpheme order in Bantu. Other more syntactically-oriented work on morpheme order in African languages includes Buell and Sy (2006) for Wolof, and Rose (1996) for Chaha. More phonologically-oriented work on morpheme order can also be found (see, e. g., Hyman 2010), though it is not focused on in this chapter.

[19] While this observation regarding morpheme ordering is often attributed to Baker (1985), especially in the formal literature, it has been observed elsewhere under other labels, for example as Bybee's (1985: 39) "Relevance Principle".

(23) Chewa

a. *Abúsa* *a-ku-thámáng-its-ir-a* *ndodo* *mbúzi.*
2.shepherd 2-PRS-run-CAUS-APPL-FV 10.stick 10.goat
'The shepherds are chasing the goats with sticks.'
(applicative has scope over causative)

b. *Alenjé* *a-ku-tákás-its-ir-a* *akázi* *mthiko.*
2.hunter 2-PRS-stir-CAUS-APPL-FV 2.woman 9.spoon
'The hunters are making the women stir with a spoon.'
(causative has scope over applicative)

In both sentences in (23), the applicative allows an instrumental argument to be expressed without special adpositional marking. In (23a) this argument, *ndodo* 'sticks', is being used by the causers of the overall event, *abúsa* 'shepherds', thus indicating that the applicative has scope over the causative, consistent with the Mirror Principle. In (23b), however, the instrumental argument, *mthiko* 'spoon', is being used by the causees of the caused event, *akázi* 'women', indicating that the causative has scope over the applicative, a scope reading predicted to be impossible according to the Mirror Principle. Ambiguity of scope for this particular morpheme combination is reported in other Bantu languages (Good 2005: 30–31), and, while it has not been extensively looked for, there is no indication that it is particularly rare. And, there are similar kinds of ambiguity reported for other suffix combinations as well (Hyman 2003).

Hyman's (2003) interpretation of facts like these is that, in addition to the possibility that the Mirror Principle may play a role in suffix ordering in Bantu, there is also a morphological template at work in many, if not most, Bantu languages that allows a verb root to appear with multiple valency-changing suffixes. This template takes the form of a relative linear ordering statement of the form causative-applicative-reciprocal-passive (CARP) which stipulates that, when any two valency-changing morphemes appear on a verb stem, they must appear in that order. This template, however, is not absolute in all cases and can be violated, and Hyman thus adopts an analysis of the behavior of these morphemes adapting notions drawn from Optimality Theory (see Kager 1999) (see Good [2016: 130–168] for another set of analyses).

It is clear that the ordering relationship among these suffixes has had an important role to play in the development of formal theories, and the fact that Bantu languages allow multiple affixes to appear on a single verb has made them attractive objects of formal theoretical work in the first place. Not only does Baker (1988a: 13–15) take their ordering as evidence for his theory of incorporation, Alsina (1999) sees it as an important part of providing a morpholexical alternative analysis of these morphemes to offer a counter-explanation for the Mirror Principle within the framework of LFG.

Analyses of morpheme ordering also reveal an unambiguous positive impact

formal theories have had on the description and analysis of Bantu languages. While the Mirror Principle ultimately turns out to be insufficient to handle the Bantu facts, the fact that it put forward a straightforward, falsifiable hypothesis led researchers like Hyman and Mchombo (in addition to the works cited above, see also Hyman and Mchombo [1992]) to investigate its predictions in more detail and, ultimately, discover previously missed generalizations, for example Hyman's CARP template, which appears to be an important pan-Bantu principle, and, perhaps, also reflects a significant feature of Proto-Bantu morphology (Good 2005).

6.2.4.2.7. Double object constructions

A final issue to be considered here in relation to Bantu valency-changing suffixes is the wide range of work done in formal frameworks on the syntactic properties of objects in double object constructions. Bresnan and Moshi (1993) offer an insightful overview of the issues, including discussion of earlier analyses up to that point in time, and this topic continues to be of theoretical interest (see, e. g., Baker, Safir, and Sikuku 2012). A particular focus has been whether the objects in such constructions show "symmetrical" or "asymmetrical" behavior. That is, in cases where a verb is followed by two objects without any special adpositional marking, do both objects behave the same way with respect to a range of tests for objecthood or is one more "object-like" than the other. The fact that two of the Bantu valency suffixes, the causative and applicative, have the effect of "adding" an object to a verb's argument structure has meant that languages of the family can often quite productively create double object constructions with a range of verbs, providing ample opportunity for their exploration.

The examples in (24) and (25) provide a first illustration of the core issues involved in the study of these asymmetries.[20] They involve the contrasting possibilities of verbal object marking – i. e., the ability of a pronominal object to appear as a verbal prefix – in Chaga (aka Mochi) and Chewa.

(24) Chaga

a. *N-ā́-ī́-lyì-í-à* *mkà* *kélyà.*
FOC-1-PRS-eat-APPL-FV 1.wife 7.food
'He is eating food for/on his wife.'

b. *N-ā́-ī́-m̀-lyì-í-à* *kélyà.*
FOC-1-PRS-1-eat-APPL-FV 7.food
'He is eating food for/on her.'

[20] The translations in (24) are meant to indicate that the argument introduced by the applicative can have a benefactive or malefactive interpretation.

c. *N-ǎ-ǐ-kì-lyì-í-à* *m̀kà.*
FOC-1-PRS-7-eat-APPL-FV 1.wife
'He is eating it for/on his wife.'
(Bresnan and Moshi 1993: 50–51)

(25) Chewa

a. *Chitsîru* *chi-na-gúl-ír-á* *atsíkána* *mphâtso.*
7.fool 7-PST-buy-APPL-FV 2.girl 9.gift
'The fool bought a gift for the girls.'

b. *Chitsîru* *chi-na-wá-gúl-ír-á* *mphâtso.*
7.fool 7-PST-2-buy-APPL-FV 9.gift
'The fool bought a gift for them.'

c. **Chitsîru* *chi-na-í-gúl-ír-á* *atsíkána.*
7.fool 7-PST-9-buy-APPL-FV 2.girl
Intended: 'The fool bought it for the girls.'
(Alsina and Mchombo 1993: 18–22)

A well-known feature of many Bantu languages (see also section 3.3.2) is that pronominal objects in many languages of the family are expressed as verbal prefixes appearing between tense-aspect-mood (TAM) markers and the verb stem, as can be seen in (24b), (24c), and (25b). However, there is an interesting discrepancy between (24c) and (25c). Whereas, in Chaga, either object of a double object construction created by the presence of an applicative can be expressed as a pronominal prefix, in Chewa, only the unflagged object introduced by the applicative, i. e., *atsíkána* 'girls', can be. Thus, in Chewa, there is an asymmetry between the two verbal objects with respect to this pattern.

More striking, however, is the fact that the two objects of double object constructions are treated asymmetrically with respect to not just this one criterion, but across a number of criteria in Chewa, and, in each case, the object introduced by the applicative behaves like the "true" object of a transitive verb while the other object does not. The data in, for example, (26) and (27) again contrast Chaga, where both unflagged objects can be passivized and thus, behave "symmetrically", and Chewa, where only the object introduced by the applicative can be passivized, showing a parallel asymmetry to that seen in (25).

(26) Chaga

a. *M̀kà* *n-ǎ-ǐ-lyì-í-ò* *kélyà.*
1.wife FOC-1-PRS-eat-APPL-PASS 7.food
'For/on the wife is being eaten food.'

b. *Kélyà* *k-ǐ-lyì-í-ò* *m̀kà.*
7.food 7-PRS-eat-APPL-PASS 1.wife
'The food is being eaten for/on the wife.'
(Bresnan and Moshi 1993: 51)

(27) Chewa

a. *Atsíkána* *a-na-gúl-ír-idw-á* *mphâtso.*
2.girl 2-PST-buy-APPL-PASS-FV 9.gift
'The girls were bought a gift.'
(Alsina and Mchombo 1993: 23)

b. **Mphâtso* *i-na-gúl-ír-idw-á* *atsíkána.*
9.gift 9-PST-buy-APPL-PASS-FV 2.girl
Intended: 'A gift was bought for the girls.'

Work on symmetries and asymmetries in double object constructions in Bantu languages has been quite extensive, covering many languages in the family, for example (among others to be discussed below): Mwiini (Kisseberth and Abasheikh 1977), Kinyarwanda (Gary and Keenan 1977, Kimenyi 1980), Southern Sotho (Morolong and Hyman 1977), and Shona (Hawkinson and Hyman 1974) – though not all of these take a formal perspective. Bresnan and Moshi (1993: 47) (a republication of Bresnan and Moshi [1990]) go so far as to label Bantu object asymmetries a "classic problem in comparative syntax" and further suggest that, from a formal perspective, the fundamental analytical problem posed by them is to find a way to explain the covariation found between languages like Chaga and Chewa, "by reducing it, if possible, to a single parameter of variation, instead of postulating multiple unrelated differences in the grammars of the two types of languages" (1993: 48).

Bresnan and Moshi (1993) is just one influential instance of formal work on object asymmetries. The earliest work considering it from a formal perspective is Gary and Keenan (1977), which suggested that the symmetries in the behavior of the two objects in double object constructions in Rwanda posed problems for the developing theory of Relational Grammar (see Blake [1990] for an overview of this framework). Perlmutter and Postal (1983: 109–126) and Dryer (1983) then offered a reexamination of the Rwanda facts to show they were, in fact, not inconsistent with the tenets of Relational Grammar in the way argued by Gary and Keenan. However, Perlmutter and Postal (1983) further suggest that Rwanda still posed problems for other aspects of the theory of Relational Grammar as formulated to that point.

Exploring the details of the transformationalist analyses of object asymmetries would take us quite far afield here since they are based on a number of theory-internal considerations. However, it is possible to say a few things about them in summary. First, they all generally adopt something like the incorporation model of valency-changing suffixes discussed in section 4.2.3. Second, many of them make crucial use of a set of ideas falling under what has been labeled as "Case Theory" (see Baker 1988a: 40–41), which relates to the places in which different noun phrases are allowed to appear in tree structures (see Diercks [2012] and Halpert [2012]) for more recent discussion in a Bantu context). Beyond this, however, the analyses often diverge considerably. Baker (1988b), for example,

relies quite heavily on Case Theory, whereas Marantz (1993: 143–144) connects some features of asymmetries to semantic mappings to syntactic positions in an abstract phrase structure. Other work on object asymmetries in transformational grammar includes Hoffman (1991), Baker (1992), Woolford (1993, 1995) (see also Alsina [1996], which contains a substantial critique of Woolford [1993]), Nakamura (1997), McGinnis (2001), Doggett (2004: 105–112), Ngonyani and Githinji (2006), and Zeller (2006), among others.

There is no question that the behavior of Bantu double object constructions has had a significant influence on the development of formal models of grammar. It has been the subject of a fairly extensive literature, provoking debate from Gary and Keenan (1977) onwards – even before the typological variation between symmetric languages like Chaga and asymmetric languages like Chewa was detected. Moreover, within the transformationalist literature, an examination of the above-cited works quickly reveals that data from Bantu languages has served as a testing ground for numerous different models for the analysis of double object constructions more generally. Within LFG, these constructions have played an important role in the development of formal devices relating to argument structure.

While it is difficult to pinpoint specific ways in which recent formal developments in the analysis of double object constructions in Bantu have directly influenced descriptive and comparative studies, it is clear that formally-oriented work has uncovered a range of interesting phenomena regarding these constructions that do not appear to have been noticed before, at least not so systematically. This is no doubt related to at least two important methodological features of formal generative work. The first is an interest in syntactic constructions and, in particular, syntactic alternations between sentences which have predictable semantic correspondences with each other. The second is the emphasis on the speaker's productive knowledge of grammar over naturalistic language use. It is difficult, if not impossible, to imagine, for example, discovering the full range of the differences between languages like Chaga and Chewa with respect to double object constructions from naturalistic data without corpora of a size that simply do not yet exist for almost any African language.

6.2.4.3. Serial verb constructions

6.2.4.3.1. Background on serial verb constructions

Serial verb constructions, common to many West African languages, have played a prominent role in formal approaches to syntax, in particular transformational approaches, for two main reasons.[21] First, their multi-verbal predicates raise

[21] Sebba (1987: 1–37) contains a useful overview of work done on serial verb constructions, including formal work on African languages up to that time. More recently,

important analytical issues for models assuming that a key aspect of syntactic structure is a verb phrase headed by a single verb. Second, in a particular class of serial verb constructions which can be called *shared object serials*, two verbs in the construction are both construed as sharing an object argument, which is only expressed once. This, too, presents analytical problems for transformationalist approaches since they generally assume argument relations are encoded by phrase structure configurations in ways that impose strong restrictions on one argument being shared by two verbs. Sentences (28a) and (28b), from Izon and Edo, respectively, give basic examples of serial verb constructions without shared objects, and sentences (29a) and (29b), from Yoruba and Edo, respectively, give examples of shared object serials.

(28) a. Izon
erí amá dùo yọụ bo-mi
he town go.through paddle come
'He came paddling from the town.'
(Williamson 1965: 49)

b. Edo
Àbiẹ́!yúwa hìín èrhán kpàán àlìmó
Abieyuwa climb tree pluck orange
'Abieyuwa climbed the tree and plucked an orange.'
(Stewart 1998: 2)

(29) a. Yoruba
o mú ìwé wá fún ẹ
I take book come give you
'I brought you a book.'
(Stahlke 1970: 63)

b. Edo
Òzó lé èvbàré ré
Ozo cook food eat
'Ozo cooked the food and ate it.'
(Stewart 1998: 2)

The shared object in (29a) is *ìwé* 'book', which is interpreted as an argument of both *mú* 'take' and *fún* 'give'. The shared object in (29b) is *èvbàré* 'food', which is interpreted as an argument of both *lé* 'cook' and *ré* 'eat'.

Bamgbose (1995: 8–9) briefly overviews the various analytical positions which have been taken with respect to work on African serial verb constructions. Of course, serial verb constructions are found outside of Africa as well. Here, however, the focus will be primarily on analyses of data from African languages and secondarily on analyses of Atlantic creoles which show comparable serial verb constructions to West African languages due to substrate transfer.

Serial verb constructions do not appear to be particularly rare cross-linguistically, though this may largely be due to widespread use of the term to denote a quite diverse range of constructions where multiple verbs appear to belong to a single verb phrase. In particular, the dividing line between asyndetic coordination – which (28b) could be considered an instance of – and "true" serial verb constructions is often unclear, on the one hand, and the line between serialization and verb compounding, of the sort illustrated below in (30), on the other, is similarly fuzzy.

(30) Igbo
ó *bú-lá* *ìtè*
he carry-go.home pot
'He carried the pot home.'
(Lord 1977: 151)

One feature of West African serial verb constructions that has received particular attention in the formalist literature are apparent instances of VOV – as opposed to VVO – order of the sort given in (29b), in particular when the intervening object is associated semantically with both verbs.[22] As discussed in some detail by Carstens (2002), this pattern is not limited to SVO languages of West Africa. It is also found in one of the few strongly SOV language families of the area, Ijoid.

Providing an informal description of the syntax of a VOV serial verb structure is quite straightforward: It seems simply to represent one attested pattern among various logical possibilities for serial verb constructions, if these are simply seen as involving different degrees along a cline of "fusion" of verbs and verb phrases within a single predicate (of the sort that is formalized in Foley and Van Valin's [1984: 238–320] model of clause linkage within Role and Reference Grammar). In descriptive work, serial verb constructions of the VOV type are sometimes associated with the labels "core" or "symmetric" and set against serialization involving VVO-type structures which may be associated with "nuclear" or "asymmetric" serialization (though there is more to this distinction than the presence/absence of an intervening object). Both types of structures are found in Africa and neither is clearly analytically more problematic than the other in descriptive terms. Kießling (2011) provides a detailed discussion of serialization in an African language showing the VVO pattern (as well as the VOV pattern), and Aikhenvald (2006) provides a comprehensive overview of issues in the typology of serial verb constructions.

[22] This structure is not found exclusively in West Africa. Carstens (2002: 31), citing Wheatley (1985), gives data indicating that the Tibeto-Burman language Yi, with basic SOV word order, employs structures showing a VOV pattern, and Tetun Dili, an Austronesian language, with basic SVO word order, for example, does as well, at least in some contexts (Williams-van Klinken, Hajek and Nordlinger 2002: 92–100).

However, from the perspective of most versions of transformational grammar, serial structures containing a sequence like VOV raise immediate questions with respect to assumptions regarding the phrase structure of clauses since it is generally assumed in such models that (i) all sentences have a constituent structure that can be represented as a tree and (ii) grammatical relations like subject and object are largely determined with reference to this constituent structure. For instance, in analyzing a sentence like (29b), transformationalist approaches force one to ask questions like: (i) Of the two verbs that the shared object is associated with semantically, which one should it be analyzed as associated with syntactically? And (ii), how can the fact that one overt argument appears to fulfill an object argument role for two verbs be formally treated?

Analyses of serial verb constructions, African or otherwise, are hardly restricted to transformational grammar. For example, Schiller (1991) analyzes certain African serial verb constructions within the framework of Autolexical Syntax (Sadock 1991), Sebba (1987: 141–209) examines African data from the perspective of Generalized Phrase Structure Grammar, and Andrews and Manning (1999: 71–111) discuss some of the relevant issues from a Lexical Functional Grammar perspective. However, in these other frameworks the proper analysis of serial verb constructions has not been the subject of as extensive theoretical debate as in transformationalist approaches.

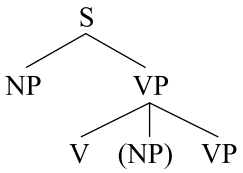
The African syntactic patterns that have been subject to theoretical debate are also found in comparable forms in Atlantic creoles due to the influence of West African substrates on the development of those languages, with creole data sometimes being discussed alongside African language data (see, e. g., Déchaine [1993: 315–323]). To the extent that such creole data has played a role in formal analyses, we can consider this to be a case where African languages have indirectly influenced theoretical debates insofar as they appear to represent the ultimate source of serial verb constructions in the Atlantic creoles.[23]

6.2.4.4. Serial verb constructions in transformational grammar

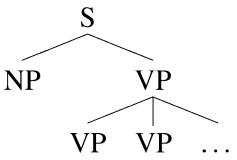
If one assumes that all syntactic structures can be represented in terms of trees, there are three logical possibilities as to how multiple verbs or verb phrases in a serial verb construction can relate to each other. These are via a complementation structure as in (31), a coordination structure as in (32), and an adjunction structure as in (33). Of course, the precise details of theses structures will vary from proposal to proposal, and the structures in (31), (32), and (33) are necessarily schematic.

[23] However, it should be pointed out here that the idea that Atlantic creole serial verb constructions represent substrate transfer has been contested by some researchers (see Bickerton [1984], for example), though this appears to be a strongly minority view today.

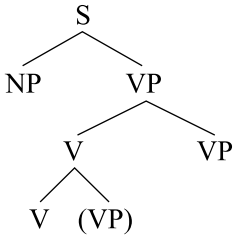
(31)



(32)



(33)



Examples of analyses of West African languages making use of each of these structures can be found in the literature with the structure in (31) probably being the dominant one, found in, for example, Baker (1989, 1991), Larson (1991), Lefebvre (1991), Collins (1993, 1997), and Carstens (2002). Generally such proposals treat one verb in a serial verb construction as being the head of the main verb phrase of the clause, but this is not always the case (as in Baker (1991), for example). For sentences like (28a), where there are three verbs in the serial verb construction, the second verb phrase would generally be analyzed as itself having a complement verb phrase containing the third verb in the construction.

Analyses of serial verb constructions making use of a coordinate structure treat such constructions in a way analogous to verb phrase coordination in a language like English, but without overt coordinating conjunctions. Examples of such analyses include Boadi (1968: 87), and Awobuluyi (1973).[24] Finally, analyses making use of adjunction again pick one of the verbs in the serial verb construction as the head of a verb phrase containing all of the verbs found in the sentence. The non-head verbs are treated as adjuncts as opposed to complements, occupying a structural position roughly analogous to a verb-phrase modifying adverb. Examples of such analyses include Schachter (1974), Stahlke (1974), Déchaine (1993:

[24] Many authors admit the possibility of "covert" coordination (i. e., coordination not marked with a conjunction) producing structures with similar surface features to serial verb constructions but which they treat as not being instances of "true" serial verb constructions. (See, for example, Collins [1997: 463–468] and Stewart [1998: 23–104].)

257, 1997), Law and Veenstra (1992), and Veenstra (1997) (though the latter two primarily make use of Atlantic creole data).

Of course, an additional possibility is that some classes of serial verbs may be analyzed with one type of structure and other classes with another, and, in this context, it should be pointed out that many of the works cited above focus on only a limited range of serial verb constructions in a given language and, therefore, it is not necessarily the case that they claim that all serial verb constructions will have the same structure. Among works discussing this issue explicitly, Stewart (2001: 48–50), for example, argues that Edo serial verb constructions instantiate both complementation and adjunction patterns depending on their semantics. See also Boadi (1968: 88) and Bamgbose (1974, 1982) for relevant discussion and analysis from the perspective of early transformational grammar, and Campbell (1989: 332–337) for arguments distinguishing a class of shared object serial verb constructions from serial verb constructions expressing certain kinds of motion events (among others, of course).

Importantly, just because two authors make use of similar structures in their analysis of serial verb constructions, this does not mean that their analyses will be similar across other analytical parameters. For example, while Baker (1991) makes use of a complementation structure in his analyses, unlike most other researchers using that structure, he, in fact, assumes the verb phrase in such structures can be headed by multiple verbs. (See, for example, Collins [1997] for an opposing approach.)

In addition to the issue of what kind of phrase structure to assign to serial verb constructions, the other major questions they have raised for transformationalist approaches is how to formalize the relationship between verbs and a shared argument as seen in sentences like those in (29). Two broad strategies have been proposed (see Collins 1997: 468). The first, and more straightforward from an informal perspective, is to take the use of the term "shared argument" fairly literally and simply assume that a single syntactic argument fills a role in the argument structure for both verbs. Other transformationalist work has adopted an approach where shared arguments are not truly shared in a formal sense. The overt "shared" argument under such analyses is only the object of one verb while elsewhere in the sentence there is an abstract element (e. g., a null pronoun) that is coreferential with the overt instance of the shared argument and which serves as the object of the other verb. Such an analysis is seen, for example, in Collins (1997).

Finally, it is worth mentioning that an important theme of some transformationalist work on serial verb constructions has been whether or not their robust presence in some languages (e. g., West African languages) as opposed to their relatively minor role in the grammar of other languages (e. g., Western European languages) can be explained in terms of a single grammatical "parameter", of the sort typically associated with the Principles and Parameters approach to transformational grammar (see Haegeman 1994). This issue is discussed for example

by Baker (1991: 85), Larson (1991: 205–207), Collins (1997: 93), and Stewart (1998). While this has been a topic of interest, it is not clear that any one proposal has yet taken hold in this regard.

6.2.4.5. Formal analyses of serial verb constructions: An evaluation

From the point of view of descriptive and comparative work on African languages, the relevance of formal studies of serial verb constructions of the sort discussed above is not immediately clear. As the name implies, serial verb *constructions* are good examples of syntactic constructions – i. e., syntactic structures which show form and meaning relations that do not fall out naturally from canonical rules of phrase structure. Transformationalist theories generally reject constructions as possible formal grammatical objects, and most of the analytical effort has been devising analysis of these apparently non-conformant structures in a way that is in line with theoretical assumptions. A point made by Sebba (1987: 6), while commenting on the earliest known reference to serial verb constructions (Christaller 1875), is relevant here: "It is interesting to note that [Christaller] does not seem to have conceived of 'verbal combinations' as any more problematic than other aspects of Twi (aka Akan) grammar …Christaller was not working within a theory where sentences were expected to have exactly one main verb."

Much more useful for descriptive and comparative linguists in this regard is work deriving from typological studies or from formal theories which consider data like that seen in West African serial verb constructions from the outset. The formal approach to clause linkage patterns adopted by Role and Reference Grammar, for instance, is much more immediately applicable to serialization phenomena than transformationalist approaches (Van Valin and LaPolla 1997: 441–516). General typological studies, such as Aikhenvald (2006) are also of more obvious applicability, as is work on African languages adopting diachronic or functional orientations (e. g., Lord [1993]; Ameka [2005]). Finally, while the vast majority of the work on serialization in African languages has focused on West African languages, Kießling (2013) and König (2010) are noteworthy for providing studies of serialization in Khoisan languages (from a descriptive perspective).

6.2.5. Word order: Object–verb order alternations

Within the transformationalist literature, alternations between VO and OV word order in the clause have been the subject of a number of studies. Word order patterns of this kind are discussed as well in section 4.3 of the first part of this chapter from a descriptive and typological perspective, and the data discussed in that section makes clear that our understanding of these patterns is still fairly limited. In particular, a simplistic categorization of constructions into VO or OV types

may be overlooking significant aspects of typological variation. Formal treatments have provided different kinds of analyses for these alternations, also suggesting a somewhat complex typology, though the theoretical assumptions underpinning them can make it difficult to apply their insights to non-formal work.

Alternations between VO and OV word order are connected to a typologically remarkable West African areal feature, the presence of a word order pattern which can be summarized as SAuxOVX, where "Aux" represents a verbal auxiliary and "X" represents non-object arguments. This word order pattern is often set in opposition in a given language to a more typologically typical SVO pattern. In addition to the discussion in section 4.3 of the first part of the chapter, Güldemann (2008b: 159–163) offers a relevant comparative overview, and Manfredi (1997) presents a formally-oriented comparative consideration of this topic.

An example of a language showing the relevant patterns which has received attention in the formal literature is Gun, as seen in (34). A sentence with a single verb marked for the perfect shows SVO word order (34a), while a sentence containing an imperfect auxiliary shows SAuxOV word order (34b).

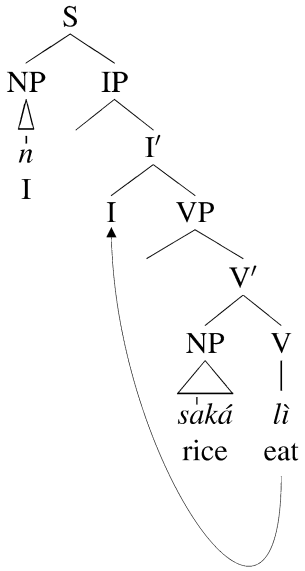
(34) Gun
a. *Kɔ̀jó zán àmì lɔ́.*
Kojo use.PERF oil DET
'Kojo used the oil.'
b. *Kɔ̀jó tò àmì lɔ́ zân.*
Kojo IPFV oil DET use.NMLZ
'Kojo is using the oil.'
(Aboh 2005: 140)

Transformationalist frameworks are well-equipped to analyze word order alternations of the kind seen in (34) as resulting from movement operations. Koopman's (1984) study of Vata and Gbadi (aka Gagnoa Bété) is the earliest transformationalist treatment of word order alternations like these. She assumes that SVO is derived from underlying SOV word order by movement of the verb to a so-called INFL (i. e., inflectional) position. Such movement would be blocked if an auxiliary verb is already present in the syntactic structure (see Koopman 1984: 28–29). The basic structure of such an analysis is schematized for sentence (35a) below in (36) (where the INFL position is labeled as I), while the impossibility of movement for a sentence like (35b), where an auxiliary is present, is shown in (37), under the idea that auxiliaries are syntactic exponents of inflection, and, therefore, occupy a similar abstract position.

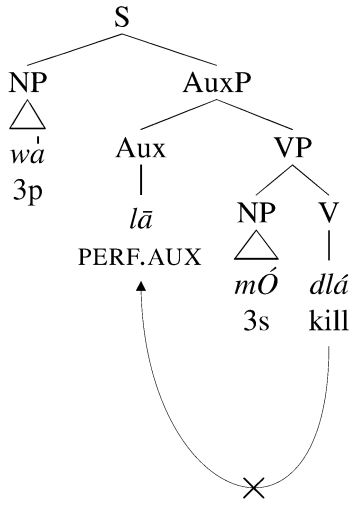
(35) Vata
a. *ṅ̀ lì sȁká*
1s eat.PFV rice
'I ate rice.'

b. *wȧ* *lā* *mÓ* *dlá.*
3p PERF.AUX 3s kill
'They have killed him.'
(Koopman 1984: 28)

(36)



(37)



Koopman's analysis of these word order shifts has not only been influential with respect to the later formal analyses of African languages, but was also important for establishing the generality of so-called "head movement". This is movement where the head of one syntactic phrase moves to the head position of a higher phrase. In particular, her work extended the applicability of head movement from nouns to verbs (Koopman 1984: 138). A further property of Koopman's analysis is that it assumes that verb phrases and inflectional phrases show different basic word order: verb phrases are head-final, while phrases headed by auxiliary verbs are head-initial (see Kandybowicz and Baker 2003: 116, for further discussion in the context of the analysis of Nupe).

The central issue regarding these word order alternations in the transformationalist literature since Koopman (1984) is precisely what kinds of movement are involved in languages that show VO~OV word order alternations. (That movement of some kind is involved appears to be uncontroversial.) Aboh (2004: 61; see also Aboh 2005) accounts for such alternations in Gbe by proposing that movement affects verbs and objects in both VO and OV structures, with each involving a different set of movements, thus accounting for the varying surface patterns. A comparable kind of analysis is given by Tamanji (2002) for Bafut.[25]

Kandybowicz and Baker (2003) present a similar analysis for Nupe, in addition to discussing in detail the fact that, even on a descriptive level, the word order facts in Nupe are sufficiently different from those of the Kru languages examined by Koopman (1984) to suggest that a different kind of analysis is needed, whatever it may be. They further point out that the alternations between VO and OV word order in two other West African languages, Ngwe and Lokaa, represent a third type and, therefore, require their own analysis, and Baker (2005) gives a detailed analysis of Lokaa modeled after Nkemnji's (1995) analysis of Ngwe.[26] Baker (2005: 126, fn.1) indicates that similar data from Legbo may require yet a different analysis (see Good (2007) for presentation of some of the relevant data). These formal results, of course, echo some of the conclusion of section 4.3 of the first part of the chapter, that the apparent surface similarity of Niger-Congo OV structures, in fact, masks significant variation.

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[25] While not specifically involving an SAuxOV pattern since the relevant alternations are not triggered by auxiliaries, Przezdziecki (2000) discusses comparable VO~OV alternations in Yoruba, analyzing them as resulting from movement of an object from a verb phrase showing underlying VO word order to a position preceding the verb.

[26] In the case of Ngwe and Lokaa, the most salient way in which they differ from the other languages discussed here is that they show verb-final word order insofar as their word orders are better characterized along the lines of OXV rather than OVX – i. e., arguments other than objects also appear before the verb. Nkemnji (1995) and Baker (2005) use a transformational device commonly referred to as "remnant VP movement" in their analyses of these patterns.

The interest that transformationalist syntax has in fine-grained aspects of word order alternations has meant that work adopting this approach has uncovered a range of significant descriptive facts about VO~OV alternations and how they can vary in intricate ways across West African languages. Therefore, much of the data found in this line of formal work is likely to be of interest to the descriptively or comparatively oriented linguist. At the same time, its emphasis on purely syntactic accounts of word order alternations means that it fails to note important functional patterns in the data, such as Güldemann's (2007) observation that preverbal objects in these languages tend to be associated with a lower degree of emphasis than postverbal ones.

6.2.6. Information structure

6.2.6.1. The African contribution to formal models of information structure

Data from African languages has made important contributions to our understanding of the typology of information structure phenomena (see, e. g., Dik [1997: 336–338] and Güldemann, Zerbian, and Zimmermann [2015: 167–171]), as well as formal models in some cases. Bearth (1999) gives a detailed overview of this topic considering work in both functionalist and formalist traditions up to that point in time. Here, two topics relating to formal analyses of information structure will be discussed that have played a prominent role in the literature: the formal modeling of topic and focus relations (in 6.2) and cleft constructions, especially predicate clefts (in 6.3).[27] A third topic, the analysis of the so-called conjoint/disjoint distinction in Bantu, is discussed in section 6.2 of the first part of the chapter. While the discussion in that section is primarily descriptive and typological in nature, some formal work on the topic is considered there as well.

6.2.6.2. Word order and information structure

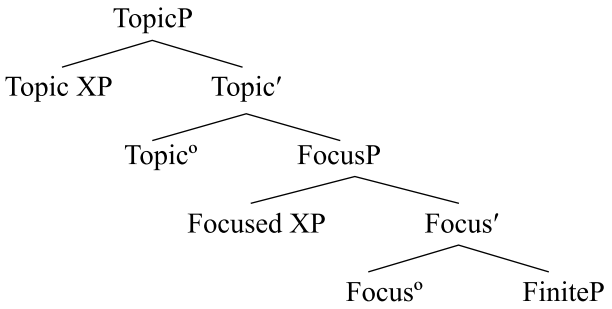
Broadly speaking, it is possible to differentiate between two broad classes of formal models of information structure. The first of these is the so-called *cartographic* approach (see, e. g., Rizzi [1997]), which treats information structure categories, like topic and focus, on par with traditional syntactic categories like

[27] Though it is not concerned specifically with information structure, it is worth mentioning, in this context, the work of Marten (2002: 178–208, 2003), which discusses the general pragmatic properties of the Bantu applicative, specifically proposing an alternative analysis within the framework of Dynamic Syntax to its function from the valency-increasing analyses discussed in section 4.2. See also section 3.7 of the first part of this chapter for discussion of "non-canonical" applicatives.

noun and verb by suggesting they should be represented in tree-based constituency structures as the kinds of elements that can head syntactic phrases. The second is the *modular* approach, which treats information structure relations as potentially independent from constituency relations (see, e. g., Lambrecht [1994] for such an approach, though not one grounded in any particular formal tradition). Each of these approaches is discussed in turn in relation to how they have been applied to word order alternations sensitive to information structure configurations.

The cartographic approach assumes that there are well-defined syntactic categories of topic phrase and focus phrase and that these are generally "mappable" to specific positions in a universal syntactic structure. A typical kind of structure assumed by this approach is schematized by the tree diagram in (38), adapted from Rizzi (1997: 297).

(38)



The tree diagram in (38) only gives the uppermost structure of a clause under a cartographic approach, including elements like: TopicP (i. e., a full Topic Phrase), a Topic′ (i. e., a phrasal subconstituent of a TopicP analogous to the verb phrase in relation to a sentence), and Topic° (i. e., a word-level category corresponding to the head of a TopicP, which will, in many languages, be unexpressed). The more traditional constituents of a sentence, under this approach – for example, the VP and argument noun phrases – would be found within FiniteP (i. e., a Finite Phrase).

The cartographic approach to information structure has been applied to the analysis of the syntax of a number of different African languages (see, e. g., Aboh [2000] for Gun; Aboh [2007] for Gun and Aghem, among other languages, (though see also Hyman and Polinsky [2009] on Aghem); Frascarelli and Puglielli [2007] for Somali and Afar; Green [2007] for Hausa; and Letsholo [2007] for Kalanga). However, more interesting in the present context is the fact that data from Gun was specifically cited by Rizzi [1997], a seminal work in the development of the cartographic approach, to support an aspect of the model schematized in (38) that is not well-supported empirically in the European languages.

In particular, in European languages, one does not find overt topic and focus morphemes which could be analyzed as filling the Topic and Focus head positions in a tree like the one (38). Therefore, they cannot offer direct empirical support for their existence. Rizzi (1997: 287) offers Gun as a language with just the sort of

overt focus marker his approach predicts should be attested. A relevant example, containing a focus marker of form *wɛ̀*, can be seen in (39).

(39) Gun
Àmì lɔ́ wɛ̀ Kɔ̀jó zán.
oil DET FOC Kojo use.PERF
'Kojo used *the oil*.'
(Aboh 2005: 139)

With respect to modular approaches to information structure, we have already seen a case of a formal analysis adopting such an approach in 3.3.2 in the discussion of Bresnan and Mchombo's (1987) LFG analysis of subject and object markers in Bantu languages.[28] They devise a formal model of argument reference that distinguishes grammatical from anaphoric agreement, with the former being the sort of agreement generally found between, for example, subjects and verbs and the latter being the sort generally found between full noun phrases and pronouns with the same referents as those phrases. Crucial to their analysis was a formal separation of the notions of topic and subject, with the possibility that both subject and topic could be realized by the same syntactic element (e. g., the same noun phrase) or that they could become disjoint (e. g., when an object is topical and the subject is focused).

Another instance of a modular approach to the formal analysis of information structure can be found in Horvath (1995) (see also Horvath 1986), working within a transformationalist framework, who develops a model of focus wherein it is associated with a syntactic feature [+FOCUS] which is analogous to features related to morphosyntactic case. Variation in the realization of focused elements in syntactic structures, under her analysis, is taken to be conditioned by what kinds of syntactic elements (e. g., verbs or inflectional elements) can be associated with this feature. In justifying this approach, Horvath cites data from Aghem (based on Watters [1979]), Kikuyu (based on Clements [1984]; see also Bergvall [1987] and Schwarz [2007]), and Chadic languages (based on Tuller [1992]; see also Hartmann and Zimmerman [2007] for relevant recent discussion of focus marking in Chadic).

Two kinds of phenomena found among these languages are used to justify her approach, the presence of apparent fixed-position postverbal focus constructions in Aghem and Western Bade and the appearance of a focus marker prefixed to the verb in Kikuyu. Examples of each of these phenomena are exemplified in (40) and (41).

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[28] I should stress that by "modular" I do not mean that information structure is necessarily accounted for by reference to a specific information structure "module" in grammar. Rather, I mean simply that its analysis is taken to involve factors independent of constituent structure.

(40) Aghem
á *mɔ̀* *zɨ́* *ndúghɔ̀* *bɛ́-'kɔ́*
DS DPST eat who fufu.OF
'Who ate the fufu?'
(Watters 1979: 146)

(41) Kikuyu
nyina *ne-ɔ:nirɛ* *mwana*
mother FOC-see.TAM child
'The mother (did) see the child.'
(Bergvall 1987: 81; glossing by JG)

In (40), a subject content question construction is exemplified from Aghem. The inherently focused question word appears immediately after the verb, contrary to the canonical SVO word order in the language. In (41) a focus marker with the form *ne* appears prefixed to the verb to mark a kind of whole sentence/proposition focus. Under Horvath's approach, what distinguishes a language like Aghem, where focus is associated with a fixed position, from English, where focus can occur on elements in a range of positions in the clause, is that her proposed universal [+FOCUS] feature can only be assigned by a verb in Aghem, whereas in English it can be assigned more freely. Given generally assumed constraints regarding feature-assignment relations in transformationalist frameworks, at least since the development of Government and Binding Theory (see, e.g, Haegeman [1994: 139–186]), restricting the ability to assign a feature like [+FOCUS] to verbs effectively means that a focused element is predicted to appear only in a position structurally quite close to the verb, thus offering an account for the Aghem facts.

The Kikuyu data in (41) is viewed by Horvath (1995) as resulting from a somewhat different phenomenon. At issue is the fact that a focus marker, apparently marking whole-sentence focus, appears on the verb, rather than in a "high" (i. e., peripheral) position, following standard transformationalist ideas about the relationship between morpheme order and scope (see, for example, the discussion in 4.2.6). Nevertheless, Horvath (1995: 51–52) views this as in line with her general model assuming that a feature like [+FOCUS] can "spread" downward from an abstract high position in a clause to other phrasal heads below it.

Before concluding the discussion of formal approaches to focus in African languages, it is important to make reference to formal work that has been done on the focus system of Somali, discussed in detail by Bearth (1999: 140–146). Such work includes Saeed (1984), Lecarme (1991, 1999), and Svolacchia, Mereu, and Puglielli (1995). At issue is how best to analyze the distinction between the *baa*/*ayaa* and *waa* focus markers which "are said to function as markers of term [=argument] and predicate focus, respectively (Bearth 1999: 141)".

6.2.6.3. Cleft constructions

Data from African languages has been prominent in the discussion of cleft constructions at least since Schachter's (1973) consideration of apparent relationships between cleft constructions and relative clause constructions, where examples were drawn from various languages including Akan, Hausa, and Bambara. For example, the data given in (42) from Akan (Schachter 1973: 23) shows that, while there are noteworthy formal differences between, for instance, English clefts and Akan clefts, in Akan, just as in English, the backgrounded portion of the cleft construction is formally quite similar to the relative clause construction within that language.

(42) Akan

a. *Mìhúù* *àbòfrá*
1s.see.PST child
'I saw a child.'

b. *Mìhúù* *nò*
1s.see.PST 3s
'I saw him.'

c. *àbòfrá* *áà* *míhúù* *nó*
child REL 1s.see.PST.REL 3s
'a child that I saw'

d. *Àbòfrá* *nà* *míhúù* *nó*
child FOC 1s.see.PST.REL 3s
'It's a child that I saw.'
(Schachter 1973: 23; glossing JG)

As can be seen in (42c) and (42d), both relative clauses and clefts contain resumptive pronouns (the third singular pronoun *nó* in the examples), and both show the same tone marking on their verb – tone marking that is distinct from what is found when the verb is in a normal declarative clause, as in (42a).

While data from Hausa (Schachter 1973: 23–4) is argued to offer another case of a language where there is a close relationship between clefts and relative clauses, Bambara data is brought in to make a substantially different point.[29,30] Specifically, the internally-headed relative clause structures found in Bambara, exemplified in (43c) (Schachter 1973: 35; drawing on Bird [1968]), are argued to

[29] See also Tuller (1986: 52–74) for a transformationalist-oriented discussion of Hausa constructions taken to be instances of so-called *wh*-movement, including relative clause constructions and cleft constructions, among others.

[30] Another case of a formal analysis of cleft constructions from an African language worth mentioning in this context is Kihm's (1999) transformationalist study of clefts in Wolof (Atlantic; Niger-Congo), which assumes a comparable relationship between cleft constructions and relative clauses in that language.

present a problem for prominent transformationalist analyses of relative clauses that crucially involved the presence of a noun outside of the relative clause itself to account for their external syntax as noun phrases.[31] (The isolated grave accent in the examples in (43) represents a floating low tone [Bird 1966].)

(43) Bambara

a. *n ye so ` ye*
1s COMPL house DEF see
'I saw the house.'

b. *tyè ` be so ` dyɔ*
man DEF INCOMPL house DEF build
'The man is building the house.'

c. *tyè ` be n ye so mìn ye dyɔ*
man DEF INCOMPL 1s COMPL house REL see build
'The man is building the house that I saw.'
(Schachter 1973: 35)

In (43c) there is no "displaced" phrase-peripheral element serving as the head noun of the noun phrase containing the relative clause. Rather, the relative clause shows the same word order as the corresponding main clause in (43a). The primary marker of the relative clause construction is the marker *mìn* which occurs within the relative clause following the noun being foregrounded. Such a construction poses a clear challenge to analyses of relative clauses that are over-reliant on the relative clause patterns seen in European languages.

While cleft constructions of one kind or another are found in languages throughout the world, a particular construction, typically referred to as a predicate cleft, commonly found in certain West African languages, but rare in European languages, has been the subject of a fair amount of formal work in the transformationalist tradition. An example of such a construction is given in (44).

(44) Vata

pā n ká mɛ́ pá ā
throw you FUT it throw Q
'Are you going to *throw* it?'
(Koopman 1997: 71)

[31] I use the label "internally-headed relative clause" for the Bambara structure in (43c) quite informally. See Culy (1990: 30–36) for detailed discussion of how best to classify Bambara relative clause structures. Culy (1990) also covers a range of other issues in the formal analysis of internally-headed relative clauses drawing on data from various African languages in addition to Bambara, including Donno So, Tene Kan, Mòoré, and Maasina Fulfulde. For a more recent transformationalist treatment of internally-headed relative clauses with an emphasis on data from African languages, see Hiraiwa (2005: 189–248).

The structure in (44) contains two "copies" of the main verb of the sentence, one at the right edge of the clause and another in its usual clausal position. Like other kinds of clefts, of the sort exemplified in (42d), predicate clefts involve the appearance of a constituent in a non-canonical position near the beginning of the sentence. What is more surprising about them is the fact that this same constituent appears to be repeated in its canonical position later in the sentence. Thus, in (44), one sees two instances of the verb 'throw', *pā* and *pá*. This is in contrast to (42d), a cleft involving a noun phrase, where one sees a resumptive pronoun, rather than a repetition of the entire noun phrase itself, and it similarly contrasts with English noun phrase clefts where one finds a "gap" in the backgrounded clause.

The Vata data reveals an additional common feature of predicate clefts that the two versions of the predicate in the sentence need not be of the same morphological form – in Vata the two forms of 'throw' bear different tones. The general pattern seems to be that the version of the verb appearing in non-canonical position towards the left edge of the clause shows a morphological form that is, in some sense, less "verbal" (and often more "nominal") than the version of the verb found in canonical position, either because it bears explicit nominalizing morphology or because it is not inflected for the same range of verbal categories as the verb in canonical position (see also Manfredi (1993) and Kandybowicz (2006: 159–165) for relevant discussion within transformationalist frameworks). The predicate cleft form in Edo given in (45), for example, shows explicit nominalizing morphology on the instance of the verb appearing in non-canonical, right-edge position.

(45) Edo

a. *Òzó dé.*
Ozo fell
'Ozo fell.'

b. *Údémwẹ̀n ọ̀ré Òzó dé.*
NZ.fall.NZ FOC Ozo fall
'It is falling that Ozo did (not, say, rolling).'
(Stewart 2001: 87)

Predicate clefts have been the subject of numerous analyses in the transformationalist literature because they present special challenges to frameworks assuming that movement operations are central to syntax. Or, as Kandybowicz (2006: 151) puts it, "The theoretical allure of [predicate cleft constructions] is that they appear to involve movement operations, whose properties are otherwise unobserved elsewhere in natural language." The most striking property of predicate clefts in this regard is that, while the version of the verb at the right edge appears to be dislocated, there is no corresponding gap, or even syntactically "reduced" element like an auxiliary verb, elsewhere in the sentence corresponding to the position that this verb is supposed to have "moved" from.

Formal analyses of predicate cleft constructions involving data from African languages include Koopman (1984: 153–186) for Vata, Lefebvre (1992) for Fon, Ndayiragije (1993) also for Fon, Cho and Nishiyama (2000) for Yoruba, and Kandybowicz (2006: 143–238) for Nupe, among others.[32] Earlier formal analyses primarily restricted themselves to finding some way of handling these constructions within the particular theoretical devices available at a given time. More recently, these constructions have been analyzed under the rubric of the so-called copy theory of movement (see Kandybowicz (2006: 4–6) for relevant discussion in the context of a study of Nupe and Collins and Essizewa (2006) for an analysis of Kabiye data making use of this theory). This can be understood as a reconceptualization of movement operations in terms of multiple copies of an element appearing in a tree, but only some of which are overtly pronounced.[33]

As Kandybowicz (2006: 5) suggests, "The [c]opy theory of movement receives strong empirical support from instances of displacement that leave behind phonetically detectable copies," and predicate cleft constructions are good candidates for just such instances of displacement. This has shifted their status from grammatical oddities that had to be fit within existing theories in earlier transformational work to phenomena which play a central role in validating a new theoretical claim.[34] In recent work involving data from African languages, this is done in most detail by Kandybowicz (2006) (but see also Hiraiwa's [2005: 249–289] study of predicate clefts in Buli). He examines not only predicate-cleft constructions in Nupe but also another kind of emphatic verbal repetition exemplified in (46) where a "copy" of the sentence's main verb appears towards the right edge of the clause rather than the left edge as in a predicate cleft.

(46) Nupe

Musa	*è*	*gi*	*bise*	*gi.*
Musa	PRS	eat	hen	eat

'Musa *is* eating the hen.'
(Kandybowicz 2006: 67)

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[32] The interested reader is referred to Kandybowicz (2006: 144–146) for a comprehensive list of references, including references on studies of predicate cleft constructions in Atlantic creoles where their presence is likely, at least partially, due to substrate transfer from West African languages (cf. the discussion of serial verbs in 4.3).

[33] See also Kobele (2006: 241–247) for discussion of Yoruba data involving relativization on predicates – also apparently producing multiple copies of a verb surfacing in a single sentence – within the context of the copy theory of movement.

[34] However, see Aboh (2006) for explicit arguments, within a transformationalist approach, against a formal analysis of predicate clefts under the rubric of the copy theory of movement.

While structures like these do not appear to be uncommon, especially if one also considers cognate object constructions, as exemplified from Edo below in (47), they have not been subject to as much formal analysis as predicate clefts.[35] Nevertheless, they, too, are clearly amenable to an analysis within a copy theory of movement in much the same way as long as one can justify that the two instances of the verb are, in some abstract sense, both simply instances of the "same" verb syntactically.[36]

(47) Edo
Òzó khián (òkhián).
Ozo walk PFX.walk
'Ozo walked.'
(Stewart 2001: 93)

It is the case, then, that predicate clefts found in West African languages (and additionally other kinds of constructions wherein one finds repeated verbs) have played a role in supporting a refinement to a particular version of transformational syntax. However, the situation with respect to the impact of these analyses on descriptive and comparative studies of African languages remains similar to some earlier cases: While a good deal of new data has been collected for these studies, much of it quite interesting and some of it even taking a comparative perspective (e. g., Hiraiwa [2005: 283–288]), the formal analyses themselves are less compelling from a generalist perspective. The Minimalist approaches, typical of contemporary transformational analyses, in particular, make such extensive use of technical terminology that they are not likely to be accessible to those not well-versed in the details of the framework.

6.2.7. Conclusion: The state of African languages and formal morphosyntactic theories

Despite its relative length, a survey such as this one still cannot be said to offer complete coverage of formal work on the morphosyntax of African languages. Given just how many African languages there are in the world, this is hardly surprising. Nevertheless, it is striking that the languages of sub-Saharan Africa are,

[35] Kandybowicz (2006), however, does not present a formal analysis of cognate object constructions. See Bond and Anderson (2014) for typologically oriented discussion of cognate object constructions.

[36] See also Torrence (2005: 232) for brief discussion of a verb-copying construction involving relativization on a verb in Wolof and Ndayiragije (2000: 497–511) for discussion of verb-phrase internal copying in Fongbe (aka Fon), both from a transformationalist perspective.

outside of Bantu and various Benue-Congo and Kwa languages, relatively unexplored formally. Nilo-Saharan languages are scarcely represented (though one can find some exceptions such as Cable [2012]) on Dholuo as are Khoisan languages (though, again, one can find exceptions such as Collins [2003]). Afro-Asiatic is better represented (see, e. g., 3.3.3), but, even then, not in a way that reflects the full diversity of the family.

Moreover, formal work has often tended to involve the reanalysis of the same areas of grammar (e. g., double object constructions in Bantu, as seen in section 6.2.4.2.7) rather than exploration of new areas. As is clear from the first part of this chapter, many more African grammatical patterns await detailed exploration from typological and theoretical perspectives than has happened to this point.

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7. Anthropological and cognitive linguistics in Africa

The Article that was to appear in this section has been omitted.

8. African socio- and applied linguistics

H. Ekkehard Wolff

8.1. Introduction

Africa hosts, depending on the criteria for counting, up to more than 2,000 indigenous languages, each with its own dialectal or other varieties. Given current estimates of 6,000 to 7,000 languages worldwide, Africa is thus home to about one-third of all languages spoken today, in addition to some known extinct ones. The conflicting estimates of the number of living languages reflect conflicting definitions of what is counted as a "language" and what is assumed to be a "dialect" or a variety of a given language. Multilingualism, therefore, in all its complex manifestations, lies at the heart of African socio- and applied linguistics.

Multilingualism, however, is more than just the sum total of languages that happen to be spoken in a given territory. Numbers alone do not describe a multilingual situation, as explained in a document compiled for the Intergovernmental Conference on Language Policies in Africa, held in Harare, Zimbabwe, in 1997:[1]

> The numbers conceal facts which need to be brought to light for a better understanding of the context and the challenge of multilingualism. In Nigeria 397 languages out of 410 are 'minority' languages, but the total number of their speakers account for 60 per cent of the population. Among them are several languages with more than 1 million speakers, with a few of them having a number of speakers close to 10 million. Similar phenomena are observed elsewhere and compel a departure from 'numerical muscle' as a decisive criterion in language planning.
>
> In a survey related to the case of Nigeria, the number of languages spoken by each of the subjects of the speech communities studied ranged from two to five as follows: 60 per cent of the subjects spoke two languages; 30 per cent three; and 10 per cent over four languages. A similar observation could be made regarding many if not all the African countries, where there is a widespread tradition of handling multilingualism. Often there is a complementary distribution of this multilingualism across languages by sectors of activities. The multilingualism is not only functional or commercial; it cuts across the whole social fabric.

Linguistic research on multilingualism in Africa, therefore, involves more than counting languages and numbers of speakers. Rather, it considers the many questions and problems that arise in a multilingual environment – issues of language status and language function, of language distribution and language vitality or

[1] The document that was prepared for the conference (most likely by a team of UNESCO researchers) was distributed there, and a copy was made available to me. I am not aware whether and where it was published.

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endangerment, of language use and language barriers, of language planning and language management, and of language policies and language politics. Additionally, and related to all of this, it examines the attitudes that speakers have toward their own and other languages. Language attitudes are tied to social and educational background, often conceal a hidden agenda, and reflect the history of the particular polity. In the end, it all boils down to issues of language and power (cf. section 2 of this chapter) and of access to quality education with subsequent privileged access to governmental positions and national resources (cf. section 3 of this chapter). Given that Africa has been subjected to Arabo-Islamic conquest, Christian missions, and European colonialism over many centuries, and considering the more recent impact of globalization and the new hegemonic desires dawning in China and other emerging economies, the "language question" is intimately linked with the overall issues of economic "development" and sociocultural "modernization"[2] (cf. section 4 of this chapter). Not least, Africa's dynamic urbanization dramatically affects patterns of language use as well (cf. section 5 of this chapter). Presently, more than one-third of Africa's population of about 1 billion people live in urban areas, and it is expected that by 2030 about half will.

Whereas various subfields of African linguistics – documentary and descriptive, historical and comparative, typological and areal/contact – may concern themselves, and legitimately so, with studying language and languages *per se*, approaches to multilingualism in Africa and the problems and prospects resulting from it are automatically concerned with the speakers of these languages – past, present, and future. African socio- and applied linguistics, therefore, is centrally concerned, apart from legitimate topics of purely theoretical and methodological concern within academia, with questions of how languages, how the study of languages, and even how the linguists who study languages can assist the speakers of those languages to reflect on and improve their conditions of life, to overcome hunger, poverty, and disease, and to gain access to quality education that will allow them to fully participate in the public matters of their polities and to profit from their respective national resources. The currently dominant paradigm of socio- and applied linguistics in Africa, therefore, is "language(s) as resource(s)", and this will provide the connecting thread for this chapter. Clearly, taking this research

[2] In this chapter, I shall accept the controversial terms "modernization" and "development" at their face value of everyday media usage without delving into a discussion of who, for instance in the African context, "modernizes" or "develops" whom or what in whose interest and according to whose ideology and value system. Obviously, postcolonial African societies are caught between a rock and a hard place when it comes to the ubiquitous conflicts between "tradition" and (post-)colonial "modernization/development" in terms of identity, value systems, economic and political activities, cultural or religious practices, and – not least – language use. African sociolinguistics, in its applied dimension, is continuously forced to address these and related issues.

paradigm seriously brings socio- and applied linguistics into the neighborhood of language activism, particularly when connecting its salient issues to a more general discussion of human rights. Further, and at this point in time, questions may be raised as to whether the time has not come to accept that "the white man's burden" has become "the black man's [own] burden" (Wolff 2012: 95; if a regression into racial terminology is acceptable in this context). What, may we ask, have African independence fighters and national leaders done since independence, some fifty years ago, in order to overcome the colonial legacy in terms of language imbalances and impediments for the sake of mental, cultural, and full political and economic decolonization? Has it been enough, to quote a popular figure of speech, to put "black faces in white places"? What impact can be expected from mainly internal African discourse on the African Renaissance and the New Partnership for Africa's Development (NEPAD) when all this is discussed without reference to the language issue? Can there really be an African Renaissance without African languages (cf. Alexander 1999)?

8.1.1. Defining the scope

The division between sociolinguistic and applied linguistic research in Africa is somewhat hard to draw and, as a matter of fact, may not be relevant at all outside purely academic circles, in view of the manifold sociocultural, political, and economic challenges regarding the status, functions, and uses of language – or rather, languages – in postcolonial Africa. Choosing a linguistics-based research perspective on the African multilingual context almost automatically leads one to an integrated approach that could aptly be called "applied African sociolinguistics". Nevertheless, much would still depend on any author's own outlook on or definition of the subfields of sociolinguistics and applied linguistics in their reference to Africa. Starting off this chapter with more or less received definitions, however, may serve to sketch out and delineate, in a less idiosyncratic manner, the programmatic perspectives of current and future socio- and applied linguistic research in the African context.

8.1.1.1. Sociolinguistics

Stated in a trivial manner, sociolinguistic research focuses on the interface between and common ground of two fairly autonomous scientific disciplines, linguistics and sociology, whose primary concerns are language and society, respectively.[3]

[3] In this chapter I will not draw a distinction between sociolinguistics proper and the sociology of language, as some authors do. I would allow for different and fully legitimate complementary approaches to fields of shared interest between the several disciplines that, each of them, may, in a more or less pronounced way, reflect the particular theoret-

Within sociolinguistics, there is a considerable breadth of concerns and approaches that may carry varying overarching labels depending on the school of thought. We may wish to distinguish three major but interlocking lines of study based on more or less pronounced research priorities.

A pronounced *linguistic* (or *micro-sociolinguistic*) approach deals with the correlation of linguistic variants and sociological variables, such as age, gender, ethnic and/or cultural and/or educational background, etc. In highly multilingual (and, quite likely, also multicultural, multiethnic, and often multireligious) countries and societies, as is the rule in the African context, we would be dealing with both (a) aspects of *individual multilingualism*, in terms of simultaneous, successive, and possibly incomplete language acquisition (the latter resulting in partial or multiple *semilingualism*) as features of the linguistic biographies of individual speakers, and (b) instances of relatively stable or consolidated *sociocultural multilingualism* of whole speech communities, in terms of the accepted everyday use of several languages, which could testify to a widespread or complete absence of monolingual mother tongue/L1 speakers in that community. In the African context, we would also expect specific ethnolinguistic parameters governing patterns of verbal and non-verbal interaction to be a topic of salience, not only in the fundamental terms of speech act theory (Austin 1962; Searle 1969) but also along the lines of culture-specific contextualization as described, for instance, in much of Dell Hymes's work, in an approach that has become known as the ethnography of speaking (cf. Hymes 1962).

A pronounced *sociological* (or *macro-sociolinguistic*) approach deals with norms and patterns of language use in view of prevailing attitudes toward language(s), identity, and issues of language and power. Research encompasses salient parameters of the political and economic history of the speech community under research, as well as the ideology, ethnic, and linguistic diversity of the polity, social class (elites versus masses), etc. In highly multilingual countries and societies such as we find in the African context, we would be dealing with aspects of both *territorial multilingualism*, in terms of nation-state profiles, and *institutional multilingualism*, in terms of (at times controversial) language policies and their (at times incomplete or lacking) implementation and acceptance.

Finally, in the African context, and quite prominently so, there is a relatively new research paradigm, which surfaced in the 1990s. It views language as a

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ical and methodological background of the researcher, for instance, as a linguist or sociologist, or likewise as an anthropologist, educationist, political scientist, etc. Speaking here about sociolinguistics in the African context in such a rather broad perspective, I would, therefore, include approaches to issues of "language and/in society", also from the perspectives of psycholinguistics, educational and pedolinguistics, anthropological or ethnolinguistics, political science, and economics – the latter, in particular, within the framework of "development studies".

resource and, therefore, considers Africa's ethnolinguistic plurality and diversity a positive asset in need of cultivation and exploitation for further sociocultural modernization and economic development. Thus, and particularly so during the past two decades, "language and development" has emerged as a prominent area of sociolinguistic research and publication, and it has received some ideological underpinning from the African Renaissance rhetoric in African political circles, even though the language question is not explicitly raised there.[4]

8.1.1.2. Applied linguistics

Starting again with a trivial definition, we may say that applied linguistic research deals with "language-based problems". Applied linguistics aims to provide the theoretical and methodological tools needed to apply the research findings and techniques from linguistics and related disciplines – in an interdisciplinary manner – to solve practical problems in society that have to do with language. Language-based problems could be expected to correlate with features and degrees of territorial, institutional, stable sociocultural multilingualism, not to forget individual multilingualism, in multiethnic and multicultural societies such as we find in Africa.

In the African context in particular, applied linguistics relates to issues of language teaching (with different target languages: mother tongue/L1, second languages/L2, foreign languages/L3), human language technology (e. g., speech recognition and production, machine translation, automatic spell-checkers, etc.), and language use for special purposes, such as in advanced technology, science, medicine, law, education, etc. There are also fuzzy borders with sociolinguistic issues such as language policy and planning, language and human rights, language standardization and harmonization, and language and literacy, among others. Figuring prominently on the agenda for applied linguistics in Africa, therefore, are issues related to

- helping planners and legislators to develop and implement a language policy;
- helping groups develop texts, materials, and literacy programs in previously unwritten languages for use in formal or non-formal education;
- developing effective programs to help out-of-school children and adults (who may have limited if any prior education);
- developing literacy in the languages that speakers will need in addition to their mother tongues for survival and for occupational purposes; and
- developing an out-of-school reading culture (postliteracy) in the absence of pre-existing literary environments for, mostly, previously unwritten languages.

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[4] Attention is directed to much of the writing of the late Neville Alexander (for instance, 1999a, 1999b, 2003, 2012); cf. also Kembo-Sure et al. (2006) and Wolff (2003, 2011, 2016).

8.1.1.3. Socio- and applied linguistics in the African context

Both sociolinguistics and applied linguistics are about promoting the study of language to assist people in solving their language-based problems and achieving their educational, occupational, and social goals through more effective communication. In Africa, this also includes empowering marginalized (disempowered) indigenous languages and their speakers by providing multilingual models for communication (including education) in a complementary relationship with international languages of wider communication such as English, French, Portuguese, Spanish, and Arabic.

Over the roughly half a century that sociolinguistics has existed as a linguistic (sub)discipline, the literature has grown tremendously. This is also true for applied linguistic research. With regard to Africa and other parts of the "third world", as it used to be called, the "invention" of sociolinguistics coincided, not by chance, with the end of colonialism and the emergence of newly independent states. A full account or survey would go far beyond the limits of a chapter and deserve a book, if not several volumes, by itself. Therefore, this chapter can do no more than present a highly selective review of past and present socio- and applied linguistic research on Africa, and thereby – unavoidably – mirror some of the author's own topical preoccupations and whimsies.[5]

8.1.2. Issues and trends in socio- and applied linguistics in Africa

With but a few notable exceptions, such as Ethiopia and Liberia, African countries and their populations have, in the past, undergone persistent periods of Arabo-Islamic conquest and/or European colonialism that resulted in, among other things, the presence of languages exerting and symbolizing hegemonic power – a situation that has largely continued after independence. Further, African countries are presently subject to regimes of globalization that are likely to perpetuate linguistic, political, economic, cultural, and religious hegemonic domination and dependencies. The formally independent postcolonial states tend to maintain center–periphery relationships with their former colonial masters, which, to different extents, perpetuate dependencies under the guise of a shared language, most of all, and a claimed superiority of European "civilization" over traditional African cultures. Examples are the anglophone Commonwealth of Nations, the francophone Organisation Internationale de la Francophonie, the hispanophone Organización

[5] Some of the issues in this introduction have already been treated by the same author on previous occasions in overview-type surveys (such as Wolff 2000, 2011a, 2011b, 2012, 2013). These treatments have been incorporated into the present chapter without being marked as direct quotations. Beyond that, I have tried to give much space to African voices, purposefully and in particular with direct quotations, in order to honor the dynamically growing impact of African scholarship in this field.

de Estados Iberoamericanos para la Educación, la Ciencia y la Cultura, and the lusophone Comunidade dos Países de Língua Portuguesa. Along similar yet different lines, mention could also be made of the arabophone League of Arab States and, though it is restricted to linguistic and literary issues, the Nederlandse Taalunie (Dutch Language Union), of which South Africa is a member. The African context, therefore, is charged with more or less open and aggressively propagated hegemonic claims of "dominant" languages of extra-African provenance, which create a situation of fatal rivalry for many African mother tongue/L1 languages. As Mufwene (2001: 173) has pointed out, languages compete for speakers within the same domains of use. In Africa, foreign (ex-colonial) languages compete with the major African languages, that is, the most widely spoken lingua francas/L2 – those with several millions of speakers – in the domains of official communication and formal education. On the other hand, these widely spoken lingua francas/L2 themselves become "hegemonic" threats to the smaller African languages in the shared domains of lower primary education and, more generally, everyday usage.

The situation as described above is not a new development in recent African history, although it does involve predominantly extra-African languages. The existence of hegemonic lingua francas in Africa predates the advent of colonialism and is responsible for the existence of many present-day cross-border languages of inter-African communication, which can be traced back to powerful hegemonic empires of the past. In West Africa, for instance, the medieval empires of Ghana, Mali, Songhay, as well as the Kanem-Bornu Empire – which thrived for more than a millennium – and the succession of the Hausa States, including the nineteenth-century Sokoto Caliphate, all helped spread lingua francas over vast territories in pre-colonial times.

Some forty years ago, and in keeping with the then still popular separative approach to African linguistics, the state-of-the-art account in the seminal series Current Trends in Linguistics, edited by Thomas Sebeok in the early 1970s, used three different volumes to cover the field. By making reference to the organization of the series we can illuminate some ways in which African linguistics has advanced as a discipline in its own right:[6]

[6] African linguistics as a discipline in its own right corresponds to what German-speaking scholarship refers to as *Afrikanistik*, which emerged as an academic subject in Berlin, Leipzig, Hamburg, and Vienna in the late nineteenth and early twentieth centuries (cf. Wolff 2013 [ed.]). Wolff (2012) describes the growth of autonomous African linguistics from its beginnings in the colonial period of Imperial Germany into a globally spreading comprehensive trans- and interdisciplinary field of study with a growing interest in sociolinguistic issues and with its own conference series, the World Congress of African Linguistics, first held in 1994.

1. Quite characteristically in those days, the Afroasiatic languages, the vast majority of which are spoken in Africa, were dealt with separately from all other African languages in the third section of volume 6 (*Linguistics in South West Asia and North Africa*, 1970). This clearly reflected the generally accepted yet biased perspective on their implicitly, if not explicitly, postulated non-African origin. Further, a likewise accepted yet biased Semitocentric view was reflected in the separation of Semitic languages (Ethiopic and South Arabian) from other languages (Egyptian, Coptic, Cushitic, the Berber languages), still reminiscent of the obsolete "Hamito-Semitic" hypothesis that grouped together all non-Semitic languages of the phylum as "Hamitic". More recent work on Afroasiatic languages tends to assume a less biased perspective, both in terms of linguistic geography and Semitocentrism, possibly fostered by the fact that the African *Urheimat* hypothesis of Proto-Afroasiatic has gained wide acceptance among mainly non-Semiticist scholars. Also, the still disputed position of the Omotic languages as a separate family, or as belonging to the Afroasiatic phylum at all, has since been a constant point of attention in overview treatments.
2. Volume 7 (1971) was titled *Linguistics in Sub-Saharan Africa*. In addition to accounts of the historical development of (sub-Saharan) African linguistics, and the introduction of African language families based on the then still fairly new classification by Joseph H. Greenberg (1963), this volume addressed a set of topics that had been particularly virulent in African applied and sociolinguistic research up to that time. They have lost little of their relevance today, as we shall see later in this chapter, even though the labels "sociolinguistics" and "applied linguistics" were not used in any overarching organizational function (rather, they were reserved for yet another volume, cf. below). The contributors dealt with topics such as pidgins and creoles, colonial policies and their legacies, Christian missions and language policies, language teaching, problems of literacy, orthographic systems and conventions, multilingualism, languages in contact, and language standardization, plus the somewhat ephemeral topics of surrogate languages and linguistic aspects of style. We note that in the present book, which has been put together almost forty-five years later, these topics still deserve to and will be addressed, albeit under the comprehensive cover term of African socio- and applied linguistics (or simply applied African sociolinguistics), with the exception of languages in contact, which is covered separately in chapter 3 of this volume.
3. In 1974, volume 12 appeared under the title *Linguistics and Adjacent Arts and Sciences*. The third section contained a fair number of topics and fields of research that would commonly be treated under the label of sociolinguistics today, including the two complementary perspectives of "sociolinguistics proper" (by J. B. Pride) and "sociology of language" (by J. A. Fishman). Other contributions were on linguistics and economics and, figuring promi-

> nently with a total of six subchapters, linguistics and education. It is interesting to note that even after forty years, we are still only slowly coming to grips with the interface between language and economy. The issue of language in education, however, has governed much of the sociolinguistic debate up to the present day.

By the time another major introductory reader on African linguistics was published (Heine and Nurse 2000), almost three decades after Current Trends in Linguistics, African sociolinguistics had established itself as a popular subdiscipline of African linguistics whose major domains of research were delineated by the present author as follows (Wolff 2000: 298–347):

- language variation (language versus dialect, social stratification, identity and language, sociophonetics and linguistic accommodation, language as a social bond, language use in African cultural contexts, language attitudes, language as a barrier)
- the social and cultural dimensions of language change (language change in time: the diachronic perspective; language change in space: the dialectological perspective, including urban dialectology)
- multilingualism (individual multilingualism, including code-mixing, language functions, institutional multilingualism, and diglossia; lingua francas, including pidgins, and creoles)
- languages under stress (language shift and language death, language maintenance)
- language planning (language standardization: determination, codification, elaboration, implementation, cultivation, harmonization)
- language and politics (endoglossic versus exoglossic policies)

The coming of age of African sociolinguistics, in particular with reference to the innovative "language-as-resource" paradigm that had gained ground in the late 1990s, was again discussed in a survey (Wolff 2012) that, in a prominent way, looked at "the role of the 'language factor' in education for the exploitation of the full potentials of African cognitive creativity and ingenuity which is … considered to be one of the core issues of modern applied African sociolinguistics" (Wolff 2012: 93). Another topic of salience was the "building of civil society, allowing mass participation in democratic development, and overcoming the postcolonial class divide in most modern African societies". Making reference to the more recent language-as-resource paradigm, the author claimed that the postcolonial language policies in place have come under increasing critical analysis as far as they allow

> … the strong presence of the ex-colonial languages as languages of power under the label of 'official languages'. These official exoglossic languages of power are effectively spoken only by a minority of a given country's populace, clustering in the capital

> and other major cities. They have created a postcolonial social cleavage between those few who master the language of the former colonial master and have taken over the colonial state from them, and those who do not master the imported language and who suffer from their institutionalised exclusion from upward social mobility, full democratic participation, and access to the national resources and power. This social class divide has been created and continues to be fostered by the discriminating filter of the formal educational system, most of all, which rests largely on the octroi of a foreign (ex-colonial) language. About 20 years after the end of bi-polarity and "cold war" between the two post-World War II super-powers, democratisation and multi-party systems have begun to take root in Africa. However, attempts at decentralisation of political and administrative structures in favour of increasing the input from the existing "plurality from below" are counter-balanced by the effects of "globalisation" which tend to stabilise the pre-existing political and cultural mono-cultures inherited from the colonial past … African sociolinguistics is called upon to critically monitor the effects with regard to the balance of power between both the inherited exoglossic official language(s) and major indigenous "national languages" and among the various indigenous languages of the vastly multilingual African countries, in particular with regard to the still pending empowerment of "minority" languages and, most of all, their speakers (Wolff 2012: 94–95).

In keeping with these new trends, the 2009 World Congress of African Linguistics (WOCAL 6) allocated two different sections to African socio- and applied linguistics: one for sociolinguistics proper and one focusing specifically on language and development, covering issues of language, poverty reduction, and sustainable development (cf. Bennett 2012).

Summarizing our short survey and historical account, we could say that rather than undergoing any drastic changes of perspective or priorities, African socio- and applied linguistics has instead consolidated and focused the scope of its research under the new paradigm of language as resource. It maintains its trans- and interdisciplinary approaches to language-based problems for speaker communities in Africa irrespective of numerical muscle, studying both majority (at times referred to as "national") languages, with millions of L1 and/or L2 speakers, as well as minority languages, which are spoken by several hundreds of speakers at most and may well be on the verge of extinction. Many of the earlier topics continue to be discussed, even though priorities may have shifted. A recurring theme that stills tops the agenda is the double-edged issue of language(s) in education, that is, the "challenges in the language classroom" (Muthwii and Kioko 2004: 1), with regard to the role of both the African mother tongues and the exogenous official languages of non-African provenance.[7] Unbalanced language attitudes, contami-

[7] One of the early milestones in applied African sociolinguistics is *Mother Tongue Education. The West African Experience* (Bamgbose 1976), which, among others, introduced the since famous Yoruba-English Six-Year Primary Project and the Rivers Readers Project (involving 15 local languages) in Nigeria to a wider public; both projects have become widely quoted models of reference.

nated by discriminatory Eurocentric perspectives deeply rooted in at least latently racist notions stemming from the colonial past, still haunt the debates on mother tongue–based multilingual strategies for national and cross-border communication in Africa, quality education, and global exchange.[8]

While questions concerning language, national identity, and nation-building have been on record for some time, since the independence of many African countries around 1960, the new language-as-resource paradigm has generally received much attention since the mid-1990s within a more comprehensive discourse on development in Africa.[9] Yet "the effects of the language policies adopted since independence" (Muthwii and Kioko 2004: 1) in Africa are still of much concern and remain widely discussed. Some new topics have come to the fore and figure prominently in fervent debates, such as that on language and human rights (cf. Skutnabb-Kangas and Phillipson 1995, who also address language rights in post-colonial Africa) and, also connected with the human rights debate, the issue of language "endangerment", both in terms of general linguistic diversity and individual languages in particular.[10]

Another fairly recent topic in African sociolinguistics deals with language in the urban space. Here we observe the almost ubiquitous emergence of new *lifestyle registers*, which originated among younger – originally socially marginalized – speakers but are now being widely used by urban youth of all educational backgrounds and also appear to carry a more or less pronounced anti-establishment ideology.[11] Also, linking up with mainly urban patterns of language use, questions of multiple incomplete language acquisition in multilingual societies are emerging that have just begun to be studied seriously in the educational context: more and more young Africans would appear to grow up with insufficient competencies in both their African mother tongue/L1 and the exogenous official language of the country – a situation that could be referred to as *multiple semilingualism*.

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8 Cf. the already classic account *Language Attitudes in Sub-Saharan Africa. A Sociolinguistic Overview* by Efurosibina Adegbija (1994).

9 It may not be a coincidence that, for instance, Bamgbose's influential book *Language and the Nation. The Language Question in Sub-Saharan Africa* (1991) appeared just before the groundbreaking book by Florian Coulmas, *Language and Economy* (1992), which, however, refers to African languages, mainly Swahili, only in passing (pp. 192–196). More recently, globalization begins to appear in the debates: some authors rank "the relationship between language and economic development, and the continent's response to globalisation" among the "five major issues that are essential to an understanding of present-day developments in the use of languages in Africa" (Muthwii and Kioko 2004: 1).

10 Among the rich and growing literature on this topic, selective reference is made to Brenzinger (1998, 2007), Batibo (2005), and Childs (2010).

11 Cf., for instance, Kiessling and Mous (2004), Mc Laughlin (2009), and, as a case study monograph on Nouchi, Kube (2005).

In the following sections, the present chapter will attempt to highlight some of the salient issues of both older and younger vintage that are identified as governing most of the presently ongoing socio- and applied linguistic research and debates on and in Africa. We will do so under the following headings under the *proviso* that, as a matter of fact, all of them are interrelated, and one of them cannot and should not be studied without due reference to the others:

– language and power
– language and education
– language and development
– language and the city

Note also that the concatenation in these headings does not imply a kind of theoretical and analytical autonomy of the terms, as if language was somehow unaffected by power, something separate from education and development, or something that exists independently of the places it is spoken. This would be the perspective of descriptive and/or theoretical linguistics. Rather, in the sociolinguistic as much as the ethnolinguistic perspective, language is or has power (or is powerless) as both an instrument and a symbol, the language deployed in education and development may have positive or detrimental effects, and the ways language is used in both urban and rural contexts directly reflects those specific sociocultural habitats.

It may need pointing out again that contrary to much of the previous work in African sociolinguistics, the present chapter does not restrict its perspective to sub-Saharan Africa but, as a matter of principle, includes North and Northeast Africa in order to encompass the widely arabophone and partly berberophone parts of the continent as well.

8.1.3. Specific features of the "language question" in Africa

8.1.3.1. The legacies of the past

Contrary to earlier Western misconceptions that Africa was home to peoples, cultures, and languages without history – a line of thought that fostered religious and "civilizing" missions as much as colonialism – Africa's distinctly multilingual linguistic landscapes, past and present, reflect the complex results of historical events of considerable impact, also with regard to the distribution of and functional differentiations among languages. The present picture has arisen from both internal and external factors that affected African history over long periods of time, starting in prehistoric times with the likely emergence of human language as such in the cradle of mankind, in Africa, before anatomically modern *Homo sapiens* subsequently spread out across the other inhabited continents, leaving behind languages in Africa that became ancestral to the Niger-Congo, Nilo-Saharan, and

Khoisan "residual" African language phyla.[12] Depending on the identification of the *Urheimat* of Afroasiatic, if assumed to have been outside Africa, namely in the Fertile Crescent of the Middle East, a migration into Africa some 10,000 or more years ago, with subsequent ancestry to now extinct Egyptian and present-day Berber, Chadic, Cushitic, and possibly Omotic languages, would have constituted one of the most dramatic geolinguistic events in African linguistic prehistory. There would appear to be more clarity on the partial (re-)migration of Semitic languages from South Arabia to the Horn of Africa some 3,000 years ago, with subsequent constitution of the ancestry of the present-day Ethiosemitic languages in Ethiopia and Eritrea, which has changed the linguistic map of Northeast Africa to a considerable extent. Even more dramatic was the so-called Bantu expansion, possibly somewhat earlier (3,000–4000 years ago), which started in the assumed area of origin in Eastern Nigeria and Cameroon and eventually covered most of the southern part of the continent, to the likely detriment of earlier populations and their languages (Khoisan, Pygmies?) in the Central African Congo Basin and the East African savanna from modern Kenya to South Africa.

The next event of comparable impact on the language map of Africa was the spread of Islam from the seventh century onward, bringing with it a hegemonic role of written as much as spoken Arabic over the northern parts of Africa, later spreading south to the Sahel of western and central Africa, and along the coastal areas of eastern Africa. This was, much later, matched by the impact of colonialism, which brought "world languages" such as English, French, Portuguese, and Spanish, but also Dutch, German, and Italian into Africa with strong hegemonic force as the languages of the "colonial master". In pre- and early colonial times, sea trade (including slaves) across the Atlantic and the Indian Oceans had already created contact situations that were favorable to the emergence of pidgin and creole languages to which both African and non-African languages contributed. In a kind of symbiotic relationship with Christian missions, languages of European provenance became powerful symbols and instruments of colonial government and administration, education, and religion, and they remain "languages of power" today in most parts of Africa. Subsequent to and as part of European colonialism, work force migration from Europe and particularly the Indian subcontinent brought several other extra-African languages to the continent that survive as "ethnic", "minority", or "religious" languages until this day. Most recently, intra-African work force migration has added to the complexity of the picture, as numerous communities of African migrants from distant origins try to make a living in many of the major cities on the continent. A case in point is the presence

[12] For purposes of convenience and easy reference I use the still widely applied Greenbergian designations for the four major African language phyla: Afroasiatic, Khoisan, Niger-Congo, and Nilo-Saharan (cf. chapter 2 for more recent insights into the classification of African languages).

of many West Africans, particularly Nigerians, in the major cities of South Africa and in Botswana, in addition to labor force migration into the industrial centers of South Africa from neighboring countries such as Zimbabwe and Mozambique.

The complex linguistic landscape in Africa, therefore, is made up of various types and degrees of multilingualism stemming as much from the continent's rich past as from its globalizing present. This accounts for the observation that we find, depending on the source, up to 2,000 or more "African languages" being spoken, in addition to a fair number of other (extra-African) "languages in Africa" whose presence and impact have their roots in history. Clearly, therefore, types and manifestations of and problems related to multilingualism remain the central issues of African socio- and applied linguistics.

8.1.3.2. Linguistic imperialism and the postcolonial class divide

It is an axiomatic assumption that, in multilingual societies, languages are not "neutral" but enter into a differentiating and competing relationship with other languages, based on the particular symbolic and instrumental values that become attached to them. The symbolic values involve perceptions of identity and real-world status in terms of power and prestige. The instrumental values have to do with education, social and geographic mobility, access to jobs, etc. Such perceptions create and perpetuate attitudes toward languages: to one's own mother tongues/L1 as much as toward second (L2) or foreign (L3) languages ("mother tongue", "other tongue", "further tongue"; cf. Brann 1980).

When linked to historical events that affect power relationships or create new patterns of hegemonic dominance, emerging multilingual situations automatically impose inequalities on the languages involved – and on their speakers: languages of power, together with the factual political, economic, or religious power of their "owners", are imposed on pre-existing languages and population segments that become, or are perceived as becoming, "disempowered". When force comes into play, the conditions for linguistic (often together with political, economic, military, cultural, religious) imperialism are met. Arabicization accompanied by military and religious as much as demographic power in much of North Africa imposed on, for instance, Berber-speaking minorities is as much a case in point as is European colonialism in sub-Saharan Africa, which was accompanied by military force and political power. Foreseeably, postcolonial globalization, which rests on the impact of economic power, will bring new players like China to Africa; the country's Confucius Institutes – government-supported non-profit organizations that promote Chinese language and culture – are already doing their best to introduce Mandarin as a new language of power in Africa.

After independence, a new class of African elites took over the colonial state ("black faces in white places"). As a rule, this group consisted of a chosen few and their sons (less so daughters!) who had been admitted to quality education

provided by institutions of the former colonial master and who thus became the cornerstones of a new class. This was noticed quite early on by the French Africanist Pierre Alexandre (1962, English translation 1974, quoted in Alidou and Jung 2002: 65), who observed: "The use of French in Francophone Africa has created a new non-tribal or supra-tribal group, which … has frequently become a kind of oligarchy or class, because of its monopoly of this very special and powerful intellectual instrument or tool."

The same observation was later confirmed by Kahombo Mateene (1980, also quoted in Alidou and Jung 2002: 65), who maintained that the colonial and post-colonial education and language policies had divided the African populations into

> [t]wo national groups, a linguistic division which has been based on the fact that one group knows better the colonial language, has got access to an education considered better, whereas the other group, in fact, the majority, only knows the national African languages, which by government decision, give it no right of access to useful and valuable education, and consequently condemns it to remain always an ignorant class, dominated.

Somewhat strangely, issues of language and education were left largely untouched by the African nationalism that emerged during the anti-colonial struggle for independence. In *The Role of Language in the Struggle for Power and Legitimacy in Africa,* Abiodun Goke-Pariola (1993: 55–56) provides a lucid description of the topic with a narrower focus on Nigeria, concluding:

> In English-speaking African countries such as Nigeria nationalism was the consequence of the colonial policies. It is, however, unfortunate that this nationalism did not really spread to matters of language choice and use …
> Thus, we see an unholy convergence of political, administrative, economic and linguistic policies in the shaping of the course of history in much of Africa … One of [the consequences] was the effective colonisation of the mentality of the emergent society through acculturation to the English language and way of life. Here, the essential point remains that the use of an imported or colonial language in some form or the other promotes in the colonised the values and ideology of the exporting country or metropolis. Such acculturation is indeed not unfamiliar in other parts of the "Third World" subjected to colonialism.
> Indigenous African languages which were derogatorily called "vernaculars" were also downgraded. If we recognise the intimate relationship between language and culture, then the downgrading of one cannot but be accompanied by that of the other. In the development of the consciousness of the first generation of educated Nigerians and other Africans, the internalisation of English progressed with the internalisation of the coloniser's world view. Education, indeed, also came to be confused with mastery of the English language.

In such perceptions and attitudes on the part of most of the stakeholders in African education lie the deep reasons for "underdevelopment" on the continent. First, there is the fatal equation of education with mastery of the language of power, be it an exogenous or endogenous language (cf. the case of Amharic in pre-democratic

Ethiopia before 1991). Second, there remains the task of completing a "decolonization of the mind" (Ngũgĩ wa Thiong'o). The prevailing situation is based on fatally negative attitudes toward African languages and value systems that have resulted in a copy-and-paste mentality that favors hanging on to largely inappropriate models, particularly regarding educational systems that stem from the former colonial masters (and that appeared to work well in the colonial motherland). This, however, ignores the decisive sociolinguistic difference between the colonial motherland and the colonies and postcolonies, namely that of fully functional and basically monolingual, mother tongue–based educational strategies in the colonial motherland, as opposed to totally dysfunctional foreign language – based educational strategies in most of the African postcolonies.

8.1.3.3. Eurocentrism versus perspectives from within Africa

For obvious historical reasons, Western perspectives have dominated much of past scientific research, including African Linguistics and African Studies in general. Decolonization and political independence, including attempts at decolonizing the mind by taking issue with the politics of language in the African context (to freely quote from the title of the 1986 book by Ngũgĩ wa Thiong'o), slowly took root in approaches to the major issues in African sociolinguistics, in particular by scholars and writers from Africa who, almost naturally as one is inclined to say, could offer to the international discourse highly welcome complementary views on matters. In addition to widely heard professional voices from Africa, like those of Mohammed H. Abdulaziz, Efurosibina Adegbija, Gilbert Ansre, Ayo Bamgbose, Sammy Beban Chumbow, Ben Elugbe, E. Nolue Emenanjo, Fary Ka, Kahombo Mateene, Pai Obanya, Okoth Okombo, Adama Ouane, Etienne Sadembouo, Maurice Tadajeu, to mention just a few (mostly from the "first generation") of an ever-increasing number of excellent scholars in the field, and never to forget the late Neville Alexander, one could single out a book for its less technical sociolinguistic but rather comprehensive political and philosophical approach "from within": *The Power of Babel. Language and Governance in the African Experience*, by Ali A. and Alamin Mazrui (1998). Under the recognition of the existence and impact of hegemonic control, also of wisdom and knowledge, it may be considered high time in African linguistics and sociolinguistics to start discussing questions of biased "X-centered" perspectives and even ownership, including such as whether there is need for "Black linguistics" involving "Black scholars" for researching "Black languages" (Makoni et al. 2003). However, and in the quest for "objective" scholarship, while a plurality of approaches to the subject promises more insight, replacing one bias with another, particularly if based on geographic origin or race, may not provide the best medicine. Nonetheless, a fresh ideological position of Afrocentrism would be able to offer interesting challenges to the established ideological position of Eurocentrism and allow for, at the minimum,

intellectually stimulating armchair philosophy that could, in the end, have some corrective impact on "received wisdom" in African (socio)linguistics.

8.1.3.4. Sociolinguistic terminology applied to the African context

In the African context, we have to scrutinize the meaning of some apparently established terms, such as bilingualism or trilingualism (as opposed to diglossia or triglossia), and multilingualism (as opposed to polyglossia), but also mother tongue (and other tongue), second language, and foreign language. Further, there are a few less established terms or apparently paradoxical notions such as monolingualism involving diglossia, and multi-monolingualism.

Monolingualism versus *multilingualism*

The definition hinges on what constitutes a language and what not. In view of existing dialect continua and more or less standardized varieties based on one of the dialects or, as the case may be, a pan-dialectal standard ("nobody's dialect"), there is considerable "harmonization potential" among varieties or speech forms that in the pre- until postcolonial past have been referred to – by missionaries and colonialists as much as by speakers themselves – as distinct languages (based on various and differing criteria). When a Malawian is said to speak Chewa and Nyanja, are these two languages or only one? Or is it justifiable to say that Chewa is "just a dialect" of Nyanja – would such blunt a statement capture the sociolinguistic reality? What about Ndebele, Swati, Xhosa, and Zulu in South Africa, which, on purely linguistic grounds, can be considered varieties of just one language ("Common Nguni") and thus have considerable harmonization potential? Or "Gurage", which is often referred to as one language, but is actually a group of distinct Semitic languages in Ethiopia. And then there is Aja, Ewe, Gen, Fon, and various other languages spoken in Ghana, Togo, and Benin that are jointly referred to in more recent times as "Gbe". We could add a long list of further cases, and a group of mainly African scholars orbiting around Kwesi Kwaa Prah's Centre for Advanced Studies of African Society (CASAS) in Cape Town invest much time and energy in exactly such lines of research and political argument. Could or should we go as far as saying that, just because it is feasible to design common orthographies, identify some shared vocabulary, and observe varying degrees of intercomprehension among speakers, we are dealing with "only one language", and that, for instance, mother tongue speakers of Akim, Akuapim, Asante, Abron, Fanti, Twi, etc. in Ghana are rightfully referred to as being "monolingual" in this one language, namely Akan, of which Akim, Akuapim, Asante, Abron, Fanti, Twi, etc. are just regional "dialects"? Or would it be closer to sociolinguistic reality to say that many Ghanaians are "multilingual" with regard to possibly several of the Akan varieties? Would these be aptly called "dialects of Akan"?

What pleases the professional linguist may not feel right for speakers, who have their own ideas of "linguistic identities". In other words, wouldn't it be more sensible to assume that many of the speakers are fluent in several varieties of languages without clear-cut boundaries, as for instance in the case of dialect continua? This pattern is much closer to that of individual multilingualism than monolingualism. On the other hand, would such speakers not just simply accommodate to the variant speech habits of their interlocutors, as most experienced language users do in terms of different codes or registers within one and the same language?

Multilingualism versus *bi-/trilingualism*

There appears to be no shared convention in the scholarly community regarding when a situation involving more than one language should be called multilingualism, including bi-, tri- quadri-, etc. lingualism. Since bilingualism, also according to European experience, is a fairly widespread phenomenon, some authors appear to reserve the term multilingualism for any situation involving more than two languages. (Other authors use the term bilingualism generally for any patterned use of more than one language, that is, a sense that is to be construed as "multilingualism".) Note that in this chapter, multilingualism is understood to mean "involving more than one language". This allows the term bilingualism to denote something else of importance in postcolonial Africa.

(Official) Bilingualism

In the African context, and given the diglossic relationship between two different languages on a high–low hierarchy of prestige and status, the term bilingualism is often used to refer to a multilingual situation in which one (or, in the case of Cameroon and apartheid South Africa, two) ex-colonial official languages of European provenance enter the picture; that is, it could be construed to mean something like official bilingualism. Cameroon is usually described as being a bilingual country (in the presence of more than 280 indigenous languages!) because it allows itself the luxury of two official languages of European (ex-colonial) provenance: French and English. Note that from a Eurocentric perspective, the African languages do not count at all. Similarly, in apartheid South Africa, bilingualism referred to the mastery of both English and Afrikaans; other languages in the country, those of Bantu and Khoisan affiliation, did not count. In Niger, *éducation bilingue* is the label used for experimental schools in which French, the official exogenous language of the country, is paired with one of the "national" African languages that is also used as a medium of instruction. (Note that there are no institutions in Niger that would not use French as one of the languages; hence the term *bilingue* could never refer to two indigenous national languages!)

Diglossia, triglossia and *polyglossia*

These terms relate to a power/status/prestige hierarchy in terms of a "high" or a "low" value attached to different varieties of one language or, in multilingual contexts, to different languages. Note that, therefore, monolingualism can involve diglossia. Indeed, this was the situation that prompted Ferguson (1959) to introduce the term, after which Gumperz (1964) and Fishman (1967) extended the model to situations of bilingualism. Monolingual diglossia is typical among varieties of Arabic (classical versus vulgar), creole languages and their base (like Haitian Creole and French), and standard and nonstandard varieties of European languages. Note that in this chapter, the term diglossia will be reserved for distinguishing "high" and "low" varieties within what is taken to be the same language, while polyglossia will be used to refer to the hierarchical relationship between two or more languages. Terms like tri- or quadriglossia, etc. could then be used to describe particular types or instances of polyglossia.

Mother tongue (L1) versus *other tongue*

In the African context in particular, the use of the term mother tongue is highly disputed and, therefore, it is often replaced by terms like first language (L1) or home language, The rationale is that the language in which an African child grows up and receives his or her primary socialization may not be the language used by the child's mother at all, but rather, depending on the sociolinguistic context, the language of the father's kin, or even a third language spoken in the community that is different from the language(s) of both parents. Hence it is important to recognize that, particularly in Africa, children may grow up with – apparently paradoxically – more than one "mother tongue" or first language, none of which need necessarily be the language of the child's biological mother. Recognizing the sociocultural patterns prevailing in African homes and compounds, some authors (including the present one) maintain the term mother tongue for the first or home language(s) of a child, precisely because of the associations it evokes in the Western reader in terms of primordial identity, early childhood, immediate environment of socialization, etc. that are also familiar to non-Africans and are associated with the mother tongue in largely monolingual societies.

Some authors like to use the term other tongue to refer to any language other than the mother tongue/L1 in multilingual contexts. Quite confusingly, other authors again indiscriminately refer to such other tongues as second languages (L2), but cf. below.

Second language (L2) versus *foreign language (L3)*

The term *second language (L2)* needs definition and explanation. For some authors, a second language is any language that is acquired in addition to a

mother tongue/L1. Thus, just as a child may have more than one mother tongue/L1, he or she may also have several L2s. Other authors (including the present one) restrict the term L2 to additional languages that are acquired in a sociolinguistic habitat that is characterized by the presence of native or near-native speakers and everyday environments of usage. In the African context, second languages are typically lingua francas of narrower or wider usage (market, regional, national, cross-border languages) that are acquired informally during childhood, either "on the streets" or as a result of migration. In contrast, a foreign language (L3) is learned without the benefit of a natural linguistic habitat, usually via formal education (foreign languages often become the medium of instruction at some point in late primary, secondary, and tertiary education). Note, however, that Africans also tend to be multilingual in several indigenous languages, none of which are necessarily lingua francas but rather the L1s of neighboring settlements in the areas where speakers grew up or moved to later in life. These languages would also be considered second languages (L2).

Multi-monolingualism

Multi-monolingualism describes a pattern of linguistic geography that is not uncommon in Africa, namely a situation that allows for larger or smaller pockets of prevalent individual monolingualism in a country that is characterized by territorial multilingualism. Quite often, it is the rural areas of a country that display multi-monolingualism, while urban agglomerations tend to become associated with individual multilingualism.

8.1.4. The challenges of multilingualism in Africa

Multilingualism, by implication almost coreferential with multiculturalism and sometimes correlating with multiethnicism, is an essential feature of African sociocultural reality. Most Africans enjoy their individual multilingualism by using several languages as enriching resources, thereby enhancing their personal cognitive and communicative skills. These language resources, in turn, tend to open the way to education, advanced professional and vocational training, job opportunities, upward social mobility, and democratic participation in wider issues of national development.

As a statistical average, at least about forty different languages are spoken in each African country. The following table lists selected African countries by population figures and number of "living" languages. Obviously, the number of different languages within one country does not necessarily correlate with population size. The table also indicates the number of languages that "have no known speakers"; the relatively small number of known cases of "language death" shows that, compared with other world regions, language death is not (yet?) a dramatic issue

due to a high loyalty of speakers to their African mother tongues. Africans tend to favor multilingualism over shifting from one monolingual situation to another by giving up their mother tongue/L1.

Table 1: Language and population figures (selected African countries; source: Lewis 2009)

Country	Population	Number of living languages	Known extinct languages
Botswana	1.8 million	29	
Republic of the Congo	3.6 million	62	
Somalia	8.2 million	13	
Angola	16.1 million	41	1
Cameroon	17.8 million	281	5
Côte d'Ivoire	18.6 million	78	1
Ghana	22.5 million	79	
Kenya	35.6 million	69	
Tanzania	38.5 million	127	1
Demomcratic Republic of the Congo	58.7 million	215	1
Ethiopia	79.0 million	85	5
Nigeria	141.4 million	516	11

Rather than being directly related to population size, increased linguistic diversity tends to be found – as part of a worldwide pattern – closer to the equator; this has a parallel in biodiversity and is referred to in biology as the latitudinal gradient, cf. Map 1.

There are different sociolinguistic research perspectives under which we can analyze and describe multilingualism in Africa. I suggest to distinguish four aspects or levels of multilingualism: territorial, institutional, individual, and sociocultural.

8.1.4.1 Territorial multilingualism

Territorial multilingualism pertains to the geographical distribution of languages across a given territory, whether national, subnational, or supranational. In multilingual societies with high numbers of multilingual speakers (cf. individual and sociocultural multilingualism below), areas of language use typically overlap and create overlying linguistic strata of several languages, for instance, in major urban agglomerations. In Africa, countries vary considerably in terms of their territorial multilingualism. On the one hand we find almost completely or at least predominantly "monolingual" countries with very small numbers of non-immigrant (i. e., autochthone, "national") languages and, most importantly, one major language that is spoken and used by more than 80 to 90 percent of the population (even if not as a mother tongue/L1). This is the case in predominantly arabophone countries

Map 1: Number of indigenous languages in Africa per country, increasing significantly with proximity to the equator (latitudinal diversity gradient)

in North Africa (despite the presence of Berber and possibly other autochthone languages) and in countries such as Botswana (Tswana), Burundi (Rundi), Lesotho (Southern Sotho), Madagascar (Malagasy), Rwanda (Kinyarwanda), Somalia (Somali), and Swaziland (Swati). These stand opposed to linguistic giants with up to several hundreds of distinct indigenous languages within national territories, such as Nigeria (with nearly 500 languages), Cameroon (with almost 300 languages), the Democratic Republic of the Congo (with more than 200 languages), Tanzania (with more than 120 languages), and others. In addition, many countries have a variety of imported and migrant languages. The mid-range African countries have anywhere from ten to one hundred indigenous languages on their territories, depending of course on what is counted as a language as opposed to a dialect of a language.

Note that for the current African situation, the seemingly paradoxical notion of multi-monolingualism is a logical way to describe the neighboring distribution of several largely if not exclusively, monolingual areas that make up large parts

of national territories. This means that territorial multilingualism does not necessarily imply patterns of large-scale individual multilingualism. Research interests here overlap with linguistic geography and dialectology.

8.1.4.2. Institutional multilingualism

Institutional multilingualism primarily pertains to language policies and their implementation, in addition to institutionalized language practices in any kind of social, cultural, religious, educational, political, or other institution, from the grassroots level up to state or suprastate level. Institutional multilingualism, therefore, ranges from traditionally established local market languages to patterns of language use in schools and universities, churches and mosques, courts of justice, the media, etc., to official regulations concerning language use in national parliaments and supranational bodies like those of, for instance, ECOWAS or the African Union.

In essence, institutions have a choice between monolingual and multilingual policies, and between endoglossic, exoglossic, or combined endo- and exoglossic multilingual solutions. All possible combinations of these solutions can be found in use across Africa and in national language policies, including legislation on language in education. Multilingual solutions usually involve combined endo- and exoglossic models, such as the official Swahili–English bilingualism in Tanzania and Kenya or the use of English, Afrikaans, and nine Bantu languages in post-apartheid South Africa. Cameroon, however, has a bilingual exoglossic model (French and English). Monolingual solutions are usually exoglossic as well, as amply illustrated by the officially monolingual arabophone countries in North Africa, and the so-called lusophone and francophone countries of the past. Monolingual endoglossic models, such as used in pre-democratic Ethiopia (Amharic) and pre-civil war Somalia (Somali), are very rare.

Institutional multilingualism may be *de jure*, such as when language policies are stipulated by the constitution or other legislation, decree, or proclamation. The *de facto* type, on the other hand, is not based on explicit rules of law but follows traditional patterns or *ad hoc* regulations for language use and behavior. Such may be the case in religious groups or any non-governmental institution run by, for instance, Christian missions or foreign donors who may have their own policies of which language(s) to use for which purposes.

This is the domain of language planning, and status planning in particular, for which there is already abundant literature for (mainly anglophone) sub-Saharan Africa, less so for predominantly arabophone North Africa (but cf. some more recent contributions by Lachachi [2008], Hachimi [2009], Seddiki [2009], Yamina [2009], and Wolff [2009]). Research interests here overlap with those of cultural and social anthropology (ethnography), sociology, and political science but also economics.

8.1.4.3. Individual multilingualism

Individual multilingualism pertains to the language behavior of individuals, who, in multilingual contexts, may have various types of linguistic biographies. Language choices and patterns of use are of particular interest, as the availability of several linguistic resources and registers allows speakers to switch languages between or within utterances (code-switching, code mixing). There are numerous studies on mostly urban speech patterns in Africa that involve code-switching, but there are still very few detailed studies on the early childhood acquisition and use of several languages at once. Among African children, these processes do not appear to be *ad hoc* and unsystematic but guided by principles and the gradual acquisition of proficiency in more than one language (cf. Khamis 1994 for case studies involving pre-school and early-school-age children in Uganda using up to four languages: Ganda, Nubi, Swahili, and English).

While informal language learning in African multilingual contexts, whether during (early) childhood or later in life, remains widely under-researched, the teaching and learning of languages – the mother tongue as well as second and foreign languages – in mostly formal (but also non-formal) educational activities has been a point of continuous concern among specialists and, therefore, an object of prolonged research interest. The most basic and still most controversial issue is the choice of language, whether an African language or one of European provenance. Whereas European languages have the advantage of being so-called Standard Languages with a long tradition of writing and norms transcending dialectal differences, this is hardly the case for the African languages:

> Whether an African country adopts a monolingual, bilingual or multilingual language policy, the question of which variety will be taken as the standard in the education system is an important one. In the case of African indigenous languages the issue of standards translates to the choice of variety to be used, since several dialects of the same language often exist … (Muthwii and Kioko 2004: 6).

In cases where African languages have benefited from early missionary or colonial activities fostering alphabetization and standardization, their orthographies and pedagogical materials tend to be deficient and do not meet modern standards:

> A further challenge in the use of African languages is the absence of standardised orthography and literacy materials for use in the language classroom. Where orthographies are present, many of them relate only in a remote way to the spoken language because they ignore significant prosodic features such as tone, vowel length and, at times, vowel quality. This makes the written material in these languages a challenge to read even for those who are literate in the languages (Kioko, 2002). Thus, even when the decision to use African languages for education is made, there is need to prepare the African languages to meet the challenges of being languages of instruction in schools (Muthwii and Kioko 2004: 7).

As a rule, however, African educational systems are stuck with a foreign (ex-colonial) language that has only very few if any native speakers in the country, and accordingly is not mastered anywhere near native-speaker comptency by those who use it as the language of teaching and learning. While teachers and learners use "African Englishes", exams are still expected to conform to native English:

> The key issue in standards and language teaching in Africa is, however, linked to the adoption of foreign languages as official languages in many African states. It is a challenge because aspirations are too far removed from realities. When African countries attained independence, many of the European teachers left. Although there was also expansion in teacher training colleges, the presence of the native-speaker model receded to the background with the departure of the native speakers. The learners thus began to approximate the model of their non-native teachers, a model significantly different from the native variety. These models are characterised by innovations drawn from the sociocultural environments within which these languages are used. In the majority of African countries, however, local varieties of these international languages have not been formally recognised and thus the norms continue to be those of the native speakers (Muthwii and Kioko 2004: 7).

The challenges for current socio- and applied linguistic approaches to language teaching and learning, therefore, involve both indigenous African languages, which are students' mother tongue/L1 and second language(s), but also foreign languages, which, as a rule, are crucial for the educational advancement, upward social mobility, and economic benefit of the learners. If at all, this mostly in former British colonial territories, African languages are used in schools for only a few early years in lower primary classes under a program of subtractive bilingualism with an early-exit model. Most other countries used to follow an exoglossic monolingual approach with no room for African languages at any stage; examples include the exclusive use of Arabic in North and Northeast Africa, and the so-called francophone and lusophone African countries. Special cases of exoglossic official bilingualism were found in Cameroon (French–English) and South Africa (English–Afrikaans) before 1996. More recently and independent of the colonial history of the country, however, endo- plus exoglossic bilingualism is gaining wider acceptance from an increasing number of governments across Africa. However, most experts consider it unfortunate that the overdue introduction of an African-language medium of instruction remains restricted to inadequate models of early-exit subtractive bilingualism.

A vast field presently under research in the applied domain of African linguistics relates to the need for the intellectualization of African languages for official use, also in secondary and even tertiary education. This is connected with the obvious underperformance of most educational systems with exoglossic media of instruction in post-primary cycles. Still, language competences in the foreign languages of instruction, for instance among African university students, tend to be deplorably low and constitute barriers to learning and effective transfer of knowl-

edge. This is presently one of the major issues being discussed among linguists and educationists in Africa.

Generally speaking, research interests concerning individual multilingualism overlap with psychology and psycholinguistics, second language acquisition studies in general, and micro-sociolinguistics in a narrow sense.

8.1.4.4. Sociocultural (stable) multilingualism

Beyond the scope of individual multilingualism, one may find in Africa definable groups of speakers who have settled for bi- or multilingualism by regularly and continuously using more than one language in their everyday activities. Such periods of multilingualism among groups of speakers may turn out to be transitory and testify to ongoing processes of language shift or they may indicate a state of consolidated stable multilingualism, which would not automatically result in language shift and loss of the group's L1.

In Africa, largely due to the history of Islamization and European colonialism but also reflecting precolonial events of intra-African political hegemonialization, multilingualism tends to be accompanied by extreme di- or polyglossia. These terms describe perceived inequalities and hierarchies of power and prestige among languages that inform prejudicial stereotypes and clichés that, in turn, play a role in fostering folkloristic language attitudes that may prevail in societies of speakers. In Africa, Arabic and the ex-colonial "official languages" of European provenance have widely become associated with the highest level of prestige as languages of power. In many parts of Africa these languages of power are in the hands of ruling minorities (i. e., the new postcolonial "elites"). It is precisely this fact that makes such languages the first choice for (formal) education by parents who wish their children to acquire proficiency in order to gain access to the ranks of these very postcolonial elites – an example, as we have already noted above, of how education becomes identified with the mastery of the language(s) of power. As a rule, acquisition of the (exoglossic) official language does not necessarily result in language shift (, i. e. the loss of the mother tongue/L1) but rather establishes a pattern of stable multilingualism, where one's mother tongue/L1 is maintained, lingua franca or national languages remain in use, and the official language is spoken wherever necessary in certain formal domains. Note, however, that members of the new postcolonial elites in urban environments tend to undergo self-inflicted accelerated language shift, through their own daily behavior and for the assumed benefit of their children, toward a new monolingualism based on the exoglossic official language. The indigenous African mother tongues became more and more exiled from the homes of the postcolonially assimilated elites, and increasingly grandchildren are hardly capable of talking to their grandparents "back in the village" unless through some kind of interlanguage.

Associating the (often foreign) official languages with upward social mobil-

ity and advanced economic prosperity, most stakeholders (i. e., parents, students, teachers, government officials, etc.) have developed negative attitudes toward the African mother tongues. Consequently, indigenous languages are now being associated with traditionalism and backwardness and are considered symbols of inferiority and underdevelopment, all this as part of the persistent impact of mental colonization under the prevailing regimes of post-/neocolonial political, cultural, and economic dependencies. These powerful negative attitudes have meanwhile turned into self-fulfilling prophecies that are prohibitive to the empowering usage of African languages in high and prestigious domains, such as national and international politics and development, formal – and in particular higher – education, science, and technology. In multilingual contexts, the dimensions of power and language ownership foster the emergence of a postcolonial class divide in African societies that Carol Myers-Scotton refers to as the effect of "elite closure", which tends to have disastrous effects on the effectiveness and efficiency of educational systems in Africa. Quality education is a pathway to power and, therefore, tends to be monitored by those already in power (whom we somewhat euphemistically refer to here as "elites") in terms of controlling the (self-)recruitment that is needed to replenish their ranks.

8.1.4.5. Multilingual proficiency and semilingualism

Given the evidence of widespread individual multilingualism in Africa, particularly in urban environments, we know very little about the degrees of competence in using the languages of one's individual repertoire, whether African or European. Therefore, one of the most highly desired *lacunae* to be filled by robust empirical research in African socio- and applied linguistics would appear to be the study of degrees of multilingual proficiency among speakers in Africa, both in rural and urban environments.

This field of study, which appears to be vastly neglected, would benefit from a connection with the better understood issues of language in education (in terms of selecting the optimal medium of instruction), the emergence of special urban "lifestyle" registers (new urban vernaculars), which are characteristically based on creative *ad hoc* lexification and – principled? – exploitation of the vast resources available from among the linguistic repertoires shared by members of the speech community. Available evidence suggests that one of the outcomes of multilingualism among urban youth, in particular, is or could be multiple semilingualism: the lack of being fully competent in any of the languages of the individual linguistic repertoire.

8.1.5. Language policies, language politics, and language use in Africa

Language policies refer to legislative, juridical, and administrative "governmental" actions that are undertaken to solve language problems or conflicts within institutions, nation-states, or even supranational bodies. Language policies are generally based on two sets of options: (a) a choice of multilingual or monolingual strategies; and (b) a choice of endoglossic or exoglossic strategies, or a combination of the two opting for official bi- or multilingualism using both African and non-African languages. Language politics, on the other hand, relates to the power struggles behind both policy formulation and policy implementation. Language politics may play a negative role, such as when stakeholders with their own – often hidden – agendas sabotage official policies through various forms of counteractivities. Some negative acts are fostered simply by ignorance, others by a country's poor political culture, namely the absence of good governance. In Africa, bad language *politics* may make the non-implementation of good language *policies* the rule rather than the exception.

The adjectives anglophone and francophone (and we could add lusophone, hispanophone, nederlandophone and germanophone, and possibly also italophone) are widely applied to African countries past and present. However, these apparently descriptive terms belie the current reality. They are justified only in reference to the colonial past of the continent and should, as a rule, be qualified with quotation marks, since they are obvious misnomers given the present-day situation in Africa. Nevertheless, since African independence 50 years ago, these terms and corresponding institutions (such as the Commonwealth of Nations for "anglophone" countries and the Organisation Internationale de la Francophonie for "francophone" countries) have been used as ideological constructs and political instruments to boost the waning global political prestige of the former colonial powers. As a rule, however, hardly ever more than 20 percent (usually much less) of national populations in Africa use the ex-colonial languages in everyday life, despite their elevated status as "official languages"; here we also notice drastic differences between rural areas and urban centers. African countries are, first of all, "afrophone": the vast majority of Africans – an estimated 80 to 90 percent – speak African languages, and most Africans do so exclusively by using one or several African languages in all domains of verbal interaction. On the other hand, formally well-educated Africans tend to concentrate in urban centers, mainly in the capital cities, and quite a number of them have begun to adhere to patterns of verbal interaction dominated by the use of languages of European origin. Many African opinion leaders among intellectuals and politicians have become factually monolingual in a European language with little or no rhetorical competence left in their original African mother tongue(s). Many of them, however, even if they would not admit this openly, feel ashamed of this fact and, subconsciously, psychologically rationalize their linguistic deprivation by becoming fervent opponents to any kind of empowerment of the African mother tongues.

Note that both "anglophone" and "francophone" Africa appear to be the most widely described African subregions from a sociolinguistic perspective. Note further that the so-called "arabophone" countries in Africa constitute a special case, largely due to their different histories in terms of Islamization and European colonialism; they tend to be less often made the focus of socio- and applied linguistics from a more general African perspective (but cf. Wolff 2009).

8.1.5.1. Background: Ideologies and prejudice

Language is a highly sensitive issue everywhere in the world. In the African context, the sensitivity would appear to be particularly intense due to the continent's colonial past and continued post- or neocolonial dependencies, which have immediate effects on all political and educational issues. It is, therefore, not surprising that the expression "language question" is often used as a euphemism for "language conflict". There is hardly any country in the world that has not had to solve a language conflict, or isn't still tackling one, with all its political, cultural, socio-psychological, legal, and administrative ramifications. Language relates not only to feelings of identity and touches upon human rights issues; it ultimately relates to power and control over resources. One also has to take note of the fact that language is both a tool and a symbol. As a symbol, however, it tends to be identified with its speakers and their sociocultural background and, therefore, often becomes the target of either negative discrimination (as is usually the case with African languages) or positive overvalorization (as is the case with European languages), depending on one's own stand.

In the African context, the language question is charged with aspects of perpetual (neo)colonial dependence and intellectual domination. This brings the project of "intellectualization" of the African languages to the fore. A particularly clear case of the use of language as a symbol and tool for maintaining neocolonial dependency is *Francophonie*, the imposed official use of French for all domains of national communication, education, the legal system, etc. Apart from nationalist or even neocolonialist or neoimperialist motivations on the side of former colonial powers, reference can also be made to the role of the World Bank and the IMF. Mazrui (1997: 39) points out that

> … the World Bank's real position … encourages the consolidation of the imperial languages in Africa … the World Bank does not seem to regard the linguistic Africanisation of the whole primary education and beyond as an effort that is worth its consideration. Its publication on strategies for stabilising and revitalising universities, for example makes absolutely no mention of the place of language at this tertiary level of African education …

The author goes on to say that "[i]n essence, the World Bank's proposed educational configuration in Africa demonstrates the continued role of instruction in

Euro-languages in creating and maintaining an economy dominated primarily by foreign economic interests and, secondarily, by a small aspiring African bourgeoisie" (Mazrui 1997: 44). Phillipson (1997: 240) adds that "[a] set of agenda-setting World Bank reports on basic education in eastern African countries barely refers to local languages … the ensuing educational 'aid' reflects the linguicist belief than only European languages are suited to the task of developing African economies and minds, the falsity of which many African scholars have documented, Ansre, Bamgbose, Kashoki, Mateene, Ngũgĩ …". It is only fair to point out here that the World Bank meanwhile appears to have changed its position toward a more favorable view of the African languages.

Thus the language question in Africa has another ideological dimension, which again smacks distinctly of anti(neo)colonialism: In Africa, language is burdened with aspects regarding notions like African identity/personality and the African Renaissance. This ideology has a long intellectual tradition in Africa grounded, among others, in the writings and teaching of Cheikh Anta Diop. It was taken up by South African leaders Nelson Mandela and Thabo Mbeki, who in their speeches often invoked the notion of the African Renaissance, and further by many linguists, sociolinguists, and educationists working in and on Africa. People everywhere in the world tend to have very strong attitudes toward languages. Such attitudes, particularly in terms of attributing and recognizing status and prestige, need to be considered by language planners as being of the utmost importance. Positive attitudes will support the implementation of language policies; negative attitudes will thwart implementation. Language attitudes reflect people's changing views on society and culture. Negative attitudes toward African languages are deeply rooted in the fear of social change (Pai Obanya), particularly on the part of the postcolonial elites but also on the part of their expatriate advisors and experts from donor countries and agencies. This fear is based on the potential for marginalized sections of the population, such as minorities, the illiterate, women, and even children to become empowered through the official recognition of their languages, a development that would affect the existing balance of power to the detriment of the dominant elite and thereby threaten their privileges. The privileged situation they enjoy today was engendered as a legacy of colonialism and is perpetuated via neocolonial educational and media structures. Acceptance of the perpetual dominance of Western culture with its politico-economic ramifications often comes disguised in terms such as universalism or globalization. Positive attitudes toward African languages, on the other hand, are connected with the theoretical framework of indigenization, which rests on the exploitation of the creative intellectual and educational resources provided by indigenous African cultural heritage and value systems yet relegates such educational systems to the realm of the detested "Bantu education" of the apartheid period in South Africa – at least in the eyes of opponents of indigenization who propagate Westernization and globalization.

Even though it is hard to overestimate the role and functions of language in society, public debates about language in Africa often overload language with functions that it does not perform; in other words, the tool is falsely identified with the purpose of its use, for instance, providing advanced education in the sciences. This is true for the originally foreign colonial languages that are generally viewed as being somehow superior and more adequate tools for purposes of learning in formal education. It is also true for the African languages, which are – antagonistically – viewed as being inferior and inadequate tools for matters of formal education (cf. Mateene 1980). Here the languages of the former colonial masters become equated with the type and degree of economic, political, technological, and scientific development that the societies of the former colonial masters represent. At the same time, the ex-colonial languages are viewed as a symbol of continuing political and cultural dominance. It is in regards to this symbolic value of language that expert circles in Africa discuss a solution to many of the educational but also ideological and political problems that have been raised in discussions of African development crises and political conflicts. This solution has to do with the overall revalorization of the African languages. This revalorization would be based on the sociolinguistic axiom that language development (in terms of status, prestige, and adaptation to new domains of usage) is achieved through active language use in new domains. The best if not only way to achieve expanded usage in new domains is, among others, to fully integrate the languages into systems of formal and non-formal education all over Africa. This expert view, however, has not yet been effectively publicized and propagated to politicians, decision makers, and administrators, and hence there is a need for integrated social marketing with regard to the management of multilingual language policies and their implementation.[13] However, the so-called traditional cultures and languages of Africa must not necessarily be viewed as "good" in and of themselves just because they belong to some unempowered "endangered" or "threatened" ethnic groups in some "underdeveloped" countries. This kind of thinking may lead to languages being maintained solely for archival purposes, which is of little benefit to the communities that use them. Rather, these languages must be proactively adapted to the needs of sociocultural and economic development, while considering the project of building a democratic society as well as the inescapable context of globalization (Rabenoro 1999: 73).

The language question in Africa reflects not only past and present political, economic, and cultural dependencies and touches upon self-esteem and feelings of identity, but it also relates to hardcore governmental politics, internal and external. Language policy is a pawn in the struggle for power and the preservation of

[13] The idea of introducing integrated social marketing theory into the discussion of problems with language policy implementation in Africa, in particular with regard to managerial tasks faced by ministries of education in Africa, had first been proposed and was later elaborated in Wolff (2004, 2006a, in press).

power, and this is by no means a typically African phenomenon (Cummins 2000). The continued use of a dominant originally foreign and ex-colonial official language after independence has created a postcolonial class divide, to which we have already referred further above. Since education is about opening up options for social change and progress, the political elites of African countries find themselves trapped in a dilemma that, until this day, has made them somewhat reluctant to accept educational reforms that would amount to social change or ruptures with unclear consequences for the balance of power in their polities. Some stakeholders may be well aware that new language-in-education policies cannot be successfully planned and implemented in isolation from general language policies, a fact that could explain their reluctance to change existing policies. Clearly, such changes must take place within a frame of overall empowerment of the indigenous languages for the benefit of the masses, who are not in a position to fully function as national citizens though the official languages. Rather than focusing on the medium-of-instruction issue alone, as is done in much of the relevant literature, a broader approach to language policy must aim to establish African languages in the primary domains of official government business on the national and provincial or regional levels, that is, in all legislative, executive, and juridical domains. Failing to do this will serve to maintain the low status and prestige of the African languages and subsequently maintain the marginalization of the majority of citizens, bereaving them of options for social change and a democratic transformation of society. Language prestige is equivalent to language use in prestigious domains, including not only higher levels of education, but all national economic, political, and cultural business! Changing the power hierarchy that exists between languages, however, will entail changing power relations between speakers and thereby initiate and effect social change.

8.1.5.2. Multilingualism and polyglossia

In terms of power and prestige, languages within a society occupy different levels of what can be conceived of as a hierarchy that I refer to as "polyglossia". The highest prestige and association with power is attributed to the official language(s) of the formally independent nation-state, the lowest to the "local" mother tongue-languages (cf. Figure 1). This has severe implications for the sociolinguistic reality of the country.

In general and in non-formal domains, Africans know how to use their individual multilingualism as an asset. In non-formal domains people come in contact through travel, marriage, etc. and learn each other's language(s) spontaneously and as needed. They allocate different functions to the languages they speak. Thus at home, on the streets, and in the community Africans celebrate their everyday multilingualism. Yet, ironically, multilingualism is viewed as a problem in administration and formal education. Multilingualism (and its twin, multiculturalism) is and will

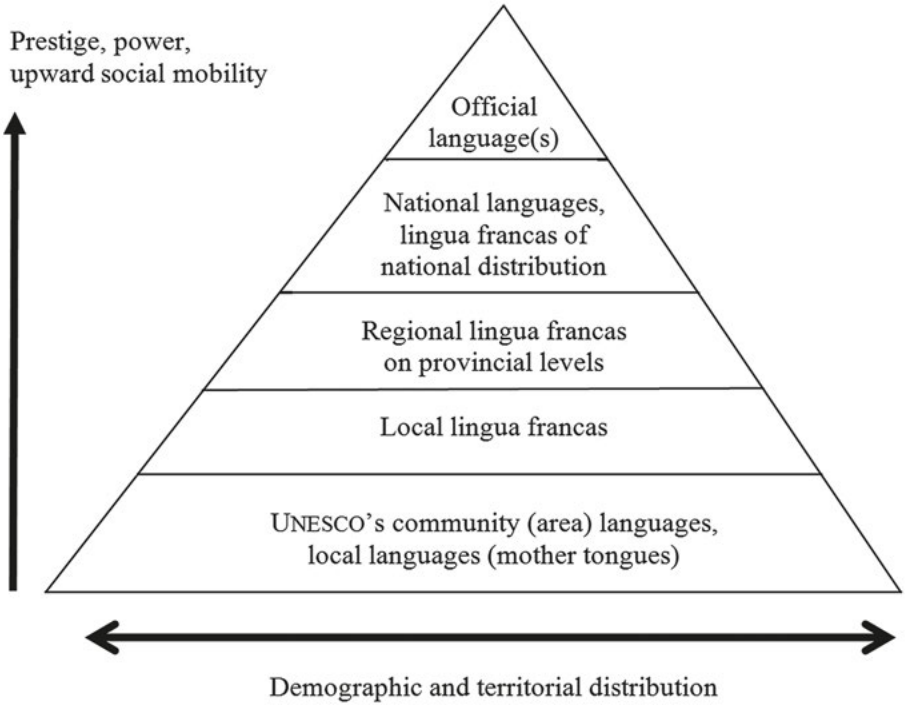

Figure 1: Africa's polyglossia pyramid; Wolff 2006b, 2011a, 2011b, 2012)

remain an integral feature of African reality, as in much of the rest of the world. All political, social, cultural, and educational planning must take this fact into account.

The complex communication landscape in Africa is characterized by the big divide between the indigenous (sometimes referred to as "national") African languages on the one hand, and the imported (foreign) official languages on the other. The latter were installed during colonial times and have since remained not only the languages of national public communication, but also of instruction on most levels of education. This is particularly so in the secondary and tertiary cycles, which form the elites of the following generation, who are then expected to be the driving forces of development. Clearly, it is essential for the elites to operate in these (ex-colonial) languages of wider communication in order to maintain international communication and exchange, mainly in the fields of economics and academic discourse. In doing so, they maintain diglossic, and in some cases triglossic, patterns of language use. Providing access to these international languages, therefore, must be in the interest of all formal education systems – in Africa as much as in the rest of the world.

The question remains whether this access must be provided already at the primary level. Most African children, particularly those from the rural areas, will

not pass on to secondary school. The way things are in most African countries, children are taught in English or French or Portuguese and will have learned practically nothing – and certainly not to speak these languages to any extent – when they leave school, if they do not drop out early. As a rule, they will not have been taught any of the national languages that would allow them to be fluent bilingual speakers of their mother tongue and, say, an African lingua franca such as Swahili or Hausa.

As is the rule in so-called developed countries around the world, access to foreign languages is usually reserved for the secondary cycle. And foreign languages must be taught as foreign languages by specialized teachers, and not by falsely and detrimentally treating English or French as if these were African mother tongues and were already well mastered by both students and teachers (which is only rarely the case in Africa). As all experience from Africa shows, using the foreign official language as the medium of instruction throughout the school system under the prevailing circumstances defeats the very purpose of teaching a foreign language: pupils almost never reach an acceptable standard of competence in the official language(s) in the lower cycles of formal education.

As the situation is now, primary school leavers tend to have only rudimentary if any knowledge of the official language, which is not enough for them to function in it to any social or economic benefit. When students are unable to master the foreign-language medium of instruction, they generally fail their final exams or perform poorly in all subjects. Further, due to the restriction of their mother tongue competence and, thereby, the impediment of their natural cognitive and intellectual development, they are unable to gain the linguistic, practical, and intellectual skills that would allow them to become better farmers, gardeners, herdsmen, craftsmen, small-scale traders, etc. Finally, because they have not been introduced to a regional lingua franca or national language – unless they know it already or acquire it later in the markets and on the streets – they are not equipped to communicate in a wider scope for social, cultural, economic, or professional purposes. Consequently, their potential contributions, as individuals, to the social and economic development of the community must remain marginal.

The elites are needed to support social and economic development, even though they themselves tend not to be economically productive, because they prefer positions in government and administration. However, all human resources ("human capital") need to be tapped for sustained social and economic development, beyond the recruitment needs of the governmental and administrative sector. Therefore, it is counterproductive to limit access to higher levels of education to only a small (and often very small) urban elite minority who have or acquire an adequate command of the relevant European language(s) to be able to function effectively in, among other things, a university setting. On the contrary, even universities must function using the national languages, side by side with international languages of wider communication, and thereby achieve two things at the same time: opening the tertiary educational system to gifted students from all regions

and walks of life, and, by making use of the indigenous languages, automatically "empowering" and "intellectualizing" the languages to become adequate means of communication for all purposes, including modern science and technology.

As things stand, Africa is denied or denies itself what the rest of the (developed) world takes for granted, namely that countries use a language (or languages) that is a mother tongue or fully mastered second language for most of the national population. The relevant point is not that most so-called developed countries are monolingual – an assumption that is counterfactual in most cases! – but that they insist on conducting their national public communication and all cycles of education in a language that is the mother tongue or second language for the majority of the population. In Africa, national communication and education is mostly conducted in a foreign language in which vast sections of the population have only rudimentary competence.

8.1.5.3. Language attitudes

It is widely observed that expatriate experts, consultants and donor representatives in Africa tend to entertain negative attitudes toward African languages, which are often derogatorily referred to as "vernaculars" or "tribal languages", and think that such "dialects" cannot and should not be used in education programs beyond lower primary education. Also, expatriate "experts" only rarely consider the option of using African languages in multilingual models of education, that is, in addition to languages of European provenance. Similarly negative attitudes toward indigenous languages and official multilingualism are found among members of the modern political and administrative elites in Africa. Both groups, who dominate the exclusive political and economic discourse on development, tend to reinforce their shared strong attitudes against using the many African languages, which they consider divisive *per se*, in favor of using one, as they see it, intrinsically unifying "neutral" imported official language, irrespective of the latter's (neo-)colonial burden and culturally alienating impact. Based on a review of the available literature, and an analysis of personal communication on the subject, Obanya (1999) lists eight distinct areas of concern that pose a major challenge to the promotion of African languages for sociocultural modernization and development, including education:

– multiplicity of languages
– the multiethnic nature of urban areas
– the low level of technical development of African languages
– the official status of indigenous languages
– hostility of Africans to the study of their own languages
– staff and material resources for teaching indigenous languages
– the high cost of educating in African languages
– long-term ill effects on the learner

As Obanya (1999) and other authors have shown, these issues do not stand up to what has been proven by research, practical experience, and day-to-day evidence. Rather, the real obstacles to the promotion of African languages in education lie elsewhere, despite the fact that the spheres listed are commonly cited in uninformed discourse. Obanya (1999) ends his thorough examination of the major arguments advanced against the promotion of African languages by concluding that most of these arguments are neither linguistic nor pedagogic in nature, but "belong rather to the realm of a genuine fear of the unknown". He strongly suggests that these unknown elements be made important issues in the dialogue on policy and curriculum among all stakeholders.

The postcolonial African elites are largely defined through their linguistic behavior, namely a preference for using the official ex-colonial language. They can do so because they have succeeded in a foreign language-based education system in which the colonial language was the dominant medium of instruction. However, their success is no guarantee for the overall efficiency of the system, as is lucidly pointed out by Roy-Campbell (2001: 271):

> There are many people who thrive in a monolingual environment, where their language is not the language of instruction. However, many more do not. Those, in a multilingual country, who perform successfully under a monolingual education policy are invariably blinded by the reality of those who are hindered by language in achieving their potential.
>
> In African countries the imposition of a monolingual education policy, with English as the language of instruction has served an elite section of the populations and their children. It is not uncommon to hear Africans in leadership positions, who successfully negotiated monolingual instruction, remark that they made it so why can others not do the same. This sentiment is also invoked in the United States, by immigrants and children of immigrants who were submerged in English instruction and emerged successfully. The fact that, in both cases, they were among the minority is not addressed. Success of the few is naturalised as the norm for all. No matter how difficult the situation may be, there are always some people who prevail, against all odds. Yet that should not detract from the difficulty of the situation for many others.

Thus political elites, drawing largely on their own educational success stories, tend to strongly oppose the use of indigenous African languages in education or generally for official purposes. This accounts for what is generally deplored and referred to as the absence of "political will". Neville Alexander (1999b: 3) aptly calls this the status quo maintenance syndrome:

> … the new elite, black and white, is prepared to do no more than pay lip service to the promotion of multilingualism or the development of the African and other marginalised languages … The reason for this tendency is that the new elites, in practice, are quite comfortable with simply taking over the colonial state, 'reforming' it to the extent that they put 'black faces in white places', but allowing everything in essence to remain the same.

With regard to the so-called masses of the population, decades and centuries of marginalization have created deep-rooted negative prejudice in the minds of many Africans toward their own indigenous languages. As Bamgbose (2000: 88) points out:

> With years of indoctrination, many people have come to accept that 'real' education can only be obtained in a world language such as English. Even the idea that a child will benefit if his or her initial education is given in the first language is disputed by many so-called educated parents. Here, there is undoubtedly ignorance and prejudice at work and a major aspect of the implementation of a policy of using indigenous media of instruction should be an enlightenment campaign designed to explain in terms that the layperson can understand, the arguments in favour of the policy.

Such negative attitudes are deeply rooted in traumatic experiences in the colonial past and have not been corrected since independence. They correlate with a widespread misconception throughout Africa about the ultimate goals of (formal) education: asked about the purpose of formal education, many parents and pupils in Africa will answer, "Access to the official language", irrespective of whether it is an African language (like Amharic in former Ethiopia, Swahili in Tanzania, Somali in Somalia, etc.) or an originally foreign one (like English, French, Portuguese), or any other language (like creoles and particular African varieties of non-African languages, including Afrikaans). Where formal education is exclusively or predominantly linked to an official language of extra-African origin, African languages stand little chance of being accepted as languages of teaching and learning by the vast majority of the African people unless their uninformed attitudes can be changed by awareness campaigns and successful social marketing for superior educational models.

Western experts, consultants and donor representatives tend to maintain rather critical attitudes toward multilingualism and the use of indigenous languages for education in Africa. These attitudes are deeply rooted in their own cultural traditions and must, therefore, be addressed under a critical assessment of the role of Eurocentrism, including attitudes in the United States of America, in development discourse (Wolff 2006b). Multilingualism is not generally accepted as a blessing in Western cultures:

> There is a long history in certain Western societies of people actually 'looking down' on those who are bilingual. We give prestige only to a certain few 'classical' languages (e. g., Greek and Latin) or modern languages of 'high' culture (e. g., English, French, Italian, and German). You generally get little credit for speaking Swahili and, until recently at least, not much more for speaking Russian, Japanese, Arabic, or Chinese. Bilingualism is actually sometimes regarded as a 'problem' in that many bilingual individuals tend to occupy rather low positions in society and knowledge of another language becomes associated with 'inferiority'. 'Bilingualism' is seen as a personal and social problem, not something that has strong positive connotations. One tragic consequence is that many western societies appear to have adopted the bizarre policy

> of doing just about everything they can to wipe out the languages that immigrants bring with them while at the same time trying to teach foreign languages in schools. What is more, they have had much more success in doing the former than the latter (Wardaugh 1992: 101).

In the African context, the negative attitude toward multilingualism involving indigenous African languages often rests, at least implicitly or subconsciously, on the idea that colonial languages and cultures are generally superior to the languages and cultures of the colonized populations. Stemming from the situations in their own home countries, expatriate experts have internalized negative attitudes against unwritten varieties of the standard language. In the colonial days, the unwritten substandard dialects of one's own standard language – those varieties spoken by predominantly rural populations that were perceived as somewhat "backward" and unsophisticated – became equated with the "primitive" idioms of the "natives" in the colonies. This negative attitude against "dialects" or "vernaculars" is paired with a fundamental distrust of multilingual individuals, who are often identified with marginalized sections of minority populations, such as immigrants and refugees, migrant workers, nomadic people, children from mixed marriages, etc. The Western or Eurocentric perspective is one of monism: one country – one nation – one culture – one language, a situation that is diametrically opposed to the almost essential African experience of plurality and diversity.

One set of clichés that are virulent among the general public relates to the postulated properties or non-properties of African languages: African languages are not "proper" languages but merely "dialects"; they possess no grammar; they have limited vocabularies with little or no abstract terminology; they cannot be written; and so forth. For example, British colonialists tended to refer to Swahili, a genuine Bantu language with a centuries-old written tradition in the Arabic script, as "jabber". Today, many people in Europe still consider it a mixed Arabic-Bantu-English pidgin and, further, believe that pidgins are not "proper languages".

Since the colonial period, the majority of expatriates working in Africa have seen little reason to learn African languages beyond some greetings and commands used to communicate with the former "natives", whom they now mainly encounter as taxi drivers, domestic servants, hotel staff, bartenders, and prostitutes. The reluctance to consider African languages as serious media of communication for business and academic purposes in Africa largely prevails until this day. Only in recent years can one see changes, mainly with regard to the increased "visibility" of a few African languages in public spaces on banners, commercial billboards, etc.

In short, African languages have long been and still are widely perceived as primitive idioms with limited communicative value, used only by illiterate hunter-gatherers, farmers, or cattle-herders for highly culture-specific purposes. According to this perception, African languages are in no way suitable for either advanced or written communication pertaining to the political, economic, cul-

tural, and social matters of our times, in particular anything related to modern technology, science, and political philosophy. In short again: African languages are perceived as being unable to undergo "modernization" or "development" and, therefore, they are doomed to die out – the earlier the better for the benefit of the "natives", who are considered most unfortunate to have been stricken with such useless mother tongues.

8.1.5.4. Language planning: Language, the nation-state, and development

Ayo Bamgbose's influential book *Language and the Nation. The Language Question in Sub-Saharan Africa* (1991) may be considered to mark the beginnings of the new paradigm of viewing African and other languages as "resources". Since then, we have come to speak in an overarching manner of the "language question" in Africa, a catchphrase that encompasses many distinct yet interrelated issues. Therefore, and in retrospect, it is interesting to take note of the book's four chapter headings, which outline the scope and still organize the fields of ongoing research: Language and National Integration; Language, Communication and National Development; Language and Education; and Language Planning. Today, we tend to view language planning in a much wider scope than before, namely as practically encompassing all the aforementioned fields. In addition to discussing the task of tackling the "colonial legacy" in terms of the detrimental impact of its language policies on education, Bamgbose writes ten years later:

> There are three other areas of vital importance in language planning. They are: the need for a language of communication at the national level, the need for national integration, and the need for national development. Here again, for all three areas, the tendency is to make do with the colonial language on the basis that it already serves, or that no other language is available to serve, this purpose (Bamgbose 2000: 101).

Language and the challenges of nation-building, particularly in multiethnic, multicultural, and multilingual African societies, involve questions of "national integration" and "national identity" that continue to receive much attention (cf. Finlayson and Slabbert 2005, Simpson 2008, Edwards 2009, among others). Characteristically for the African situation, it all ties up again with the colonial past, the power relations between languages, and the resulting attitudes:

> In view of the close link made between language and ethnic identity in colonial and postcolonial Africa, it is not surprising that language planning has been such a key issue in modern African politics. Issues of official language(s), the relative importance of attaining national unity versus the preservation of diversity, the status of previously disadvantaged and minority languages, as well as language in education have been and remain critical topics of political debate in sub-Saharan Africa (Finlayson and Slabbert 2005: 16).

The following premises taken from Okombo (2000) would appear to be axiomatic to the initiated; they are given here as Table 2.

Table 2: Development communication (Okombo 2000: 43)

Development is about verbal communication between stakeholders;
Modern development relies heavily on knowledge and information;
African countries rely significantly on foreign sources of knowledge and information, especially in the areas of science and technology;
The knowledge and information comes to Africa through international languages which are not indigenous to the African continent;
For development ideas to take root in Africa and benefit from African creativity, development activities must involve the African masses, not only the elite; and
The goal of involving the African masses in development activities cannot be achieved through a national communication network (including education) based exclusively on non-indigenous languages.

Given the obvious role of the language factor in developmental matters, it is at least remarkable, if not incredible or even ridiculous, that language(s) appear(s) to be of no interest at all in most of the ongoing development discourse and even in much of the social science research on Africa (King'ei 1999).

No matter how narrowly or widely we define development, there is no way in which issues relating to political systems and democracy, judicial, and educational systems, the human rights situation, economy and social mobility, the role of electronic and print media in society, issues of cultural autonomy, and the status of minority groups can be seriously analyzed and discussed without reference to language as an important factor. The very fact that postcolonial education policies in Africa do not reflect the importance of the language factor for societal and economic development is one of the major reasons for the persistent undereducation of the African masses, elite closure, and the subsequent underdevelopment of African political and economic systems.

It is commonly accepted that illiteracy among individuals and larger sections of populations is a major obstacle to economic, cultural, and social development in Africa, and that the single most important key to development and poverty alleviation is education. Education and literacy are closely linked to language, because it is through language(s) that all educational content and skills are transmitted and consumed. In multilingual societies, questions regarding the medium of instruction are of primordial importance. Therefore, in Africa in particular, no development issue can be discussed or resolved without reference to education, which in turn cannot be discussed without reference to the language issue: education aims

to develop an individual's cognitive skills, and these cannot be easily separated from language skills.

The received wisdom among social scientists tends to rest on inadequate theories concerning the fact that most developing countries are multilingual and multicultural, with ensuing problems for national communication, and how this might affect the conspicuous correlation with both high levels of poverty and high levels of illiteracy. Already in the early years of the newly developing discipline of sociolinguistics/sociology of language, Fishman (1968, as quoted in Stroud 2002) observed that "[l]inguistically homogeneous polities are usually more developed, educationally more advanced, politically more modernised and ideologically-politically more tranquil and stable." Or, in the words of Pool (1972, as quoted in Stroud 2002), "… a country that is linguistically highly heterogeneous is always underdeveloped and a country that is developed always has considerable linguistic uniformity." Such sweeping statements are popular until this day. This is a surface correlation, however, of purely quantitative nature that explains nothing in terms of a causal relationship. As a matter of fact, no direct causal relationship has ever been established between higher degrees of linguistic diversity and lower levels of economic and social development – on the contrary (cf. section 4 of this chapter)!

In recent years, and predominantly among African scholars of sociolinguistics, a new paradigm has gained ground that no longer views the study of African languages as an end in itself, either to examine academically interesting sound patterns and grammatical structures or to archive exotic specimens of human mental production. Nor is it sufficient to look at African languages as mere symbols of sociocultural identity and potential sources for either national unity or, on the contrary, for national disintegration through language-based separatist ethnic movements. The new paradigm looks, first of all, at the speakers of language(s) and how they use (or do not use) language(s) as resource(s) in everyday life, and whether this use is to the benefit or detriment of social, political, and economic development. The question is no longer what linguists specializing in African languages can do for these languages, but what these languages can do for their speakers and how linguistically trained experts on these languages can help speakers tap into the resourcefulness of indigenous and foreign languages in order to promote socioeconomic development, democracy, and the eradication of poverty and hunger.

In this sense language(s), the indigenous languages in particular must be treated as integral elements of any national (economic, social, and cultural) development plan. In the words of Sammy Chumbow (1987: 22):

> The languages of a nation are its natural resources on the same level as its petroleum, minerals and other natural resources. These languages can therefore be harnessed and developed, if carefully planned, for the overall interest of the nation. However, if care is not taken and appropriate planning undertaken, multilingualism, like its twin-sister, multi-ethnicism, can be a source of disunity and strife in the body politic of the nation. Language planning is consequently as important as any other aspect of economic plan-

> ning and the place of language planning is therefore the "National Development Plan", as a concomitant of all the other aspects of economic planning for national development.

First of all, multilingualism must not be viewed as a problem but as a resource, even in the narrow sense of an economic asset. Similarly to the way in which the energy sector has introduced innovative technologies that make use of sustainable resources, such as solar, wind, and water power, the language sector provides rich potential for innovative and sustainable language industries. Alexander (2003: 34) shares the following vision:

> Indeed, if handled properly, languages, like all other resources, have a job-creating potential. In some countries, notably Australia, Canada, Belgium, Sweden, a language industry has been set up which caters for domestic as well as international linguistic needs. Thus, for instance, hundreds – and even thousands – of interpreters, translators, terminologists, lexicographers and other language practitioners and professionals have to be trained and employed in order to make the multilinguality work smoothly.

It has been postulated and become widely accepted among experts that (economic) development has been impeded, and still is, by the prevailing language policies on the continent, which directly or indirectly can be made responsible for slow development progress and persisting mediocrity, as Alexander never tires of pointing out (2000: 20):

> … the fact that the languages of scientific and technological innovation are foreign to the common people of Africa necessarily restricts the layer of creative people from whom recruits to the modern sector can be drawn. One of the unintended consequences of this situation is that the economy is necessarily orientated toward the European, and other Northern, metropoles from which the "experts" always come. If the concepts of modern science and technology were accessible through the indigenous languages of Africa, there is no doubt that the layer of creativity and innovation would be exponentially enlarged and the economies would be rendered less dependent on foreign expertise. In my own view, there is no doubt that the situation in which modernity and technological sophistication is accessible to African people only through the languages of Europe, generally speaking is one of the main reasons for the enduring mediocrity of African intellectual production in the late 20th century.

8.2. Language and power in Africa

As much as language planning, viewed in a comprehensive way, will affect all spheres of political, economic, social, and cultural life, public and private, within polities, be it on local, regional, national, or even supra-national levels, the bottom line of all discourse on language policies and language planning is that language has to do with power. Therefore, the overriding issue in African socio- and applied linguistics is that of language and power: past, present, and future. Even though we

will discuss language and education and language and development in more detail in separate subsections further below, one may see them as subfields of the language and power issue. Firstly, education – unless perverted under discriminatory ideologies like the notorious Bantu Education Act in apartheid-era South Africa – offers pathways to power and, therefore, tends to be monitored by those already in power (whom we somewhat euphemistically refer to here as "elites") as a way to control (self-)recruitment to replenish their ranks. It is here that Carol Myers-Scotton's term "elite closure" comes in, and where the late Neville Alexander has spoken, on several occasions, of the status quo maintenance syndrome of the ruling elites. We are also reminded of Birgit Brock-Utne's provocative book *Whose Education for All? The Recolonisation of the African Mind* (2000). Secondly, the definition of what sociocultural modernization and economic development mean for a given society, and what directions they should take, also relate back to issues of power: Who will participate and in what way? Only Africans or also non-African stakeholders? Only members of the elite or also the African masses?

As was said before, in multilingual societies there will always be a language question in terms of inequality, power, and differing attitudes toward languages. It is unlikely that any one of the languages involved will ever truly merit the label "neutral" in these regards, despite the efforts of politicians and ill-informed language planners to create or introduce a "neutral" language in order to escape conflict and national disintegration. While multilingualism could serve as a simply descriptive term that refers to the presence and availability of more than one language in a given territory, institution, sociocultural group, or even for an individual speaker, I have suggested the term polyglossia to refer to the hierarchy of power and prestige that exists between any two or more languages and almost automatically prevails in multilingual settings.

The facts are as follows. The central role of language in the processes of sociocultural modernization and economic development, including the ideological emancipation of Africa, also under the guise of the African Renaissance rhetoric of the late twentieth and early twenty-first century, remains largely unidentified, underrated, and under-researched.[14] Less in sociolinguistic but rather in political circles, the salience of the "right" language policies for attaining democracy, equity, and equality and allowing for mass participation in national development goes largely unnoticed – and detrimentally so in terms of language policies and language politics. A "copy-and-paste" mentality is still the order of the day, testifying to the highly successful brainwashing of the postcolonial elites on their way through (post-)colonial-type education: *What is good for the colonial motherland must be good for the postcolonies*; or, in a still lingering racial perspective, *What is good for the White Man must be good for the Black Man*. The predictable results

[14] Cf. the contributions by Wolff (2011b) and Agwuele (2011) to the programmatic reader *Multidisciplinary Perspectives on Overcoming the African Predicament.*

are generations of mediocre and often ridiculed "copy-cats" who function in the languages of the former colonial masters (currently referred to euphemistically as "representatives of the donor community") instead of being proud and creative African individuals who enjoy their own genuine outlooks on life and the future of African societies, and who express this in their own languages. Language ownership is a powerful tool, also in times of globalization, and educated Africans compete globally for good jobs and positions of power. But: who prefers a copy to the original? While it is certainly useful to be able to use second or foreign languages for international and global communication, most Africans continue to rely on African languages for their daily tasks; there is little or even nothing to gain from sacrificing mother tongue competence to shift to speaking, let's say, English only. Further, from a development perspective, there would appear to be little gain in maintaining the postcolonial class divide along the lines of language use: the privileged few in power profit from good, mostly private, education in the language of power and keep it exclusively as the in-language of the elites, while the masses suffer from exclusion from such education, having only been granted access to poorly performing mass education in a foreign language that is neither properly taught nor acquired and has little or no meaning in the out-of-school reality of the people. Such a sociocultural schism would appear to have severe negative repercussions on democratic development and sociocultural modernization.

8.2.1. Language and the colonial past

More than half a century after independence, the aftermath of Africa's colonial past continues to trouble African states and societies in the domains of national communication and integration, education in general, sociocultural modernization, and economic development, also in the face of globalization. Many of the complexities involved have already been surveyed in Bamgbose's influential book *Language and the Nation* (1991) and in later writings by the same author and others (e. g., Laitin 1992) that mark the beginning of the new paradigm of language as resource.

The imposition of colonial rule was accompanied by the imposition of a hegemonic foreign language. Today, it is this language that provides the educated postcolonial African elites with the much-desired "window to the world" at the price of continued and largely exclusive political, cultural, and economic ties with the former colonial master in terms of trade, monetary standards, external telecommunications, technical and budgetary assistance, specialist training, etc. For many, however, this fact stigmatizes the ex-colonial language as a symbol of perpetual hegemonic domination. This constant attitudinal pull in two diametrically opposed directions creates an insoluble dilemma for language planners and policy-makers in postcolonial Africa. Here and typically so, the assumed instrumental value of language may clash with the perceived symbolic value of the same language.

The colonial powers adopted different language policies for their colonies. While the British, under the low-cost idea of "indirect rule", would allow the use of local languages in local administration and the so-called native courts, they restricted the teaching of English and education in English to a small class of targeted somewhat bicultural and bilingual individuals (*assimilados*) who would then be left with the task of mass education. The system used the local "vernaculars" in lower primary education before switching to an English medium of instruction after two to three years. The French and the Portuguese adhered to the idea of total assimilation, which discouraged the use of African languages across the board and created a strong position against the advancement of Arabic as well. From 1911 on, all administrative documents in French West Africa had to be printed in French; in Portuguese Africa the use of native languages in all schools and for publication (except as a parallel text to Portuguese) was prohibited from 1921 (Laitin 1994: 84–85). The Belgians in the Congo, sensitized by their own language conflict back home, established a clear hierarchical three-tier order with French at the top, major lingua francas ("vehicular languages") for the different regions, and the local "vernaculars" at the bottom of the system (Laitin 1994). German colonial language policy, short-lived as the German colonial era was, was far from uniform: German was used as the language of power in Southwest Africa (Namibia); Swahili, already established as a lingua franca, remained in use in East Africa; Ewe and German were tentatively implemented in Togo; and no solution was found for Cameroon. Differences among Protestant and Catholic missions regarding the use of languages for liturgical purposes played some role, with pre-Vaticanum II Catholic liturgy before 1962 clinging to Latin, while Protestant churches favored liturgy in the "vernacular" languages. A clear correlation emerged in the African territories in which the Romance language – speaking mainly Catholic colonial powers favored a strong assimilation policy with little or no room for African languages, while the Germanic language – speaking and largely Protestant colonial powers, including the somewhat special situation in South Africa, followed a path that would ultimately lead to some kind of apartheid. The Belgian approach lay somewhere in the middle.

Largely, these patterns from the colonial days persist until today: former British territories tend to follow subtractive bilingualism with early exit (after two to three years) from an African mother-tongue language to an English medium of instruction, while former French and Portuguese territories still widely adhere to official monolingualism in the ex-colonial language and disallow the use of any African language, except in, perhaps, "experimental" institutions. More recently, however, we may observe the first cracks in the accepted ideologies of the postcolonial educational systems, and with them the first steps toward embracing multilingual options to solve the language-based problems in education. In 2010, ministers of education from eighteen African countries adopted the *Policy Guide on the Integration of African Languages and Cultures into Education Systems* (Ouane and

Glanz 2010: 50–57). South Africa has already gone a long way in recognizing nine Bantu languages, in addition to English and Afrikaans, as official languages of the country, and post-imperial/post-socialist federal Ethiopia allows each of its constituent regional states to decide on its own "working language", which, as a rule, is the African language of the ethnolinguistic majority group within the regional state.

However, a basically racist Eurocentric "colonial ideology" still haunts the minds of many language planners, decision-makers, and expatriate consultants in Africa. Taking issue with British colonialism, Bamgbose (1991: 4) draws on several sources to highlight the "elitist" and "exclusive" strategy behind the British policy, which was designed to allow a system of rulership of the very few over the very many, both in India and in Africa:

> Colonial educational policies led to a conscious breeding of an elite. Macauly's justification in India for this policy was as follows:
> It is impossible for us with our limited means to attempt to educate the body of the people. We must at present do our best to form a class who may be interpreters between us and the millions we govern – a class of persons Indian in blood and colour, but English in tastes, in opinions, in morals and in intellect. To that class we may leave it to refine the vernacular dialects of the country, to enrich those dialects with terms of science borrowed from the Western nomenclature, and to render them by degrees fit vehicles for conveying knowledge to the great mass of the population.

This clearly mapped-out elitist approach resulted in the traumatic devalorization of the indigenous languages (discriminatingly referred to as "vernaculars" and "dialects"), the effects of which are still felt rather strongly in Africa, where, basically, very little has changed. With a somehow bicultural and definitely bilingual colonial subject as a member of a willing and dependent "colonial class" in mind, the British policy obviously left room for functional proficiency in the indigenous languages. As Bamgbose (1991: 4) continues:

> The major twist to this policy in India and elsewhere was that the few succeeded in English largely to the detriment of their own languages; and, rather than being able to train the masses, they became alienated from them. As a Government Commission in India observed: 'Use of English as such divided the people into two nations, the few who govern, and the many who are governed, the one unable to talk the language of the other and mutually uncomprehending.'

Alienation of the elites from the masses of the African populations remains one of the major problems for both African governments and applied African sociolinguistics, which provides the scientific foundation for language policy design and implementation. Maintaining the colonial educational system after independence cannot provide a viable strategy for successful mass education, which is needed in present-day Africa to accomplish the pending tasks of sociocultural modernization and economic development. However,

> [c]onfronted with the colonial legacy and the difficulty of making a change, [African governments] may simply accept the situation as a *fait accompli* or they may remain indifferent. Sometimes, they are aware that there is a problem, but they are so overwhelmed by the magnitude of the problem that they stick to what already exists. It is only in a minority of cases that there have been brave attempts to face the problems squarely and take decisive policy measures; but, even in such cases, the legacy of the past often limits what can be done.
> There is a feeling that language problems are not urgent and hence solutions to them can wait. It is true that the effects of not taking action on a language question may not show up in the same way as those of not taking action on an economic problem … But the fact that the effects are hidden does not make them less serious or mean that they will somehow disappear (Bamgbose 1991: 5).

As a consequence, the transferral of the colonial system to the independent African states has "serious implications for the performance of workers and therefore for effective administration" (Bamgbose 1991). In the words of a commission that reported on the public service in Nigeria, dating from 1974 (Bamgbose 1991: 6):

> An overriding problem, which affects the public service as it does all aspects of society is that of language … What this means for efficiency in the conduct of government business is rarely even thought about perhaps because there seems to be no immediate answer. But it is perfectly clear to the careful observer that below the top-most levels in the various sectors of society most people are conducting their business in a language which, in varying degrees, they have not in fact mastered.[15]

This is the devastating legacy of the colonial past in terms of language, and it testifies to the failure of the newly independent governments to design and implement a feasible language policy to create the basis for an efficient and effective postcolonial administration and education.

8.2.2. Language and the state

Another legacy of the colonial past, so to speak, is the imposition of some kind of "nation-state" ideology of national-romantic European provenance on postcolonial overseas territories that have emerged as independent countries, usually after

[15] Note that "the top-most levels" of society at the time when the report was written were still, as a rule, occupied by British former colonial administrators, then in the service of independent Nigeria, and thus native speakers of English. There was also a fairly thin layer of university- or military academy–trained Nigerians who had received much of their education or training in Great Britain and had, therefore, profited from an extended stay in various native-speaker environments. Not too many years after this report was written, most British ex-colonial administrators left the services and the country, essentially leaving governmental and educational institutions to exclusively L2 speakers of the official language.

a painful process of decolonization. However, the partially overlapping definitions of "nation" and "state" according to European models do not hold for postcolonial Africa. The European nation-state is ideologically obsessed with "oneness" (one state, one nation, one 'national' culture, one 'national' language), which, in European history, was superimposed, often by force, on pre-existing linguistic, ethnic, cultural, and religious diversity by historical events involving both imperialistic military action and progressive cultural assimilation. From an idealized perspective, European "nation-states" took time to grow almost "naturally" by overcoming their inherited ethnolinguistic and cultural diversities, not least by creating or fostering a standardized (pan-dialectal) "national" language that became ideologically associated with either the ruling feudal class, as in the UK (the "King's/Queen's English", nowadays and in more democratic terms also referred to as "BBC English"), or the language of national literature and poetry, as in Germany's *Hochdeutsch* (Standard German), a term that literally translates as 'high German' and thereby also invokes "superiority". The independent states in Africa, on the other hand, have emerged almost overnight as "artificial" polities based on anti-imperialist/-colonial struggles against a common external "enemy" rather than internal homogenization of vibrant linguistic, ethnic, cultural, and religious diversity. These states shared little more than a common territory and a common colonial past as their defining assets. National political unity, fair shares in the economic resources and infrastructure, social cohesion, and pride in a commonly enjoyed national culture are not the order of the day in postcolonial Africa. In the worst cases, the postcolonial "state" must even be considered "failed", with Somalia providing the most striking case in point. If the model of the nation-state implies that its population constitutes a nation united by the ideology of a common descent, a common language, and many forms of shared culture, then applying such a model to Africa is futile. In Africa, therefore and in general, strategies that copy and paste extra-African models, including those provided by the former colonial masters, simply won't work for a number of reasons.

Yet suddenly on the agenda was the creation of a unified nation-state out of the pieces left behind by colonialism and the anti-colonialist struggle. Following an extra-African model, this required at the very least the promotion of a uniform endoglossic "national" language through a "nationalizing" language policy. If this was not possible, a "neutral" language was to be used (which then happened to be, practically by default and because it was already "there", the language of the former colonial master). Both of these monolingual strategies generally failed, with few exceptions. The "national language" model failed because extreme territorial multilingualism made it impossible to choose one endoglossic "national" official language that would be acceptable for all residents. As for a "neutral" official language, it is doubtful that such a thing could exist under the prevailing circumstances, least of all in the form of an imposed foreign and ex-colonial language of power. Achieving national unity through a "national education system", with

compulsory primary education and a relatively uniform curriculum in secondary schools, also failed since, again, it presupposes the existence of a "national" official language for the medium of instruction. A unifying national education system would, at the same time, enhance the spread of the "national language" across the whole society, but at the cost of wiping out minority and other languages by prohibiting their use in public, including in schools and universities (a strategy that was and still is widely used in Africa). Clearly, the goal was a regime of "national official monolingualism" using a "copy-and-paste" model of extra-African provenance. However, just as the whole monistic ideology proved inadequate for postcolonial Africa, so too did these strategies for "national integration" (nation-building). They were bound to fail – and have done so on a large scale, despite their disputable historical "success" elsewhere in the world, most of all in Europe.

The postcolonial state in Africa is not even a "multinational state" of sorts, since the notion of "nation" as such hardly ever applies to any of the constituent social, cultural, religious, and linguistic groups that make up the diverse plurality of the ethnolinguistic fabric of the African countries. Not surprisingly, therefore, traditional concepts of nation building and national integration did not work in Africa, and will not do so in the future. Self-declared "rainbow nations" (South Africa) that, by necessity, officially promote "unity in diversity" (Nigeria) have no other option than to accept plurality and diversity and to develop language policies based on mother tongues and other tongues – indigenous African languages, African lingua francas, and imported foreign languages – and combine these languages in mother tongue–based multilingual strategies for education and national integration. While this strategy may not entirely prevent conflicts and occasional threats of ethnolinguistically based separatism, successful implementation will help increase the cultural uniformity and homogeneity of the population over time. Or, in the most general terms: a nation cannot be built in opposition to its prospective citizens but only in accordance with them.

In terms of formulating and implementing a unifying language policy, things may be easier in a handful of fairly ethnolinguistically homogenous countries in Africa, such as Botswana, Burundi, Eritrea, Lesotho, Madagascar, Rwanda, Somalia, and Swaziland, in which more than 90 percent of the non-immigrant population is assumed to be able to communicate in one common language. The recent history of some of these countries, however, shows that linguistic homogeneity is no guarantee for domestic peace. This, by the way, renders absurd the whole idea of using "one national language" as a strategy to create and maintain peace. As Ayo Bamgbose (1991: 15) points out, language is but one factor:

> Some of the real causes of divisiveness in African countries have nothing to do with language. They include exploitation of ethnicity by the elites in order to gain political or economic advantage, the problem of sharing scarce resource with the inevitable competition (e. g. for jobs, positions, facilities, etc.), uneven development, and sometimes external instigation based on nationalistic, ideological or religious motives.

As long as the blueprint comes from the West or from other models with an imperialistic past (e. g., Russia, China), those already in power will insist on maintaining the *status quo*, which entails bedevilling multilingual pluralistic solutions by constantly repeating a litany of persistent myths about the evils of multilingualism with regard to national unity and even economic development. Bamgbose (1994) mentions some of these myths:

– Monolingualism always unites, multilingualism always divides;
– National unity is not possible unless a country has a single language;
– Linguistically heterogeneous states are characterized by low or very low GNP per capita, while linguistically homogeneous states have high or mid-level GNP per capita.

Bamgbose (1994) also shows that these myths can easily be debunked with counterexamples from Africa and around the globe; the third point is taken up again in section 4 below.

To promote "national development", understood in the broad sense of tapping the human potential of the masses, increasing their productivity, and improving their living conditions, language is crucial in two areas: mass literacy and mass communication. Neither of these presupposes a monolingual solution, on the contrary: mass literacy and mass communication is best achieved via languages people already use. Thus this would suggest using multilingual strategies based on mother tongues and other tongues, as many as are necessary and feasible.

Before closing this section, a word must be said about the notions of national languages and official languages, both of which bear direct connection with the notion of nation-state and are often confused, and even allow the combined use of national official language. First of all, any language, endoglossic or exoglossic, may serve as the official medium for communication for use in government, administration, legislation, the legal system, education, the media, etc. It is primarily defined by its instrumental value for effectively reaching all stakeholders, less so by its symbolic value, which, however, must not be underrated (cf., for instance, membership in the Commonwealth of Nations, the Organisation Internationale de la Francophonie, etc.). It is not, as a rule, meant to symbolize "national identity", which wouldn't make much sense anyway if this language was shared with a number of other countries based on a common history of colonialism. Symbolizing "national identity" whether in a monolingual or multilingual setting, however, would be the primary value of one or several national language(s). In the strict sense, this label would apply only to relatively homogeneous nation-states that see the vast majority of their populations as sharing a single identity, by descent, and a common history as "one nation", which, almost inseparably, shares one language. The notion of multinational state would allow for more than one constituent nation within the state territory and therefore more than one national language. This, as a matter of fact, provides the model for many African countries that equate their

constituent ethnolinguistic groups with "nations" and allow, as for instance the Republic of Niger, 10 *langues nationales*, each with its own native speaker group in the national territory. Again, the situations in Europe and Africa cannot easily be compared:

> …with a small number of exceptions, … Africa has not witnessed the kind of language nationalism that strikingly characterised the growth of various nations in Europe from the nineteenth century onwards, adopting Herderian views that a (single) language is the soul of a nation and a central symbolic rallying point for the championing of nationhood. This is perhaps, rather naturally, due to the practical constraints placed on nation-building by the establishment of multi-ethnic colonial territories. … the varied ethno-linguistic character of the majority of colonies did not really allow for a single language to be used as a fully representative symbol of an emerging nation in the way that, for example, German or Polish did in nationalist movements in Europe. Instances where specific languages did become associated with independence and post-independence nationalist movements have occurred in certain countries where a lingua franca or common language is present, such as the Arabic-speaking countries of North Africa … and the Swahili area of East Africa (particularly Kenya and Tanzania …), but elsewhere language has not figured as the central spiritual driving force of nationalism, except perhaps in the case of the Afrikaner nationalism as a unique, defining property of the Afrikaner struggle against British rule … (Simpson 2008: 12).

Rather, as Simpson (2008) points out, other indexes of identity developed a stronger binding force in African postcolonies, such as "religious adherence" and "loyalty to (sub)ethnic group or clan". Also, the very notion of "national identity" in relation to language may have two readings:

> … the first of these is a population's relationship and sense of belonging to a nation-state, and the second is the identity of an individual nation-state within the international world order. Based on the first meaning, Senegal can best be described as a predominantly Wolof-speaking nation, while on the international scene it is a francophone state (Simpson 2008: 13, quoting Mc Laughlin in the same volume).

Under the impact of the growing discussion of combined endo- and exoglossic multilingual rather than (mainly exoglossic) monolingual solutions, African national languages become upgraded, in constitutional texts, to the status of co-official languages, alongside with (mostly ex-colonial exoglossic) languages, as, for instance in the new constitution of Kenya; other striking examples have already been referred to: post-1992 Ethiopia and post-apartheid South Africa. Thus, it now would make sense to speak of, for instance, Amharic and Swahili as national official languages, while English, French, Portuguese, and Spanish would remain simply official languages, not carrying the co-label "national". Note that Afrikaans and Arabic (in North Africa) would make interesting cases for debate under the notions of (endo- or exoglossic) national, official, and national official languages.

8.2.3. Language and globalization

As Mufwene (2008: 1) points out, in particular for the African context,

> … one cannot make sense of *globalisation* without connecting it to *colonisation* and articulating the different ways in which the latter proceeds. Languages are affected because colonisation and sometimes globalisation entail the following: population movements; the spread of the migrants' languages and the ensuing contacts of the latter with those of the indigenous, dominated populations; the emergence of new language repertoires and new divisions of labour among the coexistent languages, as well as new dynamics of competition and selection among them; and differential evolution regarding their vitality.

Not least with colonization in the nineteenth and twentieth centuries, Africa entered the specific competition of modern economic globalization, even if only as a provider of pre-industrial raw commodities and totally dependent on political and market powers outside Africa. This more recent globalization had, however, its forerunners during the African Middle Ages, during the times of Islamization, and, prior to that during the Hellenic, Roman, and Phoenician empires. While none of these periods of contact are comparable with what happened during and after European colonization, it is still clear that the need to identify and use a common, and thereby dominant, language of the particular global system at a given time in history has been part of the African experience for a long time. However, when the continued existence of mother tongues is threatened by a hegemonic language, it is not this dominant language, not even in the case of a colonial master, that becomes the source or driving force of language endangerment, attrition, shift and loss, as the layperson could be inclined to think. Neither in the case of Arabic nor following Belgian, British, Dutch, French, German, Portuguese or Spanish colonialism has the newly imposed language of power eradicated the local African languages. Rather, as evidence shows in particular from the most recent periods, it is the internal competition from more or less powerful majority African languages (in particular those which are widely used as lingua francas) that pose threats to the vitality of minority languages whose speakers, quite often if not as a rule, have assimilated to patterns of stable individual and sociocultural multilingualism. The message, therefore, is: Africa is not a new player in the game of globalization and has developed its own strategies to cope with the ensuing challenges, namely the praxis of resourceful multilingualism rather than ideology-driven language shift from one monolingual situation to another! The words of Hobsbawm (2000: 125) apply *mutatis mutandis* to Africa: "The idea that one day the entire world will speak English seems utopian to me; it is something that will not happen. Multilingualism, by definition, is an obstacle to globalisation." For Africa, this assumption has been proven right, as far as past experience has shown.

Modern sociolinguistics is further challenged by a new paradigm that Blommaert (2010) refers to as sociolinguistics of mobility, which he sets against the

older paradigm of sociolinguistics of distribution. Whereas the older paradigm was more concerned with variants of "an artifactualised image of language" localizable in time and space (which some sociolinguists would refer to as the "ancestral code"),

> … in which movement of language resources is seen as movement in a horizontal and stable space and in chronological time; within such spaces, vertical stratification can occur along lines of class, gender, age, social status, etc. The object of study, however, remains a 'snapshot', in which things are in place, so to speak. The second paradigm can be called a *sociolinguistics of mobility*, and it focuses not on language-in-place but on language-in-motion, with various spatiotemporal frames interacting with one another (Blommaert 2010: 5).

Although contemporary phenomena such as increased migration and modern communications technologies are now affording highly localized African languages a more global reach, Africa has seen the effects of globalization throughout much of its history, and prior to independence, when African countries began to enter into more global competition. If, under a sociolinguistic perspective, language is viewed as "a complex of resources, of their value, distribution, rights of ownership and effects … in which people make different investments and to which they attribute different values and degrees of usefulness" (Blommaert 2010: 28), then

> [i]n the context of globalisation, where language forms are perhaps more mobile than before, such patterns of value and use become less predictable and presupposable. Economic metaphors such as those developed by Bourdieu (1991) are particularly useful for a sociolinguistics of globalisation. Recall that Bourdieu saw language as a market of symbolic capital and power, with people juggling for profit and with some peoples structurally having less capital than others. Bourdieu and his contemporaries Bernstein (1971) and Hymes (1980, 1996) all drew our attention to the same phenomenon: that the world of language is not just one of difference but one of inequality … (Blommaert 2010: 28).

In the need and under the expectation that African governments conform to and meet the hopes and aspirations of their national populaces, also in the face of globalization, there are at least three goals to be targeted with regard to language policy. First of all and via formal education, a language policy should provide access to the official language(s) of the country. Hitherto, even in the context of combined endo- and exoglossic national language policy, the exoglossic official language takes high priority over the endoglossic one. With regard to this primordial target of the national education system, twentieth- and twenty-first-century globalization simply adds to the pull toward the international language of the former colonial power as the most effective means of achieving vertical social mobility and a highly valued "window to the world". This ties up both instrumental and symbolic values that are attached to international languages of wider communication (or languages for global communication). Consequently, national lan-

guage policies must (re-)establish an equilibrium of power and prestige between the endoglossic and the exoglossic official languages.

Second, an adequate language policy should provide, via formal and non-formal education, (additional) access to the major national (possibly co-official) languages (lingua francas) that have a strong instrumental educational and economic value on the national level and may also be valuable on the subregional level (in the case of African cross-border languages). The emphasis here is on the instrumental value of these languages; their symbolic value may be of lesser concern for their users but may foster the sociopsychological dimension of national (and subregional) identity and belonging. Third, if feasible, a language policy should ideally provide additional education in the local mother tongues and cultures for purposes of ethnolinguistic identity and pride.[16]

The implied bridge between "local" and "global" would be provided by mother tongue–based multilingual options for national and international communication, including formal education. Laitin (1992) later popularized this under the "3 ± 1 language outcome", a similar trilingual model that, at least for Cameroon, had already been proposed in the 1970s, by Maurice Tadadjeu. It aims to impart language skills for *international, national,* and *local* levels of communication:[17]

> Citizens will need to know (1) a European language, which will continue to be used in certain domains where the central bureaucracy or educational establishment is especially tenacious; (2) the national language, which will replace the European language in a wide array of language domains and will be a required subject for educational advancement throughout the country; (3) their own vernacular, which will be the medium of instruction for the initial years of their education, and also the language of administration in their home region. Those citizens whose vernacular is the same as the

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16 These public expectations would not necessarily reflect expert knowledge about the valuable *gnoseological* dimension of mother tongue/L1 medium of instruction, which, from a pedagogical perspective, deserves the most consideration. It may be interesting to note from a historical point of view that such trilingual approaches have long been discussed, for instance, in relation to the national, provincial, and local levels of communication and education (cf., for instance, Tadajeu 1975), and have become cited under notions like "mother tongue, other tongue and further tongue" (cf. Brann 1980). Unfortunately, the sociolinguistic models discussed in Africa in early post-independence days have had little practical impact before the breakthrough of democratization after the end of the Cold War and the increased interest in the new paradigm of "language as resource" in the 1990s.

17 Note that in the African context it would make sense to look at the *international* dimension of language use under two perspectives: (a) the subregional context, which would allow for regional cross-border cooperation (like ECOWAS, SADEC, etc.) for which quite a few African cross-border languages are available; and (b) global communication, which would make use of languages of European provenance, plus possibly Arabic and, in the future, Mandarin.

> lingua franca will need to learn only two languages. Migrants from one "titular" state living in another will feel compelled to learn a fourth language, especially if they feel nativist pressures in their new homes that might lead to their exile. This is an equilibrium outcome, because no party will have a clear interest in challenging it …
> This logic does not apply to states in which there is no obvious vernacular, lingua franca, or pidgin that could serve to symbolise national values, remain politically neutral, and be widely understood. In situations of this sort … the European language is likely to remain the interregional link language. But there will remain open the incentive for regional elites to press for cultural autonomy within their regions of power. The cost for the central bureaucracy of avoiding regional secession could well be agreement on language autonomy in the region, in the context of a "national" communications network in a European language. If these conditions hold, then an individual would be able to get a government job within his or her region by being literate in the local vernacular and to get a job in the national capital by being literate in the international language (Laitin 1992: 117–118).

Federally structured post-1992 Ethiopia, under its new constitution, provides an example of an attempt to put intelligent combined endo- and exoglossic multilingual strategies into place, pressured by its diverse ethnolinguistic set-up and traumatized by centuries of the imperial hegemonic dominance of one language of power over much of its present territory (in the rather exceptional absence of classic European colonialism), but also wishing to keep open the "window to the world" in order to be part of the global game.

First, the federal government uses Amharic as its "working language" (purposefully avoiding the ideologically contaminated term official language) for its business on the national level; Amharic is both the most widely distributed lingua franca (the term national language, which is equally contaminated in the Ethiopian context, is purposefully avoided here) and the former hegemonic language, thereby providing a welcome *fait accompli* of more recent Ethiopian history. Second, since the federal government continues to be responsible for higher education (secondary and tertiary), it has ruled that English shall remain the medium of instruction (which, as a matter of fact, has no non-immigrant native speaker communities in the country). Third, the individual regional states, which are delineated based on the contiguous geographic spread of the major ethnolinguistic groups, are free to choose their own "working language" for regional government, administration, and primary education, which results in the empowerment of the major Ethiopian languages, besides Amharic, such as Afar, Oromo, Somali, and Tigrinya. (In the absence of any major language that could serve as a common "working language" of the region, Amharic is being used as a default and fall-back strategy.) Finally, provisions are envisaged for other Ethiopian languages with local (sub-regional) majority status so that speakers may apply for official recognition for administrative and educational use.

With these options enshrined in a basically tripartite language policy for the international/higher education, national, and regional/local levels of communica-

tion, the Ethiopian government and a vast majority of Ethiopians would appear to be able to have their cake and eat it too.

8.3. Language and education in Africa

The field of language and education, or rather language *in* (formal and informal) education, is among the most researched and published on in African socio- and applied linguistics. The available literature abounds with both general observations, including debates on policies and their implementation (or non-implementation), and case studies for individual countries or languages. Since "Western" education was superimposed on pre-colonial "African" education, a new and problematic "language question" has been imposed on education. Language in education issue has inspired a long debate, with missionaries and colonial governments and administrators involved to such an extent that it became almost totally overlooked that African societies had educated their young ones, in their own mother tongues, before the advent of the White Man in sub-Saharan Africa or the Arabs in North and Northeast Africa (cf. Alidou 2004). The missionary and colonial impact on language-in-education issues has been overwhelming, and it dominates the debate until this day, more than half a century after decolonization and independence for most parts of Africa. The impact has been disastrous to the point that, in most parts of Africa, parents and their children, teachers and education officers, legislators and government officials all tend to reduce "(formal) education" to, primarily or exclusively, "mastery of the official language", that is, the language of power, which is usually of extra-African provenance. The official, often ex-colonial language is perceived to be both a symbol of power and superior education and an instrument for attaining superior education and access to power. The language of education has become a new fetish, so to speak, to replace the more important concern with the content and quality of education, namely what to teach/learn and which/whose knowledge to transfer and how to go about it. In relaxed rather than heated educational discourse, the language question would center around instrumental aspects relating to the choice of medium of instruction; language would simply be a gnoseological tool for knowledge transfer. In the African postcolonial context language acquires much more significance: language becomes the gateway to upward social mobility and individual economic success, the window to a globalizing world. For some, it is a weapon in the struggle against post- and neo-colonial domination, for others it is a symbol for freeing oneself from one's own African past and an entry ticket to global lifestyle communities. And it all begins with (formal) education. The language question in education in Africa remains overburdened with conflicting goals and necessities, hopes and aspirations. And because it is such a "messy" issue, decision makers tend to neglect putting it on the agenda and resort instead to opportunistic lip service.

And, indeed, mastery of the language of education – the medium of teaching, learning, and writing examinations – has an immediate impact on pass rates in all subjects taught in this medium. As studies, including many from African schools, show, those students whose mastery of, for instance, English, remains poor are likely to fail in other subjects, such as mathematics, science, history, geography, etc. The crucial fact of African daily experience in formal education is that students often or even mostly, do not understand what their teachers say. Teachers know this, and they often switch classroom communication to the mother tongues or a lingua franca that the students are known to have mastered. Yet the students, now being taught through a familiar language, are still expected to write their exam papers in the foreign language – with the expected poor results. This makes the question of which language or languages to use in formal education possibly the most crucial one in discussions of mass education in Africa. All other issues of importance, such as culture-sensitive content, community involvement, and literacy and post-literacy issues, hinge on the fundamental policy decisions concerning the medium of instruction. This makes education the foremost battleground for language attitudes, linguistic rights of minorities, language planning/development/engineering, and finally empowerment of disempowered sections of national populations.

8.3.1. The medium-of-instruction controversy

The first milestone in the upcoming postcolonial medium-of-instruction debate is usually said to have been the *Report of the UNESCO Meeting of Specialists* (1951), published by UNESCO in 1953. It has become one of the most cited publications and has stimulated countless subsequent publications, written by UNESCO but also by individual researchers. The message was crystal clear, namely that "pupils should begin their schooling through the medium of the mother tongue", and that "the use of the mother tongue be extended to as late a stage in education as possible" (1953: 47). In case mother tongue education was not possible, the suggested fallback strategy was that any other language that the pupil was sufficiently familiar with at the time of school entry, such as a lingua franca or "community language" spoken in the environment of socialization, could and should be used instead of the mother tongue. Taking the fact into account that most African and other mother tongues have relatively small numbers of speakers to the extent that "numerical muscle" cannot negatively influence decisions on language planning for education, a 1972 meeting of the UNESCO advisory group of consultants, The Role of Linguistics and Sociolinguistics in Language Education and Policy, asserted that "teaching at least initial literacy in the mother tongue may be advisable even in situations where the scanty number of speakers appear not to warrant the large-scale production of educational materials", as quoted in Bamgbose (1976: 11).

Sixty years after the UNESCO Report the medium of instruction is still a subject of heated debate. The fervent discussion in the literature reflects the antagonism

between African mother tongues and indigenous languages and imported, often ex-colonial, languages of European provenance, and not to forget Arabic in the northern parts of the continent. The debate is controversial and hinges to no small extent on the language/educational biographies and hidden agendas of those who participate in it, as it addresses both purely pedagogical/educational and largely political/developmental issues involving highly ideological aspects of "language ownership". Having been focused for many decades on primary education, the medium-of-instruction debate has recently been shifting to higher education, in response to the deplorable situation at university level across much of Africa.

8.3.1.1. Mother tongue versus other tongue

One of Africa's most knowledgeable, prolific, and constantly consulted experts on language issues in education is Ayo Bamgbose, Emeritus Professor of the University of Ibadan, Nigeria. His groundbreaking book *Mother Tongue Education. The West African Experience* (1976) is considered another milestone in applied African sociolinguistics for its lucid account of the early postcolonial developments in West Africa. Thirty years later, in a brilliant retrospective, Bamgbose (2005) returns to the question with "Mother Tongue Education. Lessons from the Yoruba Experience". His introductory section contains, in a nutshell, a full outline of the most burning issues of the African language question and deserves to be quoted here in full:

> The question whether or not to use a child's first language or mother tongue as a medium of teaching and learning is a colonial and postcolonial issue. Prior to colonial rule, traditional socialisation took place necessarily in the mother tongue. The language aspect of such socialisation took several forms, including practice in listening, memorising and recalling, solving riddles, reciting verses, singing, engaging in phonetic exercises involving syllabification and tongue-twisters, and story-telling. The non-language aspects involved transmission of knowledge on various subjects, including farming, buying and selling, measurement, crafts, tradition, religion and generally all that is required of a child growing up in that culture. In the context of Western education, this socialisation is referred to as *informal education*, since it does not involve a school building with its partition into graded classed and a structured timetable.
>
> The language of instruction debate is often presented as a choice between an imported official language and an indigenous language. What is often ignored in this dichotomy is the reality of multilingualism. In many African countries, not only are there many languages, it is a fact of life that many people speak more than one African language. Hence learning an official language is an extension of this practice of learning more than one language, except that in this case the other language is not an African language and so there will be need for adequate preparation and thorough grounding in the African language before beginning learning in the official language.
>
> Formal education has largely resulted in the marginalisation of African languages, a situation that may be traced to a number of factors. First, the colonial period saw the imposition of a one-language model for administration. This language, whether English, French, Portuguese, German or Spanish, became the dominant language in practically all

aspects of the public domain. African languages either did not feature in language policy or were assigned a subsidiary role, such as in initial literacy and cultural activities.
Second, the inherited colonial policy was generally continued into the post-independence period, either because the governments were reluctant to effect a change of policy or because they were persuaded that it was the best. Understandably, the educated elites, who are also in power, have benefited from the use of a European language as an official language and would not readily give up that advantage.
Third, the obsession of developing countries with modernisation meant that there was uncritical acceptance of a language of wider communication, such as English, as the shortest route to development. African leaders were in a hurry to develop their countries economically so as to approach, if not attain, the levels of the developed countries in as short a time as possible. An effective instrument of achieving both integration and modernisation was believed to be the erstwhile colonial language, which was already a formidable medium of science and technology as well as a useful means of inter-ethnic communication.
Fourth, there is a long-standing myth about African languages being unable to cope with the demands of technology and science. This myth ignores the fact that there are traditional African concepts about the universe, measurement, medicine, environment, and so forth which can be adapted for modern scientific discourse. Besides, it is a trite linguistic fact that there is no concept that cannot be expressed in any language if need to do so arises. This explains the successful efforts at using African languages as media of instruction at certain levels, and the compilation of technical terminology as well as translations into African languages. In fact, even in apartheid South Africa, it is reported that performance of African students was better when they were exposed to mother-tongue-medium education in the first eight years of schooling (Heugh 2000:23).
Fifth, arising from centuries of marginalisation of African languages, many speakers of these languages have come to develop negative attitudes to them, resulting in a preference for an imported official language for oral and written communication and for sourcing information either in books or electronic and print media.
The Yoruba language, which is spoken in south-western Nigeria by about thirty million people, has been a school language for more than a century and a half, yet it is still subject to arguments as to whether it should be used for teaching at upper primary level and beyond (Bamgbose 2005: 231–233).

We will come back to the "lessons of the Yoruba experience" in some detail further below. Suffice it here to quote four conclusive statements from Bamgbose's paper (2005: 249, 254, 255):

… the primary agent for the intellectualisation of an African language is the university. The lesson to be learnt … is that teaching and research on African languages at university level should continue to be actively promoted even when there is as yet no programme for using such languages for teaching at lower levels of education.
In other parts of Africa, widely spoken languages such as Kiswahili in Tanzania, and Amharic and Oromo in Ethiopia, have been used as languages of learning and teaching for the entire period of primary education, while Somali in Somalia has been used as a medium of instruction for secondary education as well … What seems to be lacking in many African countries is the political will to break away from the colonial policy and practice of limiting mother-tongue education to lower primary classes. Where such will

> exists, much can be done in a short period of time, as reported for Oromo, which, between 1992 and the present time, has come to be used as a medium of instruction from Grades 1-8, and a subject from Grades 9-12, in spite of problems of standardisation and terminology creation. (Griefenow-Mewis 2002:192–93).
> A starting point for … positive action is the generalisation of the principles behind the Six-Year Primary Project, which involves the use of a child's first language as a medium of instruction at least for the entire primary education, to as many languages as possible, not only in Nigeria but in Africa as a whole.

8.3.1.2. Swahili and Yoruba

Swahili in East Africa and Yoruba in West Africa provide case studies of African languages that are highly important for any discussion of African socio- and applied linguistics. Swahili is often cited as a shining success in terms language development and empowerment in Africa (only to be rivalled by Afrikaans, which, however, would provide a very different case worthy of study!). At the same time, its rise to prominence deserves to be critically reviewed since, as the saying goes, not all that glitters is gold. Swahili can be considered a largely non-ethnic lingua franca that is spoken mainly as a second language in large parts of East Africa by possibly a total of more than 100 million speakers in, among others, Tanzania, Kenya, Uganda, Democratic Republic of Congo, Somalia, Mozambique, and Malawi. Historically, Swahili is a mother tongue/L1 for fairly small populations living along the East African coast and on nearby islands, including Zanzibar. The Unguja variety, spoken in Zanzibar Town respectively today and historically spoken in the sultan's court, forms the basis of (Tanzanian) Standard Swahili. Swahili acquired its ever-growing function of lingua franca in pre-colonial days along mainly Arab trade routes for slaves and ivory. With regard to the use of Swahili in education, our focus will be on the situation in Tanzania (main source: Brock-Utne 2005).

Yoruba has been known to experts as the language of one of the most important language-in-education experiments in the 1970s: the famous Six-Year Primary Project (SYPP). Yoruba is one of the three major languages of Nigeria (together with Hausa and Igbo) and a mother tongue for an estimated 30 million speakers. It is also used as lingua franca for interethnic communication by an unknown number of L2 speakers. To a limited extent, Yoruba is also a cross-border language, mainly straddling the international border between Nigeria and Benin. With regard to the use of Yoruba in education, our focus will be on the situation in Nigeria (main source: Bamgbose 2005).

Both languages have a long history of standardization going back into the colonial era. Yoruba uses a modified Latin-based alphabet with diacritic-marking, while Swahili has a double tradition of being written both in a Latin-based and a modified Arabic-based orthography. For both languages, there is rich socio- and applied linguistics literature available to be studied and from which important lessons can be learned.

Swahili[18]

Reports on Swahili as the success story of a highly empowered national and official African language must be critically reviewed and stripped of obvious political and nationalist propaganda, at least in the case of Tanzania. This relates to the post-independence political choice to make Swahili the symbol of decolonization and of independence, and not least of Julius Nyerere's ideology of Ujamaa socialism. Therefore, numbers may be exaggerated when reports say that 95 or even 99 percent of Tanzanians speak Swahili as a first or second language. The prevailing language ideology tends to obscure the existence of Tanzania's many other indigenous languages, as well as the fact that Swahili, to no small number of Tanzanians, has remained a foreign language just like English. Being, however, widely spoken in the country, Swahili is being acquired parallel or even prior to the acquisition of the mother tongue/L1 of certain inland populations; it is also the mother tongue/L1 along the coast and on the islands, in particular Zanzibar. Owing to the ongoing dynamic spread of Swahili as a co-official (together with English) and national language, the number of "non-ethnic" mother tongue/L1 speakers increases continuously. This has led concerned intellectuals, such as the writer Ngũgĩ wa Thiong'o, to accuse Swahili of being a "killer language" at the expense of the other about 120 Tanzanian languages.

As the country's national language and one of the two official languages, Swahili is used widely as a medium of instruction in formal education, namely through all seven years of primary school and in some teacher training colleges. It is also used as such in academic institutions that deal with Swahili on the tertiary level. On the whole, however, Swahili continues to battle with English with fairly dim prospects.

Swahili was first used for educational purposes under German colonial rule and, not least for anti-Islam reasons propagated by Christian missions, the Germans established obligatory Latin-based writing instead of using Arabic-based writing for official purposes. When the British took over after World War I, the idea was to eliminate Swahili as a lingua franca in education in favor of English only; this idea was later given up. The 1962 Constitution of Tanganyika declared: "The languages of Tanganyika are English and Kiswahili." After independence, the promotion of adult education through the medium of Swahili helped to spread its use to rural areas of mainland Tanzania. In order to enforce the unifying function of Swahili, census figures of how many people spoke other Tanzanian mother tongue/L1 languages were never elicited; their existence was practically denied for any official purposes.

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[18] This section is in large parts a selective summary of Brock-Utne (2005) with additions by the author, using parts of the original text verbatim or paraphrased without marking these passages off as indirect quotes in each case. *Verbatim* quotes are indicated.

Before independence, Swahili was used as the medium of instruction in the first four years of primary education, and English was taught as a subject in Standard 3 and 4. From Standard 5 and in secondary schools, English was used as the medium of instruction and Swahili was taught as a subject. In 1967, Swahili was made the medium of instruction throughout primary school (seven years). A proposal to introduce Swahili as the medium of instruction in secondary education was made after 1969 but not implemented. The idea came up again in 1977 and 1982 in reaction to observations concerning poor performance in English by students in secondary schools. In 1983 the idea of introducing Swahili as the medium of instruction in secondary and also in tertiary education was once again abandoned, despite the fact that levels of English remained too low in most schools for effective learning to take place. In order to remedy the situation, the Criper–Dodd Report (1984) came to the astonishing conclusion of suggesting an English-only medium, with no room for Swahili. There is evidence that the recommendation was based on external interference to safeguard British political and commercial interests, for instance, concerning the publishing industry. Subsequently, a British-funded English Language Teaching Support Project (ELTSP) was launched. Twenty years later, studies carried out between 1997 and 1999 "have shown that the language crisis in Tanzanian secondary schools and at the university is to-day even more severe than it was twenty years ago. Results of the University Screening Test … indicated that despite the fact that these students had studied under the ELTSP, their English language proficiency was no better than that of students before the ELTSP was launched" (Brock-Utne 2005: 60). Quite obviously, clinging to English rather than replacing it with Swahili was also the outspoken wish of President Julius Nyerere at this point in time. Nyerere was later reported, around 1995, to have considered this decision a mistake. Yet the decision was not reverted. "The language in education policy in Tanzania from the 1990s can best be described by words like confusing, contradictory and ambiguous …" (Brock-Utne 2005: 62). A new attempt to introduce Swahili as the medium of instruction in secondary schools was made, to start in 2001, but it was not successful. Since then, the public debate continues with stakeholders from politics, media, and academia taking adverse positions toward the feasibility of using Swahili for secondary and higher education purposes; it is more a battle of private opinions than a principled debate based on solid research. In the meantime, classroom situations are characterized by heavy code-switching between English and Swahili. Although this is done to ensure that children understand the content, they are still forced to write their exams in English, the language in which they are the least proficient.

Strangely, while Swahili can be used and understood by the vast majority of Tanzanians, and is the language used by most of the press, in primary education, in parliament and the in lower courts in Tanzania, it fails to be accepted for secondary and higher education. On the contrary, the proliferation of private schools that push English as the sole medium of instruction, along with "globalization"

and "market-driven" forces, each with their own agendas to "sell English", work in favor of even rejecting the use of Swahili as the only medium of instruction in primary education.

All facts based on solid scientific research concerning, for instance, mother tongue–based bilingual teaching in Swahili *and* English across all levels of education are on the table, yet there is no sustainable communication possible between researchers and policy-makers. One wonders why this should be the case, and in this regard Tanzania is not different from many other African states in sub-Saharan Africa. Obviously, linguists, sociolinguists, and educationists have reached the limits of their persuasive power in the dialogue with other stakeholders in education, parents and politicians alike. The question remains for future sociopsychological research to answer as to why such heavy communication barriers exists among members of African elites and stakeholders, how these barriers are maintained in view of all the available counterarguments that have been put forward for several decades since independence, and how – eventually – they can be overcome for the benefit of following generations, for sociocultural modernization, and for economic development.

Yoruba[19]

It may come as a surprise to learn that Yoruba has a long tradition of being used in formal education – since 1831 for freed slaves in Freetown, Sierra Leone, and since 1846 in Nigeria. From its beginnings as a language of education, both technical and policy-related problems have had to be overcome. On the technical side, there were problems related to standardization (Yoruba being a dialect continuum with mutually unintelligible dialects at the periphery), orthography (effected in 1875), and textbooks. On the policy side, there was the relationship between Yoruba and English in the school curriculum, an issue that still dominates the debate today. Basically, as was common in former British-controlled overseas territories, the mother-tongue medium was restricted to lower primary education and was replaced by English from the fourth year – at least on paper. In practice, teachers kept using the mother-tongue medium after the official transition whenever comprehension was low in classes taught in English. However, exams had to be written in English. "The outcome of the present practice of abandoning Yoruba as a medium of instruction in upper primary education and depending on English as the medium of instruction for the rest of the education cycle has resulted generally in what may be referred to as educational failure as shown in poor attainment, and high dropout, repeat and failure rates … A common complaint, which illustrates

[19] This section is a selective summary of Bamgbose (2005) with a few additions by the author, using much of the original text verbatim without, however, marking the copied parts off as quotes. Verbatim quotes are indicated.

attitudes about poor attainment, is that most primary school-leavers are neither literate in Yoruba nor in English" (Bamgbose 2005: 238–239). Average dropout rates between 37.4 and 52.7 percent have been reported in Nigeria, the most likely reason being that the children who drop out are basically unable to cope with their learning, which is conducted in English.

Statistics collected for the 1995–1999 West African School Certificate Examination show not only massive failure in English but also declining performance over the years, with a failure rate of about 64.3 percent every year and a falling tendency overall. Statistics also show that, since English is the medium of instruction in all other subjects except Yoruba and French, performance in the other subjects is almost as poor as in English. Over the years, statistics bear out the fact that the lower the performance in English is, the lower the results in all other subjects tend to be.

It is against this background that the Six-Year Primary Project (SYPP) needs to be studied and evaluated. Without giving a detailed description of the projects here (for that cf. Afolayan 1976), the results have been stunning and have drastically changed our understanding of the role of mother tongue–based education. SYPP started in 1970 in Ile-Ife, Nigeria, and originally comprised two experimental classes (Original Experimental Group) and one control class; the experiment was later expanded to include the New Experimental Group. The main aim was to find out whether primary education given through a mother-tongue medium of instruction was indeed more meaningful and effective than using the customary transition from the mother tongue in lower primary to a foreign language medium after three years. The SYPP curriculum consisted of English, mathematics, science, social studies, and Yoruba. "In the experimental classes, all subjects of the new curriculum, except English, are taught in Yoruba: and the English language is taught as a school subject by a specialist teacher of English as a second language. In the control class, the new curriculum is taught under the existing language policy of using Yoruba in the first three years and English in the last three years as media of instruction." (Afolayan 1976: 119) As a matter of fact, the use of specialized ESL teachers in the New Experimental classes was even abandoned, but new teaching materials for English were introduced.

The mains results of the SYPP were:

- Contrary to expectations, the experimental groups did not require a transitional course of intensive English, despite the fact that they had not been taught in an English medium of instruction at all but had only been exposed to English as a subject. Surprisingly, the students competed favorably with their peers from other public schools in entry tests for high school admission.
- The experimental groups performed higher in tests on all subjects, showing that the difference in medium of instruction is significant.

The lessons to be learned from SYPP are:
– The outcomes provide strong support for the use of a child's mother tongue for learning and teaching in primary school.
– SYPP provides a model for the balanced use of and competence in both Yoruba and English. To this extent, it is more functional and prevents children from being alienated from their culture.

Despite its obvious advantages, the SYPP model has not been generalized to all schools in Yorubaland, which covers a territory shared between three states within the federal structure of Nigeria, but also extends into Benin and Togo.

In high schools and colleges of education, Yoruba has always featured as a subject of instruction; since 1970 non-specialist teachers have been continuously replaced by specialist teachers with a linguistic and philological background in Yoruba. Following the National Policy of Education (1981), Yoruba is supposed to be taught as a first language to Yoruba-speaking students and as a second language to others. In practice, teaching Yoruba as a second language is neglected.

At university level, Yoruba was introduced as a subject in 1964. Initially, instruction was in English but was later shifted to Yoruba itself after an adequate metalanguage for teaching phonetics and grammar had been developed. Presently, there are master's and PhD programs in place, and PhD dissertations are being written in Yoruba.

Bamgbose (2005) concludes with the following lessons to be learned and applied to other situations in Africa:
– Primary education is more meaningful when conducted in the child's first language.
– Mother-tongue education does not preclude effective education in more than one language.
– Language education may entail curriculum reform.
– Terminology need not be an obstacle to mother-tongue education.
– Cooperative effort is required to develop materials and create terminology.
– Mother-tongue-medium education will lead to a reduction of educational failure.
– Teaching and research at university level may provide the impetus for improvements in mother-tongue-medium education.

8.3.1.3. Mother tongue–based multilingual education

A recent milestone publication "for the improvement of the quality of education in Africa", jointly published by the UNESCO Institute for Lifelong Learning (UIL) and the Association for the Development of Education in Africa (ADEA), "has laid a new foundation for in-depth discussions among experts, practitioners, stakeholders and government officials charged with education planning and

implementation as well as evaluation of such programmes and the development of new strategies for mother tongue and bilingual education in Africa" (Ouane and Glanz 2011: 19). As condensed in a resulting evidence- and practice-based advocacy brief compiled by UIL (Ouane and Glanz 2010), there now is robust evidence to address, based on solid research, "the strong prejudices, confusions and threats surrounding the language question … [and] show that there is a real intrinsic value and worth to mother tongue–based education beyond the emotional attachment and loyalty to identity, culture and values" (Ouane and Glanz 2010: 7). The salient message regarding language options for education reads as follows:

> [A]n effective way to lay the foundations for quality education in Africa is to use familiar media of instruction for a period of at least 6 years, to apply effective first and second language teaching methods, and to provide socially and culturally relevant curricula so that school learning can be related to learners' circumstances and be useful for life outside school (Ouane and Glanz 2010: 30).

In particular, the survey contains a number of highly relevant observations:

– *Mother tongue–based multilingual education is not an obstacle to national unity and development. On the contrary:*
  It has conflict resolution potential through recognition of linguistic and cultural diversity.
  It enhances social development through activation of the whole population.
  Strong multilingual competences further regional socioeconomic activities.
  Multilingual communication is an integral part of economic development.
  Languages and communication provide the foundation for new economic activities in the language industry and in the creative sector.
– *African languages have a high potential for education:*
  Rather than being "not modern" and requiring costly and time-consuming "development", languages develop in use, and therefore any language can be used for any purpose at any time.
  African languages, through their own ways of encoding knowledge, enrich existing worldwide scientific knowledge.
  African cross-border languages stimulate cost-efficient cross-national language development through joint publication activities, also beyond basic and functional literacy materials.
  African languages have already shown their potential to be used in formal education up to year 12 and are on their way into tertiary-level education.
– *The African reality of multilingualism can be handled effectively for lifelong education:*
  Restricting the medium of instruction to one language, (i. e., the official language) disadvantages 85 to 95 percent of pupils, who do not know any international official language before they enter school.

Acquired multilingualism is already a feature of many African individuals; trilingual models of additive mother tongue–based education are feasible, effective, and also cost-efficient.
Multilingual education increases social cohesion.
Language choices for education are a matter of social negotiations among the government, communities, and parent associations.
The right of every citizen to learn the official language must be guaranteed.

– *Teaching in the mother tongue is beneficial for student performance:*
More time and space allocated to the instruction in the international official language will not automatically result in higher proficiency and performance in this language, unless based on simultaneous acquisition of instrumental knowledge in the students' first known language(s).
Additive bilingual models with late or no exit from the mother tongue medium of instruction generally yield better overall performance in school, including proficiency in a foreign language.
Academic language skills are highly specialized and challenging; they should thus build on the skills and expertise in the first language(s).
Low proficiency in the language of instruction (also on the part of teachers) creates communication problems in many classrooms and, in general, has a negative impact on teaching and learning behavior.
New scientific concepts are better understood in a familiar language, yield better results in exams, and result in fewer class repeaters.
Proficiency in the medium of instruction is a key factor for school performance.
The use of the mother tongue or a familiar language facilitates the use of effective, child-centered teaching practices that encourage learners to be active and engage with the subject matter.

– *Mother tongue–based multilingual education is cost-efficient and affordable:*
There is a higher return on investment for society as a whole.
Quality bilingual programs are cost-effective.
It is estimated that less than 10 percent of the budget for learning materials and teacher education would be spent on the production of materials in African languages and teacher training. In the case of South Africa, this 10 percent would amount to less than 1 percent of the entire education budget.

Independent of the overwhelming evidence from pedagogical and applied linguistic research including cost-benefit analyses, the crucial factors are "political will" on the part of government and legislators, and "informed" rather than "uniformed choices" on the part of immediate stakeholders such as parents, students, and teachers. According to Ouane and Glanz (2010: 48–49), opting for the generalization of mother tongue–based multilingual education is not merely an educational or linguistic endeavor but involves "deep social transformation induced by a

political, cultural and development project and an education reform agenda." The political agenda emerges as the most powerful one; it

> … rests on the premise of respect and the promotion of human rights, democratic values, diversity, pluralism and the protection of people's identity and culture. Striving for equality and inclusion are the driving force behind this kind of policy option … The choice of being educated in a known language that respects and reflects one's culture and values is part of the exercise of the right to education in an inclusive society (Ouane and Glanz 2010: 49).

8.3.2. Literacy and the "intellectualization" of African languages

8.3.2.1. Writing systems in Africa

Contrary to the generally held idea that Africa has no script or writing traditions, the continent is home to some of the world's oldest graphic systems, several of which are still used to write African languages today. Ancient Egyptian, now extinct, is known for having one of the oldest scripts of humankind; dating some 5,000 years back, the hieroglyphic inscriptions use logographic and alphabetic elements. Over time, other systems were developed to write Egyptian, such as two cursive scripts, hieratic and demotic, the latter of which was one of the three scripts inscribed on the Rosetta Stone, along with hieroglyphs and Greek. Around the first century AD, demotic script was replaced by Coptic, which was partly based on the Greek alphabet. Coptic, in turn, was modified and used to write Old Nubian. Still largely undeciphered remains the Meroitic script of the upper Nile valley. Its fate is shared with the Old Libyan inscriptions of a language that is identified by some as Numidian. The Phoenician/Punic alphabet used in Carthage and its hinterlands is believed by some to have survived in the Tifinagh script, unless the ultimate source is Old Libyan, which was kept in use by berberophone Tuareg in the Central Sahara and which in very recent times has acquired high symbolic value for Amazigh identity, particularly in the out-of-Africa berberophone diaspora.

Scripts were also brought from outside of Africa. The Roman script arrived in northern Africa some 2,000 years ago while the Eastern Maghreb partially belonged to the Roman Empire (*Africa proconsularis*); it was revived and has spread dynamically since the times of precolonial contact along the Atlantic coast and, most of all, during colonialism and through the work of Christian missionaries from Europe. In Ethiopia and Eritrea, migrants from South Arabia who were familiar with the Sabaean script introduced what would become the core of the later Ethiosemitic languages for which, during the Axumite period in the first half of the first millennium AD, an alphasyllabary, or abugida, was developed that is still in use today for practically all Ethiosemitic languages, including Ge'ez, Amharic and Tigrinya. Often referred to as Ge'ez script, the writing system is also called *fidäl* or *fidel* (depending on transliteration). The Arabic script came to

Africa together with the spread of Islam in the seventh century and was adapted for use with African languages. The resulting script, known as Ajami, is still used today in Islamic parts of West and East Africa.

Under the impact of lasting contact with both Arabic and European writing traditions, particularly along the West African Atlantic coast and its hinterlands but also in Northeast Africa, local scripts were invented for individual African languages in order to establish a counterweight of cultural identity in the face of external domination. Some of these have survived for cultural practices until this day, like the pictographic Bamun script in Cameroon and the Vai, Kpelle, Loma and other scripts in Liberia, which date from the late nineteenth century. Many attempts to create idiosyncratic scripts for individual African languages in the first half of the twentieth century, also in East Africa, such as the Osmaniya script for Somali and the Sapalo script for Oromo, lost out to a modified Roman alphabet designed by Western linguists. Even today there are still reports of *ad hoc* constructions of idiosyncratic African scripts produced by "nationalistic" individuals, often motivated by anti-(post)colonial and anti-globalization sentiments, who are fighting against what they regard as linguistic and graphic hegemonic domination.

8.3.2.2. Harmonizing orthography in African languages

The first attempts to standardize Latin script – based transcriptions of African languages go hand in glove with colonialism and Christian missions in Africa and date back to the late nineteenth and early twentieth centuries. They include, for instance the Standard Alphabet designed by Richard Lepsius; an alternative system was proposed by Carl Meinhof. In order to create a so-called practical system under the "dictatorship of the typewriter", that is, by using only the keys available on English language typewriters, the International Institute of African Languages and Cultures, later simply International Africa Institute (IAI), in London proposed an Africa Alphabet in 1928 that contained a mix of English and IPA symbols. After independence, UNESCO became active and launched a series of Expert Meetings to standardize and harmonize Latin script-based writing systems for African languages. National harmonization initiatives of Latin script-based alphabets have been reported in, for instance, Cameroon (Alphabet Général des langues camerounaises, 1979) and Nigeria (Pan-Nigerian Alphabet, in the 1980s).

Orthographic harmonization of as many African languages as possible is on the agenda of the Centre of Advanced Studies of African Societies (CASAS) in Cape Town, South Africa, under its prolific founder-head Professor Kwesi Kwaa Prah. A matter of deep concern is, among other issues, what Prah considers "myths" about the number of indigenous languages in Africa, which is said to be in need of reduction by, for instance, establishing degrees of mutual intelligibility and exploiting the accompanying potential for shared orthographies even, and preferably so, across borders. Prah starts by reporting the fact "that about 85 per cent of

Africans speak no more than 12–15 *core languages* as their first, second or third language (by core languages I mean clusters of mutually intelligible speech forms which in essence constitute dialects of the same language) … These would be the first order languages of prominence" (Prah 2005: 40). Identifying dialect continua is not a new thing in Africa, but missionary and colonial initiatives to create standard varieties among these dialects (all carrying different names) by choosing some (and neglecting others) for purposes of Bible translation and formal education are said to have "invented" ethnic and linguistic diversity that, for the benefit of "development", must be undone. One way of doing this would be, according to the CASAS project, to harmonize existing orthographies that divide rather than unify the languages or dialects in question. Some modern reharmonization of previously different orthographies appears to work. A successful case is the "Akan language" in Ghana, which, in colonial times, was given a number of different names (Akim, Akuapim, Asante, Abron, Fanti, Twi, etc.), each of which was considered to refer to a separate language. Similarly, Aja, Ewe, Fon, Gun, Gen, etc. in Ghana, Togo, Benin and parts of western Nigeria are being "harmonized", at least in expert circles, to constitute a single language called Gbe. The question remains of whether and to what extent, even in the light of shared orthography, grammatical properties, and lexicon, the majority of speakers are willing to accept being "monolingual" in Akan or Gbe. And what about other clusters of purportedly mutually intelligible languages? Even if, for instance, the members of the postulated "Luo cluster consisting of languages such as Anyuak, Shilluk, Jur, Lafon, Acholi, Langi, Alur, Chopadhola and Lakeside Luo", or of "the Somali, Rendile, Borana and Oromo cluster", could be referred to as mutually intelligible, they do not, as Prah (2005: 42) observes himself, "easily submit themselves to harmonisation". Mainstream sociolinguists remain skeptical of the large-scale harmonizing of African language orthographies: What is the measurable value for national cohesion concerning ethnolinguistic identities? Where is the political or economic benefit of reducing the number of separate languages? Would, in the end, the use of a shared orthography (in terms of an identical system of graphic representation) turn several hitherto separate languages into just one, so that we consider all so-called Ethiosemitic languages "one language" because they all share the tradition of being written in the same script, namely the Sabaean-based Ge'ez script? Somewhere along the road, the issue becomes nonsensical.[20] On the other hand, the choice of script has a clear socio-psychological dimension, particularly in Ethiopia: as much as using the Ge'ez script is rejected by speakers of Cushitic languages as a symbol of continued political and cultural dominance, for the speakers of Ethiosemitic languages it remains a strong symbol of linguistic and cultural unity.

There may be an academic pleasure in reducing the actual number of "languages" in Africa; perhaps there is some ideological contentment to be found in

[20] For issues of large-scale orthography harmonization in Africa, cf. Prah (1998, 2005).

blaming apparently ill-meaning colonialists and missionaries for a "divide-and-rule" approach to the submission of the continent, and by accusing Eurocentrically-minded linguists for creating their own jobs by ethnicizing African societies by way of delineating linguistic divergence rather than convergence, something that would run counter to ideologies of, and therefore be detrimental to, national unity. No doubt, however, there is considerable economizing potential across international borders for national budgets if it were feasible to share the burden of the costs of printing, for instance, educational materials, at least for the many cross-border languages in Africa. In any case, linguistically feasible harmonization approaches to language diversity that do not take into account questions of grown "ethnolinguistic" or even "national" identity are doomed to fail in practice. This is shown by the failure to create (or "invent") a post-apartheid Common Nguni and Sotho-Tswana standard language in southern Africa – an endeavor that would be feasible on linguistic grounds, make good sense on economic grounds, and reduce the number of official languages in South Africa considerably. However, such linguistic harmonization is politically unacceptable to the speakers who have settled in their different assumed "ethnolinguistic" identities, which, paradoxically, were imposed upon them by racist divide-and-rule politics as part of the colonization process.

With modern desktop publishing and print-on-demand facilities available, writing and publishing in African languages and using modified versions of existing alphabets (Latin, Arabic, Ethiopic) is no longer a problem for creating literacy in any African language, irrespective of the number of speakers and previous attempts to do so – at least as far as orthographies are concerned.

8.3.2.3. Literacy, postliteracy, and publishing in African languages

Even if it were true that there are no orthographies (yet) for the majority of the 2,000 or so African languages, this would provide little reason to generally object to the use of African languages for public communication and in education. First of all, for a team of experienced linguists, developing a writing system for a previously unwritten language is not as difficult and costly as many non-experts would fear, particularly when other (related) languages in the vicinity have already been provided with an orthography. The task is facilitated if there is a common national alphabet for all languages irrespective of their genealogical affiliations, as has been suggested, for instance, in Cameroon and Nigeria.

Creating literacy and a sustainable postliteracy environment, however, will take more time and effort and must involve larger sections of the speaker populations (intellectuals, teachers, poets, religious personalities, etc.) and, to a certain extent, must or should involve local publishing facilities. There is still a lot of ignorance, however, about the degree to which African languages have already been turned into "written languages"; these, as a rule, are major languages or lingua francas

with wide catchment areas – regional or national. UNESCO sources (1999) give the following picture (quoted from Obanya 1999: 83):

Table 3: A selection of Africa's written languages

Country	Written languages	Population in millions	Country	Written languages	Population in millions
Benin	7	12.0	Nigeria	22	121.8
Burkina Faso	12	11.4	Uganda	3	21.3
Cameroon	38	14.3	Central Africa	4	3.5
Côte d'Ivoire	19	14.6	Senegal	6	9.0
Ethiopia	11	62.0	Sierra Leone	6	4,6
Ghana	19	18.9	South Africa	8	44.3
Guinea	6	7.7	Chad	4	6.9
Kenya	7	29.0	Togo	13	4.4
Liberia	4	2.7	DRC (Zaire)	7	49.2
Mali	9	11.8	Zambia	7	8.7
Niger	5	10.1			

This selection lists 217 written African languages, which only make up just over 10 percent of all African languages but could reach up to 50 percent of the literate African population, given the high degree of multilingualism and the nature of many of these languages as regional or even national lingua francas (unfortunately, there are no exact figures available on L1 versus L2 usage for most of these languages). The outreach of these and, practically, all cross-border languages in Africa could be easily enhanced by regular teaching of African L2s in formal and non-formal education.

Note that the notion of literacy as a central issue in all educational programs must be construed to mean literacy in all the languages that are used in the educational system, not just those of European provenance or Arabic. The need to state here what would appear to be only too obvious is justified by the observation of a widespread misconception: literacy in the African context is often but falsely understood to apply only to the official languages of non-African provenance and not to the various mother tongues and/or national languages. This stems from the fact that certain intellectual and political groups inside and outside Africa do not accept African languages as being on equal footing with European languages: terms such as bi- or multilingualism and literacy tend to be used, in uninformed discourse in and on Africa, to apply to exogenous languages only, in particular to English, French, Portuguese, and Spanish (Arabic is usually not even mentioned). A person speaking and writing in any two of these languages would be considered "bilingual" and "literate", whereas the vast number of individuals who speak and write several indigenous African languages would not! Further, literacy rates for speaker communities may be given with apparently conflicting figures:

one (usually much higher) figure for languages used in formal education, whether endo- or exoglossic, and one (usually much lower) for the mother tongue/L1.[21]

Likewise and generally overlooked in the African context is the ability to use the different writing systems that coexist on the continent with the script based on the Latin/Roman alphabet. Examples include Coptic in Egypt, the Semitic script(s) used in Ethiopia, adapted varieties of the Arabic script (called Ajami in West Africa) across the continent, the Tifinagh script of the Tuareg in the Sahara, and several other locally developed scripts particularly along the West African coast (Vai, Kpelle, Bamun, etc.) as well as Somali and Oromo. Some of these scripts have gained national recognition, while others meet needs and serve functions of more restricted cultural relevance on local levels. Africa is not only a multilingual but also a multigraphic continent.

Sociocultural modernization and development based on quality-oriented education must involve the development of both functional and academic multilingual literacy. Here, too, the sound pedagogical principle of proceeding from the known and familiar to the unknown and unfamiliar must also apply; thus all learning must take place in the local/familiar language (mother tongue/national language, L1/L2), and also literacy must begin in this language and its established writing system. Knowledge and literacy skills can then in due course be transferred into other languages (and, possibly, a different writing system), such as the foreign/official language. In general, literacy is considered the basis of all modern skills (Prah, 1995; quoted in Chatry-Komarek 2003: 21, who provides a thorough introduction to teaching literacy – and reading! – in African schools and upon which the following section is based).

Among the major challenges for creating a literate environment, particularly in rural Africa, are the following:

– the fact that many children from a basically oral communication background arrive at school without print awareness (whether on paper or on screen);
– negative school-external factors, such as population growth, human conflicts and natural disasters, spread of HIV/AIDS, and economic crisis;
– negative school-internal factors, including the lack or inadequacy of teacher qualifications, instructional time, textbooks, and other educational materials; class size and school infrastructure in general; teacher attitudes and competence; and school and class management;
– the language of instruction;
– failure to use modern pedagogical approaches (e. g., integrated language approach, whole-language approach) in place of traditional separate approaches to oral and written language;
– the fact that literacy is not viewed as a lifelong process;

[21] For example, for the Central Chadic language Lamang, the *Ethnologue* (Lewis et al. 2013) gives "Literacy rate in L1: Below 1 %. Literacy rate in L2: 25 %–50 %".

– a lack of linguistic awareness and tolerance of non-standard variants; and
– the lack of visibility of African languages in the public space.

As mentioned above, teaching literacy in formal and non-formal education is not an end in itself but relates to the creation of a literate environment that encourages individuals to become literate in the first place, and then to retain and improve their literacy as part of lifelong education and integrate the newly acquired skills into their everyday lives. In Africa, however, and in particular with regard to the African languages, a serious lack of print materials and electronic media – books, journals, and newspapers, but also digitalized texts – makes it difficult to pursue reading for information and pleasure. Generally speaking and for the majority of Africans, their context of living does not support the acquisition and practice of literacy, not least due to the lack of written material in whatever form. This provides a serious constraint on the practice of literacy. Therefore, large-scale postliteracy activities are desperately needed to help solidify literacy education, provide resources and media aimed at the newly literate, and also create systems of non-formal education to serve newly-literate communities.

The need for the postliteracy creation of literate environments for as many languages as possible in Africa presupposes the economic viability of publishing African language materials, ideally by local publishers in Africa, as much to support students and teachers of African mother-tongue languages and linguas francas ("national languages") as to provide interesting reading materials in the international official languages (which, however, are more likely to be produced in Europe for the international market). Besides the

> … demand for educational materials in African languages … learners in literacy programmes enjoy reading books which go beyond the reading materials used in the classroom and extension literature. Such materials, including literature and comics, are necessary for people to become fluent readers.
> Even though the markets for many African languages are small, publishers have found ways of promoting them (Ouane and Glanz 2011: 43–44).

The publishing business is part of a language industry that offers promising economic prospects in the educational and cultural sector – particularly in multilingual contexts – in terms of job creation for skilled language practitioners and IT experts.

> A local publishing industry contributes to economic growth because taxes are paid locally, costs for books decrease, jobs are created and dependence on imported textbooks and external funding is reduced.
> … the publishing industry – like all consumer-oriented markets – can create a long-term market for its products and contribute toward the development of a literate environment. Publishers can also stimulate a writing culture in African languages by offering book prizes. … African-language literature both raises the profile of these languages and makes reading and writing more attractive to a larger proportion of the population. Using African languages to cover as broad a range of thematic fields as possible ensures

> that terminologies in these languages are constantly being created, coordinated and maintained at the same level as those being used in the wider context of dominant-language media and education. Dictionaries fulfil an important function in this regard (Ouane and Glanz 2011: 45).

8.3.2.4. Intellectualization and technicalization of the lexicon

In their critical overview on the interplay between language and politics in Africa, Ali and Alamin Mazrui (1998: 64–65) maintain that there are reasons to believe

> … that intellectual and scientific dependence in Africa may be inseparable from linguistic dependence. The linguistic quest for liberation, therefore, must not be limited to freeing the European languages from their oppressive meanings insofar as Black and other subjugated people the world over are concerned, but must also seek to promote African languages, especially in academia, as one of the strategies for promoting greater intellectual and scientific independence from the West.

They identify as "an important source of intellectual dependence in Africa … the language in which African graduates and scholars are taught" and illustrate their case as follows:

> … today, in non-Arabic speaking Africa, a modern surgeon who does not speak a European language is virtually a sociolinguistic impossibility. So is a modern physicist, zoologist, economist and so forth.
> Nor is it simply a case of the surgeon or physicist acquiring an additional skill called a European language which he is capable of discarding when he discusses surgery or physics with fellow professionals in his own society. Professional Japanese scientists or social scientists can organise a conference and discuss professional matters entirely in Japanese. But a conference of African scientists, devoted to scientific matters and conducted primarily in an African language, is not yet possible (Ali and Alamin Mazrui 1998: 65).

This was the starting point for the late Neville Alexander to raise the issue of the "intellectualization" of the African languages, a term he prefers over "terminology development", "lexical innovation", and others as part of what is traditionally known as *corpus planning*. Alexander's term calls on intellectual elites, professionals, school teachers, and, in particular, university teachers and scientists to take on the task of conscientiously using African languages in their respective – high-prestige – professional domains, based on the sociolinguistic axiom *language development is language use*.

> What is required of the intelligentsia and of students of applied linguistics and language activists is no less than the initiation of the linguistic counterpart of a radical version of NEPAD, that is, the construction of the language infrastructure of the continent as an integral component of the economic development plan and as an inseparable element of the cultural revolution and of the deepening of democracy on the continent (Alexander 2007: 19).

He sees this as a "long-term, secular process that will test the political will and stamina of the ruling groups of the continent to the full" in terms of "a counter-hegemonic trend in the distribution of symbolic power and cultural capital implicit in the prevailing language dispensation in Africa's education systems" (Alexander 2007: 19), with some hope being entrusted in the African Academy of Languages (ACALAN) as one of the African Union's specialized agencies, but also in university departments and their professional staff. In a straightforward way, this ties into mother tongue–based education, which would teach all subjects in an African-language medium and thus remedy a deplorable situation:

> The failure of postcolonial African states to base their educational systems on the home languages or at the very least on the languages of the immediate community of the child, more than any other policy or practice, explains the fundamental mediocrity of intellectual production on our continent. We have to persuade our communities about the potential of African languages as languages of power and languages of high status (Alexander 2007: 20).

Djité (2008: 86) relinks the issue to language policy and mental decolonization:

> This is where language policy comes in. European languages were introduced into Africa as media of command, not of rights, and their use in education in Africa, from the first year or after the initial stages of schooling, was predicted on the need to train a number of low-level cadres (clerks, interpreters, messengers, petty bureaucrats and primary school teachers) who would serve as intermediaries and interlocutors of the colonial administration. As Rassool (2004) remarks, education in the European languages was then a potent social construct of colonial ownership, subjugation and assimilation – a displacement of national, cultural and group identity. This colonial language policy has significantly influenced the social character of many Africans, and most local languages are still under-utilised in education throughout the continent. The school remains a locus where the voices of the majority of the people are silenced, as African children continue to be taught and learn in European languages. But the purpose of sending African children to school has gone well beyond training low-level cadres for the colonial administration; why then should they continue to operate at a linguistic disadvantage? Why can't Africans enter the information age and cyberspace in their own languages, just as they have managed to find a spiritual home in their Church to live their faith within the context of their own cultures?

Judged by the pitch and moment of this political project, technical issues of terminology development, whether through loans and calques from other languages or the creative adaptation, including neologisms, of native linguistic material and existing vocabulary, remain minor challenges of *terminology expansion*. Apart from welcome contributions from expert members of language academies or boards as instances of planned lexical expansion, this can be solved largely by informal "innovating while doing", meaning the free use of *ad hoc* strategies to create or borrow terms while continuously using the African language in high domains. Codified standardization will follow established usages.

As for the more technical issues relating to terminology development within what is mostly referred to as corpus planning, solutions are usually elaborated with certain target languages in mind and are tested for acceptance and propagated on the ground within the respective speech communities. This explains the deplorable absence of more general handbook- or manual-type monographs for general use in, say, sub-Saharan Africa. Yet, available case studies provide ample examples of how to research the basis for "lexical innovation", which, at present, is likely to be conducted on large computerized corpus-based collections of texts from "dialectally variant" locations and "sociologically variant" groups of speakers. Such corpora should cover as many topical domains as possible, including oral poetry, terminology related to traditional crafts, the pedagogical texts already used in formal and non-formal education to teach medicine, mathematics, natural and social sciences, philosophy, etc., and possibly other areas, including those suggested by institutionalized language academies or boards or developed during brainstorming exercises at specialized workshops. And not to be forgotten are the spontaneous *ad hoc* creations of journalists working in African language media, national and international, print and electronic. (To single out one article-length informative contribution, reference is made to Adegbija 1995; Cluver's *Selected Bibliography* (1996: 625–632) lists more than 140 references to "Technical language/Terminology" with a major focus on Africa).

There tends to be a lot of potential and existing material around. All this material needs to be made available to interested parties in constant feedback processes (e. g., via internet access), continuously – even if provisionally – standardized (in terms of choice of at times multiple options, adaption to orthographic conventions), and subjected to routine adoption by the speech community. Such continuous applied lexicographic work must, however, be accompanied by the creation of – preferably monolingual – dictionaries and reference grammars as normative reference sources for practitioners in education, publishing, the media, etc. Work and experience in these fields is largely ongoing and deserves to be accompanied by increased and continuous socio- and applied linguistic research that, almost naturally, would be hosted by African university institutions or academies, possibly highly professionalized supra-national NGOs such as ACALAN, and deserve priority funding by governments as an investment into primary national resources.

8.4. Language and development in Africa

One of the more recently discussed and still heavily under-researched fields is that of language and development. What exactly is the role and impact of the various options for language policies on sociocultural modernization and economic development? How does language planning affect social and economic planning? And for Africa in particular: How does ethnolinguistic diversity link up with socio-

cultural modernization and economic progress? But before addressing necessary actions both in academic research and national politics, we need to understand the situation prevailing on the ground in Africa today.[22]

The implicitly understood motivation and legitimization for exoglossic language policies in place in most African countries, policies that are implemented and enforced through the educational systems at the expense of the indigenous African languages, relate to "fetish notions" such as Western-type development and, more recently, globalization. Under these notions, only a restricted number or type of languages are regarded as opening the "window to the world" for Africans, who fear being tied down to eternal underdevelopment and an insignificant existence by their native languages, cultures, and religions. This attitude must be seen as the most serious trauma of colonial and missionary brainwashing that has affected many if not most Africans, and not least of all the elites. Therefore, there is enormous pressure for young Africans to learn and speak an "international" language (which would be, most likely, that of the former colonial master, who is more than willing to support any policy in this direction – *honi soit qui mal y pense*!).

> The clamour in favour of international languages is seen from the highest levels from where language policies are set and where it is determined which language or languages will be considered national languages, down to the case of a district primary school where students are routinely beaten if they are overheard speaking their own languages. Parents overwhelmingly do not favour instruction of their children in indigenous African languages, even in lower primary classes. They have their reasons. But it all boils down to negative attitudes toward the African languages and the fact that instructional materials are not readily available in the African languages in most nations in Africa, especially south of the Sahara. These attitudes are almost always reinforced by government language policy.
>
> While parents and policy-makers clamour for English the statistics on the success of such an approach are not encouraging. For example, according to Simire [2004 – HEW] about 33 percent of the total population of Nigeria are literate in English (the official language) but only 15 percent of these can really use English effectively in professional and administrative activities. From this, you could say that 85 percent of Nigerians have no meaningful knowledge of the official language, a situation very similar to that indicated earlier for Kenya and Uganda. Education in foreign languages has thus become education for a minority, and the majority is excluded from national development programmes. If the development of such countries were to hinge on communication using English, then we must accept that it will involve a very small minority of the population. Naturally, this becomes a hindrance to economic, political and socio-cultural development because institutions and other corporate organizations cannot perform their developmental roles accurately unless they can understand and be understood in their immediate environments (Muthwii and Kioko 2004: 8).

[22] For a brief, recent sketch of salient issues cf. Alexander (2012). The complex interrelationship between language and development in Africa has been made the topic of a monographic treatment in Wolff (2016).

Monistic political decisions favoring foreign languages of European provenance over indigenous languages for national communication, education, modernization, and development curtail the rights and possibilities of the African masses to have access to government services, programs, knowledge, and information, which, in turn, prevents the development and empowerment of their languages and themselves: when people cannot understand the policies, objectives, and procedures of development, they cannot meaningfully participate (cf. Musau 2004).

Little robust research has been conducted on the complex interrelationship between language and economic development, in particular the effects of monolingual versus multilingual contexts. This remains largely the domain of folkloristic assumptions under the regime of a Eurocentric perspective. As Djité (2008: 138–139) observes:

> Some believe that language is what defines a nation naturally and that 'diversity' is negatively connected with macroeconomic welfare (Pool, 1972). Coulmas (1992: 25) adds that, if it is agreed that language is an asset, multiplicity of languages is deemed not to be conducive to social wealth. Rather, 'the inverse connection seems to suggest itself and has been interpreted as a causal rather than an accidental correlation […]', hence, 'it is ruled out that a high level of socio-economic development is compatible with linguistic fragmentation'. The gist of this argument is that multilingualism hurts growth and development.

Laitin writes in this connection that:

> … Correlation analysis involving all countries of the world suggests that there is a positive statistical relationship between societies with diverse speech communities and low level economic development … Scholars who provide policy advice accept these results and argue that *economic development* presupposes the settlement of the language question and therefore *depends upon agreement on a single national language* (Laitin, 1992: 53–54; my emphasis).

Lieberson and Hansen (1974) as much as Fasold (1984) had already challenged the assumed or postulated "causal" (rather than purely correlational) relationship between language diversity and (under)development, and Fishman and Solano (1989), in particular and based on the examination of 130 polities and some 230 variables, clearly stated that they found no direct link between the level of economic development measured by GNP per capita and linguistic heterogeneity (cf. Robinson 1996: 25–32). As a matter of fact, "Fishman and Solano (1989) even suggest that the existence of lingua francas and bilingualism enables many polities to attain a higher per capita GNP" (Stroud 2002: 37). A much overlooked aspect of the surface correlation between the number of languages in a country and the developmental status of its economy, and possibly also the degree of democratization, good governance, and political stability, may, however, be that:

> [t]his surface correlation … is purely quantitative and *explains* nothing! The explanation would rather have to be sought in the qualitative fact that such linguistically heterogeneous states hardly ever allow the majority of their citizens to be educated in their *mother tongue* through all educational cycles, i. e. ideally from preschool kindergarten to university. This, however – and this fact is totally overlooked in those circles –, is the norm in all so-called developed countries, irrespective of the number of languages within the national borders which, as a rule, indeed tend to be much lower than in the so-called underdeveloped countries. The issue, therefore, is not one of quantity (i. e. number of languages) but of quality (i. e. in terms of language-in-education policies)! (Wolff 2006b: 4)

Insights and attitudes have begun to change. Djité (2008: 140) makes reference to the Millennium Development Goals Report 2006, issued by the United Nations Development Programme (UNDP), which "has the added merit of making direct, positive reference to multilingualism as a contributing factor to, and a key ingredient in creating a favourable context for sustainable long term-term endogenous development and acknowledges that economic development can occur through languages other than those of developed nations".

8.4.1. The linguistic dimension of the Millennium Development Goals for 2015

Some of the core issues of African socio- and applied linguistics with regard to language in and for development in Africa can be illustrated by looking at the UN Millennium Development Goals (MDGs), which were to be achieved by 2015:

- Eradicate extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria and other diseases
- Ensure environmental sustainability
- Develop a global partnership for development

Although practically all of the MDGs involve a linguistic dimension, it is widely overlooked, in particular by social scientists and politicians who have no background in linguistics or sociolinguistics. Each of the goals is – and to no small extent – based on (a) the transfer of knowledge, which still occurs from north to south in most cases, and (b) successful communication. Transfer of knowledge is the core task of education, even if it occurs outside the formal education system in domains covered largely by NGOs. In Africa, modernizing knowledge transfer concerning development usually operates through European languages! Since any type of successful education presupposes fully functional communication, and since successful communication presupposes full linguistic competence in the chosen medium of communication, we need to ask several questions: To what

extent is this basic requirement met by European languages in Africa in general? To what extent is it met by African languages in both rural and urban environments? To what extent does it apply to the fast-growing number of urban youth in megacities, in reference to multiple semilingualism and the growing importance of urban lifestyle registers? First of all, we must recall a disturbing fact: 80 to 95 percent of Africans, especially in rural areas, are not fully able to talk about "new knowledge" in European languages. But can it be safely assumed that 100 percent of the population can do so in African languages? And if so, in which – mother tongue, other tongue, or both? And again, what about urban youth – in which languages are they most successfully addressed? These and other salient issues of communicating development in multilingual settings in Africa will be addressed in some detail further below.

Bennett (2012: 41), whose primary concern is the relationship between language policy and planning on the one hand, and poverty reduction on the other, illustrates the potential link in relation to the MDGs in the following table:

Table 4: Millennium Developments Goals (MDGs) and their linguistic dimension

MDG	Potential link to language policy and planning
Goal 1. Eradicate extreme poverty and hunger	Bi- and multilingualism can enhance access to jobs and higher income. Dietary information needs to be communicated in a language that the recipient understands. Effective disaster management requires rapid provision of crucial information to all affected communities.
Goal 2. Achieve universal primary education	Mother-tongue instruction at an early age facilitates children's acquisition of literacy and numeracy skills. Books and other pedagogical material needs to be translated competently into mother tongues. Social and cultural obstacles to school enrolment need to be addressed in a language that parents, teachers and administrators understand.
Goal 3. Promote gender equality and empower women	Special measures may be requested to promote bi- and multilingualism among girls and women. Gender linguistics can provide orientation for eventual language reforms aiming to promote gender equality.
Goal 4. Reduce child mortality	Parents require information about childhood disease prevention and treatment in a language they understand. Access to medical services for infants and other children depends inter alia on competence in the language of the service providers (doctors, nurses etc.).
Goal 5. Improve maternal health	Both fathers and mothers require reproductive health information in a language they can understand. Midwives should be able to communicate in the language of their clients. In cases of emergency (e. g. need for a Cesarean), own-language communication is essential to obtain adequate assistance.

MDG	Potential link to language policy and planning
Goal 6. Combat HIV/AIDS, malaria and other diseases	Literacy is an important factor affecting public and personal health. Information on disease prevention and treatment should be provided in a language people understand. Lexical modernisation may facilitate access to essential information. Introduction of ethic terms may reduce stigmatisation of persons living with HIV/AIDS. Research into local languages may reveal traditional knowledge relating to prevention and treatment of diseases, hygiene, nutrition etc. (cf. ethnobotany).
Goal 7. Ensure environmental sustainability	Building environmental awareness requires communication in a language that target groups understand. Research into local languages may reveal traditional knowledge of the natural environment as well as strategies for surviving under adverse environmental conditions.
Goal 8. Develop a global partnership for development	Strategies and practices to promote good governance and combat corruption need to be communicated in languages that people understand. Public service providers (e. g. magistrates, school inspectors, tax collectors) should be competent in the language(s) of their clients. Global communication requires not only a common language, but also a common terminology.

Apart from these rather straightforward links between the MDGs and language, there are other areas where the link is less direct:

> In particular, recognition of minority language competence as an asset can enhance self-esteem within minority language communities and thereby provide important motivation to them to improve their situation. Obviously, without broad-based motivation, even the most well-formulated poverty reduction strategy will be condemned to failure (Bennett 2012: 42).

8.4.2. Development communication

One of the core topics in African socio- and applied linguistics, therefore, relates to what we might wish to call *development communication*. Here, the term shall be construed in two different readings that, however, remain closely linked: (a) communication *about* development ("development discourse") and (b) verbal interaction *in* development activities among stakeholders. "One could argue that what has mainly gone wrong in development communication was its absolute rooting in Eurocentric approaches to both development and communication." (Blake 1993: 11, quoted in Robinson 1996: 4). Sociolinguistically informed approaches to sustainable development

> … must involve discovering how global development – or those aspects of it which a local community might wish to adopt – can be brought into harmony with local socio-cultural realities. Communication with and within the local communities becomes

> the key. In such communication, messages are sent by the choice of language, and so the status and function of the available languages assume, as anywhere in the world, a social significance. Examining the particular role of the local, minority language in this research in no way negates the need for multilingualism; rather, its aim is to reduce the possibility of skating over the role and potential of minority languages. Their use or non-use, alongside other languages, sends powerful signals about cultural respect, equity and power (Robinson 1996: 6).

8.4.2.1. Discourse on development

Since independence, the impact of the "language factor" on development has been conspicuously absent from mainstream development discourse. This is true with regard to discourse on, for instance, such central issues as poverty alleviation and sustained development for Africa. This discourse tends to be monopolized by experts from economics and related social science disciplines, who – as a rule – have little or no understanding of the role that the "language factor" has for successful development communication. It is, or has been, also true for major philosophical and strategic documents that focus on the continent's future, such as key documents relating to the New Partnership for Africa's Development (NEPAD), the African Renaissance, and even the Education for All movement. The salient issues to be addressed – namely those relating to the eminent role of indigenous African languages for quality education as part of additive bi- or trilingual systems – receive marginal treatment at most. Indeed, if language is addressed at all, reference is usually only made to the official languages of non-African origin that were inherited from the colonial past, such as English, French, and Portuguese.

Scholars of African socio- and applied linguistics (who else?) must seek answers to the questions of why and how various deficits in language and development planning and implementation in Africa "conspire" to impede advances and serious progress in development in general, and in education in particular. The existence of a close interrelationship between language, development, and education does not appear to be accepted in all intellectual, academic, political, and economic arenas, apart from almost esoteric groups of enlightened sociolinguists and educationists. It is widely accepted on *a priori* grounds that development may have something to do with education; it is much less widely understood how language relates to education, and not very many interested parties will see the constitutive interrelationship between development and language(s). The integrating element between the three factors is communication. Quite trivially, we can say that there is no development without communication between stakeholders, and communication between humans is almost exclusively verbal (i. e., through language). We may be dealing with one or several languages, depending on whether we are dealing with predominantly monolingual or multilingual polities or communities.

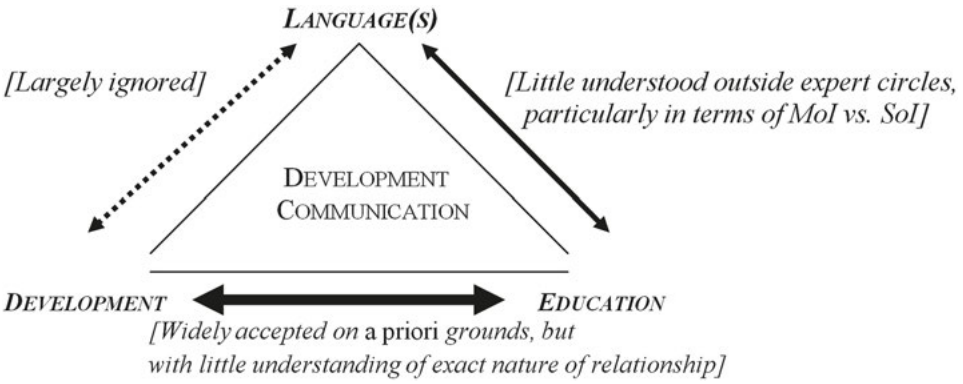

Figure 2: Model of development communication with regard to language(s) and education (Wolff 2006b, 2011a, 2011b, 2012)

The approach could be based on the following simplified model that illustrates both the interrelationship between languages(s), education, and development and the different degrees of our understanding of the respective interrelationship:

Strangely and irritatingly, and despite the correlation – on the surface of things – between the degree of multilingualism and that of economic and social development, no direct causal relationship has ever been established between linguistic diversity and economic and social development. Also, when it comes to education and literacy as prerequisites for "development", indifference and ignorance would appear to prevail:

> … in all the analyses and indicators of development used by UNDP, the World Bank, OECD and so on, the language factor is never considered as part of the equation. Even UNESCO, which has advocated the mother tongue as the language of instruction since the 1950s, makes no references to linguistic diversity in its statistical data offered in the World Education Reports. Illiteracy figures are cited, but in which language – national, international or local – is unclear. This is surprising given UNESCO's concern for linguistic diversity and the development of local languages (Watson 1999: 6–7).

Robinson (1996: 7) describes the deficits in terms of lack of communication within development sciences:

> Development thinkers have not treated language issues at the level of intervention models, but at the implementation level. It has been a question of deciding which language the project materials or a literacy component might use, once the overall project shape has been decided. On the other hand, linguists have understandably chosen to examine language situations in developed and developing countries, without necessarily discussing *how* the latter are being developed, and without reference to the debate surrounding the different development approaches.

Bennet (2012: 42) reports on an illuminating experience with the internet search engine Google (on August 13, 2009) when comparing the number of hits for the

keywords "language policy + education" with the numbers obtained for combinations of "language policy" and some of the Millennium Development Goals (cf. further above):

(a) with "education":	330,000 hits
(b) with "mother and health":	36,200 hits
(c) with "gender and women":	16,100 hits
(d) with "HIV and AIDS":	13,800 hits
(e) with "child mortality":	1,480 hits

Bennet (2012: 42) remarks: "The results are similarly skewed in favour of education when applying the same terms in French or German. These results suggest that much more scientific research needs to be done to define the potential links between language policies on the one hand, and issues of gender equality (MDG 3) and health sector policy (MDGs 4, 5, and 6) on the other."

Given the multilingual settings in which most African societies function, development communication in Africa requires multilingual strategies for the following simple reasons:

– Development is largely about communication; in Africa this involves stakeholders with different language backgrounds.
– Communication is predominantly through language, be it oral or written, be it in a foreign/official language or indigenous/local languages.
– Communication is facilitated by shared language competence and language repertoires, most of all between local people and advisors/consultants, be they nationals or expatriates.

Expatriate donors and their agencies, but also African governments and administrations, do not appear "to waste" much thought on language when it comes to selecting and using media and channels for their largely top-down communication: by default and intellectual indifference, as it would appear, the official language, whether exogenous or indigenous, is expected to do the job – simply because it is there, and because there would appear to be no alternative anyway!

Reviewing current discourse on language policy in and on Africa with particular emphasis on language-in-education policies, we need to look at formal education systems as much as at practices in non-formal education. This would include aspects of literacy and postliteracy in both indigenous African mother tongues/national languages and non-indigenous official/foreign languages, to the extent that they are used in national communication and/or in the educational system. The central issues of such research are the following:

– Present and continuing underdevelopment in Africa is intimately linked to the language factor, which plays a decisive role for the success or failure of development communication, which again is closely linked to education and, more specifically, to the language factor in education.

– Science-based reviews and analyses of the background and history of language politics and language planning in Africa, particularly language planning for education, have led to advocating "comprehensive social planning" that must be based on the politics of language that reflect the multilingual and multicultural heritage of the people planned for and that must be guided by a clear vision of a free and democratic society that explicitly includes ethnolinguistic and ethnoreligious minorities.
– Education must be viewed as a societal project that aims to achieve sustained economic and sociopolitical development framed in a broader context of social engineering that is facilitated by socioculturally adequate language and education policies and practices that are inclusive rather than exclusive.

What remains to be deplored is the widespread ignorance concerning the role of the "language factor" for sociocultural modernization and economic development. Although almost all of the targets of the UN Millennium Development Goals for 2015 have a linguistic dimension that must be taken into consideration to achieve these goals in a sustainable way, it remains largely unnoticed. Remedying this situation is one of the major challenges for African socio- and applied linguistics for at least the first half of the twenty-first century.

8.4.2.2. Communicating development in multilingual settings

Externally stimulated ("North–South") cross-cultural multilingual communication for the purpose of conducting development activities in Africa faces a set of major challenges. Among them, for instance, is the task of overcoming language barriers between stakeholders, mainly expatriate experts and consultants representing donors at the sending end and local populations at the receiving end – with foreseeable problems regarding adequate communicative feedback. To put it more informally: communicating development (and communicating about development) in multilingual settings often resembles the children's game of Pass the Message, in which the initial message ends up totally distorted or acquires surprising twists of meaning by the time it reaches the final listener. Since development communication as a dialogue works both ways, top-down and bottom-up, the disastrous effect is doubled by the response: the game works in both directions! In a very lucid description of the problems encountered on the ground, Bearth and Fan (2004; footnotes omitted) point out that

> … apart from pointing to linguistic fragmentation as a hindrance to socio-economic growth, specialists of development communication have generally shown surprisingly little interest in the possible relevance of language to their field of inquiry. Melkote and Steeves (2001), for instance, while offering a penetrating analysis of communication models and communicative practice in development around the world, remain silent on the language issue. Wilkins and Mody (2001) leave no stone unturned in exploring

> conditions for improvement of development communication but do not even mention language as a potentially relevant factor to be taken into account. Martens et al. (2002), writing from an economist perspective, trace the failure to achieve objectives set in overseas development co-operation to what they call the "broken feedback loop" (p. 26; passim), i. e. a deficit in the flow of communication from the local community back to the sponsors. While this view is characteristic of the gradual shift from an exclusively expert-centred approach to a focus on the local community as a relevant source of development communication, language-related factors do not appear to play a significant role either in diagnosing the failure or in current thinking about possible remedies. Writing from an African perspective, Koné and Sy (1995) show greater awareness of the language issue and its relevance to development communication. As Koné (1995:42) points out, the choice of the linguistic medium may decisively affect the acceptance or rejection of an exogenous message by the target community. Sy (1995:65) and Nwosu (1995:154–155.) recognise local languages as depositories of the cultural knowledge on which development must build. Rambelo (1999) similarly maintains that reliance on local language and local culture are interdependent conditions for agricultural innovation and for local participation in development. Diawara (2000:370) paraphrases development "mediated" through local knowledge as "concepts and conceptions of development experts transmitted through local languages and measured against the practical judgement of local populations." Robinson (1996), in a ground-breaking case study on the motives and effects of language choice in a multilingual rural setting in Cameroon, claims "that the local language must have a place in a participatory kind of development intervention" (p. 248). Finally, Tadadjeu and Chatio (in press) identify the main cause of what they perceive as a perennial continent-wide failure to meet the objectives set by development co-operation as the failure of development strategists to take into account the local language factor in African-multilingual societies: "In African local communities, where day-to-day communication takes place almost entirely in local languages, […] information on modern approaches to development is made available […] almost exclusively in inherited official languages that the majority of the population neither speak nor understand. This has been the fate of the continent for over four decades today. This approach to information dissemination has accounted significantly for the failure of most of the development programs proposed and implemented on the continent over the years."

The authors then continue to describe, in a case study from the Tura in western Côte d'Ivoire, the existence of institutionalized discourse procedures in the local language that are designed to help "indigenize" exogenous innovative messages in view of their self-propagation within the target society. The Tura's Konon ritual serves as an example in support of the claim that communicative sustainability, resulting from the substitution of an endogenous source for the original exogenous source of an innovative message, is an indispensable precondition for developmental sustainability (Bearth and Fan 2004). As their study shows, "social inequality of which the language difference is both the cause and the symptom may interfere with the idea of a participatory approach to development" with "contradictory effects on development communication resulting from the necessity of translating and/or interpreting the original message", which has negative "impli-

cations for sustainability". Bearth and Fan further show "how judicious use of local communicative resources, exemplified by the *Konon* conversational ritual of the Toura, may go a long way in overriding these negative effects". They end "by pointing out the need for further interdisciplinary research with a view to making language-related insights bear on broader issues relevant to development theory".

In particular, the almost default use of interpretation and translation services, often by people with uncertain qualifications other than that of "speaking the language", is a constant source of concern. According to Bearth and Fan (2004):

> [T]he few studies devoted to the issue of translation in development communication generally focus on questions of terminology and transfer of concepts. Two types of shortcoming are identified: (i) terminological underdevelopment of the target language, and (ii) pitfalls inherent in the translation process itself. Among the latter, one might mention (a) the failure to readily access a communicatively equivalent expression, resulting in makeshift equivalents being used that fail to convey innovative concepts to the target audience; (b) lack of attention to, or awareness of, mismatches between "false friends"; and (c) quite generally a lack of contextualisation of the message due to the tendency of most translators to focus on form rather than on content. One might conclude from all this that once problems of equivalence of terminology and lack of mastery of translation procedures are overcome by providing training and enforcing standards, the problems associated with translation as a tool in development communication would be solved. However, this is not the case, for the fundamental problem with translation is neither translatability nor training but translation itself. It is not the transfer of the meaning of words and sentences, but the "meaning" of translation as a socio-cultural practice which is at stake. Paradoxically, the act of translating, particularly in face-to-face communication, while reducing linguistic difference, tends to maintain or deepen the communication gap by reinforcing social, cognitive and epistemic differences typically associated with ethnolinguistic diversity in the South …

In particular, translation brings with it the following difficulties: 1. Translation reinforces perceived sociocultural asymmetry; 2. The translation interface dichotomizes the processing of inferences; 3. Translation carries with it an anti-dialogical bias; 4. Translation imposes constraints on utterability and face regulation (Bearth and Fan 2004). The authors conclude their critical analysis of the apparent non-issue of translation in development communication, based on their observation of the Konon bypass strategy of the Tura, with "a plea for recognition of the necessary place of a language-sensitive and linguistically informed approach to problems of development in the multiply multilingual environments typical of most Third World countries":

> A full-fledged discourse methodology is clearly required for an exploration of such language-related issues of development which have primarily to be studied in their natural context of oral communication. Such a methodology would necessarily have to be multidisciplinary. It would have to rely, minimally, on insights and methodology from the linguistic disciplines, including specific knowledge of the languages directly

> involved in the empirical situation, and on ethnographic and sociological analysis for relating variables observed from the viewpoint of linguistic discourse analysis to the social dynamics reflected in the negotiation of power, social values and practical issues …
>
> As to the specific contribution which can be expected from a systematic rather than a merely anecdotic linguistic approach to development studies, one would seem to be justified to maintain a low profile until the results of further investigations are available for inspection and comparison. However, there has been an increasing convergence of opinion, supported by various disciplinary vantage points, including, for instance, economics, to the effect that problems of communication are likely to be at the heart of pervasive development failure. While language has not figured prominently or not figured at all as a key issue in this kind of diagnosis, our case study confirms the contention by African writers quoted … that it cannot be ignored. If extrapolation from the Tura case on a continental scale is perhaps somewhat speculative at the present time, one may nevertheless say – while keeping in mind the diversity of multilingual situations, on the one hand, and of factors influencing local commitment to development, on the other – that a language-sensitive approach to development communication is far from irrelevant to cost-benefit analyses of the development enterprise at large which have been the focus of inquiry from various disciplines including economics.

8.5. Language and the city in Africa

It is commonplace knowledge that Africa is, possibly, the fastest urbanizing continent on our planet: "With 37 percent of its population living in urban areas in 2000 … it is expected that that by 2030, 53 percent of the African population will live in urban areas (UN 2002). Current language use in African cities and the accompanying evaluations and attitudes may therefore become decisive for very necessary changes in language policy in Africa" (Kube-Barth 2009: 113). Experts on urban planning are reported to maintain that African cities triple in size every fifteen years (Koffi 2012: 181).

Migration from rural to urban areas affects both individual patterns of multilingual behavior, among the migrants, and the multilingual territorial patterns of the urban areas. Largely intuitive notions of apparently chaotic urban multilingualism have destructively affected discourse on language policy in general, and in education in particular, following one of the most frequently heard reservations: "If mother tongue-based education was indeed feasible for (parts of) rural Africa, certainly it would not be feasible for urban Africa!" This intervention is usually countered by reference to *ad hoc* observations that (a) African cities tend to be made up of quarters in which speakers share the same languages or regional origin cluster (and thereby maintain their language of origin in patterns of individual multilingualism) and/or (b) that African cities have historically emerged within a certain language area that provides a kind of default "language on the ground" that is almost automatically learned by immigrants. Koffi (2012) suggests a three-way

distinction between megacities: those with *ethnolinguistic hegemony*, those with *ethnolinguistic dominance*, and those with *ethnolinguistic equilibrium*. Language policies, particularly regarding education, should recognize and reflect this differentiation. A useful distinction would be between "urban village" and "megacity". According to Gordon (2007: 219, quoted in Koffi 2012: 193), urban villages are defined as "rural villages that have grown into cities of 200,000 to 400,000, but lack even the most basic services". They tend to remain ethnolinguistically rather homogeneous, hardly attract migrants from distant areas and, therefore, pose no particular problems for language planners insofar as they fall under the provisions made for the rural areas of similar ethnolinguistic composition. With African megacities, on the other hand, the situation is different and will be dealt with in some detail below.

Urbanization in Africa is not independent of general demographic development: it is estimated that "approximately two-thirds of the African population as a whole is under 25 years of age, and as much as 50 percent of the population is no older than 15 years" (Mc Laughlin 2009: 2). This, by and large, is the target age group for formal education, and education links up with the ethnolinguistic, social, cultural, and religious complexities of the catchment area of any educational institution. As much as practically all African countries are characterized by territorial multilingualism, so are African urban spaces. Regardless of the dominant indigenous language of the territory on which a city emerges, urban spaces, and particularly those growing into megacities with infrastructure and job opportunities, will attract migrants from other parts of the country, if not other countries, who bring their own languages. With this heavy influx from the rural hinterlands, a fair number of minority languages will find their way into the cities and add to an ever-growing sociolinguistic complexity. At least temporarily, degrees of individual multilingualism will grow as speakers add urban languages or varieties to their repertoires; yet permanent immigration, after two or three generations, ultimately results in language shift and thus implies the loss of the original mother tongues. This scenario depicts the context in which language contact takes place – not necessarily between immigrant minority languages and the official (ex-colonial) European language but rather with the dominant urban African language. However, "[u]rban varieties of minority languages in Africa have been little studied, but preliminary observations show that they are often influenced by dominant urban lingua francas" (Mc Laughlin 2008: 7). Another feature of urban varieties is the emergence of a koiné, a more or less pan-dialectal variety that retains common features of dialects to the exclusion of idiosyncratic features of the dialects in question. This process may be accelerated by the fact that eventually the urban variety (koine) will be spoken by a large number of non-native speakers of the language of which it is a variety.

Urban dwellers come to speak differently from people in rural areas, and they tend to enjoy their different *urban identity*. As Mc Laughlin (2009: 3) generalizes:

> In some cases, urban languages are unique to the city, but they are often urban varieties of languages that are also spoken in rural areas. In this latter case, people are often able to manipulate a variety of forms along a rural-urban continuum …, and report a variety of lexical, morphological, and syntactic changes to their speech in the urban context. The allure and modernity of the African city have contributed to the prestige often associated with urban languages, but because of their association with urbanisation and the loss of what is often perceived nostalgically as a more traditional and authentically African way of life, the same languages are often criticised as being somehow illegitimate or debased, especially when they exhibit heavy borrowing from a former colonial language. Attitudes toward urban varieties, then, are complex and reflect a general ambivalence toward life in the city, with its combination of promise and frustration.

Urbanization is also quoted among the major factors contributing to language endangerment and loss since it is assumed to foster rapid and large-scale language shift among immigrant populations. This may not be a valid generalization in terms of shifting from one "ancestral code" to another. As Laitin (1992: 115) reports: "Massive urbanisation and government failure to meet the social needs of the people have created an environment conducive to the rapid growth of lingua francas that are far from the standard languages recorded by missionaries". Thus, cities provide the ground for the emergence of new urban speech varieties that may differ considerably from hitherto recorded "dialects" known from the rural hinterlands of the cities (cf. the notion of koine above and below). In terms of endangerment scenarios, clearly in Africa (and quite different from the situation in Australia and North America), there is no large-scale shift to English or any other ex-colonial language of European provenance. Language attrition or loss must be blamed, in activist terms, on "killer languages" of African stock, namely the dominant lingua francas, both in rural and urban environments.

> This pattern of dominant urban vernaculars and national or regional lingua francas threatening minority African languages is a much more realistic one, but even then, it needs to be tempered since the acquisition of one of these languages by speakers of a minority language is often additive to their linguistic repertoire rather than replacive … As Mufwene (2001; 2008) has pointed out, a more subtle study of the ecology of multilingualism is necessary for an understanding of the fate of Africa's languages because languages can only threaten others within the same domain of use (Mc Laughlin 2009: 10).

As a rule, African mother tongues and the ex-colonial European official languages do not compete in the same domains and, therefore, provide no threats for each other. Endangerment scenarios may result, from case to case, when minority languages have to compete with African lingua francas, even in the home, or where the latter compete with the European language, either in the home or in public communication.

A second marked feature of sociocultural modernization and development in present-day Africa, and more specifically in urban areas, is the visibility of written languages in the public space, a development that includes a rapid increase in the

use of indigenous African languages. Referred to as the "*environnement graphic*" by Calvet (1994), language visibility in the public space has more recently been renamed the "linguistic landscape" by Gorter (2006) and others and has become a somewhat fashionable line of sociolinguistic research (cf. below).

8.5.1. Is mother tongue–based education feasible in African megacities?

Language planners in Africa tend to shy away from discussing mother tongue–based (multilingual) education for children in the major cities. Their hesitance has fuelled stakeholders' frequently heard complaints that, in general, mother tongue–based education would have a negative impact on horizontal mobility and wouldn't work in cities anyway – and who wants their children to be stuck in the rural areas?! The general assumption was that, apart from the logistical problems of supplying this kind of education, the dynamically increasing numbers of urban children simply don't need it. This, in the words of Koffi (2012: 210) "is a form of linguistic discrimination that has gone unnoticed. If mother-tongue education is indeed good and desirable, it should be so for every student irrespective of where they live." It is widely assumed that mother tongue–based education is not feasible in African megacities; urban sociolinguistics has a lot to offer to change this uninformed assumption. Following Koffi (2012), the megacities of Africa are of three types. The first type can be described as ethnolinguistically homogeneous, with one dominant language. Examples are Addis Ababa (Amharic), Bujumbura (Rundi), Mogadishu (Somali), and Kigali (Kinyarwanda). The second type of megacity is characterized by ethnolinguistic dominance, with one particular African language being spoken by at least 50 percent of city residents. Megacities belonging to this group include Conakry (Susu), Kampala (Ganda), Kinshasa and Brazzaville (Lingala), Nairobi and Dar es Salaam (Swahili), Dakar (Wolof), Bangui (Sango), Ouagadougou (Moore), Bamako (Bambara [aka Bamanankan]), Accra (Akan), Ibadan (Yoruba), Cape Town (Xhosa), and Johannesburg (Zulu). The third type of megacity has no majoritarian African language. According to Koffi (2012), only a handful of African megacities fall into this category. While they pose particular challenges for implementing mother tongue–based education, these exceptions must not overshadow the fact that for the majority of African cities and megacities, mother tongue–based (multilingual) education is feasible – contrary to generally held assumptions!

The feasibility of mother tongue–based (multilingual) education in African megacities is enhanced by the fact that migrants typically settle in neighborhoods whose inhabitants already have a common regional, ethnic, and/or linguistic origin, and sometimes even profession, and tend to share at least one language. In any case, primary education would certainly be possible. Under the prevailing subtractive models that replace a mother-tongue medium with a European foreign language medium in upper primary and beyond, secondary schools and tertiary educational institutions would fall beyond any ethnolinguistic rationale anyway.

8.5.2. Urban "linguistic landscapes": Language visibility in the public space

Language visibility, in particular the visibility of African languages, in the public space, is a relatively new phenomenon that has begun to find its way from the cities along overland highways into the rural areas. Not too long ago, whatever was written on public and commercial signboards in Africa was bound to be in a European language (or Arabic in North Africa), a notable exception being Ethiopia. The investigation of this area as a specialized field of sociolinguistic research is pretty recent, a fact that is reflected in the fluid terminology for the field: the older term language visibility is being replaced by graphic environment (Mc Laughlin 2009, following the model of *environnement graphic* used in Calvet 1994) and by the somewhat more fashionable *linguistic landscape* (e. g., Landry and Bourhis 1997, Gorter 2006).

Case study descriptions from Africa are found, for instance, in Calvet (1994), Reh (2004), and Bwenge (2009). Du Plessis (2013) and Wolff, Berhanu, and Fulea. (2013), in case studies from South Africa and Ethiopia, have recently related language visibility to issues of language legitimization (as much as to de- and re-legitimization) in the wider framework of its relationship to symbolic power (cf. Cenoz and Gorter 2006).

Another newly emerging field is the study of mainly urban vernaculars used in "ephemeral media like text messaging on cellular phones or e-mail or Internet chat rooms [which] appear to be the prime locations for written forms of urban languages because they are genres that are less formal than other types of writing, and they aim to imitate spoken language" (Mc Laughlin 2009: 5).

A particular dimension of African written language use, whether in the public space, education, media, etc. is the neighborhood of mono-, di-, and trigraphia. This refers to the regional coexistence of different writing systems, which in present-day Africa would largely encompass Roman, Arabic (Ajami), Ge'ez/Amharic (*fidäl*), and Tifinagh scripts, all of which form part of the modern linguistic landscape.[23]

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[23] Other scripts are still in marginal use, or have had some political or even practical-instrumental relevance at some point in regional history, or date far back into the past. In Northeast Africa we find the Osmaniya (and other variant forms known as Borama, Kaddare, Wadaad's writing) for Somali and the Sapalo script for Oromo; in West Africa we have records of more or less successful indigenous writing systems for Bamun (pictographic), Bassa (alphabet), Bete (pictographic/syllabary), among the Bamileke (Eghap script), the Kpelle, Loma, Mende, and Vai syllabaries and the N'ko alphabet for Mande languages. Reference can also be made to the more recent developments of the Mandombe script in the Democratic Republic of the Congo, which is supposed to be used for Kongo, Ngala, Luba and Swahili; the *Mwangwego* syllabary for languages in Malawi; for Beria (Zaghawa), a newly developed script based on livestock brands is reported. The Nsibidi (Nsibiri) ideographic script in southeastern Nigeria is much

8.5.3. New urban vernaculars: "Lifestyle registers" or emerging "nationalist" languages?

More recent African sociolinguistic research has been intrigued by "new urban vernaculars", sometimes called urban "youth languages", "argots", "slangs", "lifestyle registers/codes" (for an overview cf. Kiessling and Mous 2004). These "new languages", which emerged mainly among young urban delinquent males and street gangs, and more recently have become increasingly loaded with hip-hop and gangsta-type lifestyle attitudes, are rapidly spreading to other sections of the urban population, such as educated youth (in schools and universities), women (although their usage of this speech is held in low esteem), and adults (who may well have kept comparable speech forms in use since their own youth). New urban vernaculars of this type tend to be taken up and are thus supported by the media of popular culture (comics, music, video clips, etc.), and they can be used for linguistic accommodation or disaccommodation across social, gender, and age barriers. Their domains of use reach from originally "secret, in-group" communication via age- and gender-specific "lifestyle expression" to "inter-ethnic lingua franca" and almost "default urban vernacular" functions. They all share an unstable and highly variant lexicon, packed with borrowings from both European and African languages of the regional environment, replenished and changed by constant *ad hoc* creation of neologisms. As far as grammatical structure is concerned, there is usually a more or less stable "matrix" language, European or African, that provides the basic (morphological and) syntactic patterns (e. g., Swahili for Sheng, French for Nouchi, Afrikaans for Flaaitaal/Tsotsitaal, Zulu/Sotho for Iscamtho aka Camtho) – but there is much room for further research. The best-known varieties, which have been the subject of some research, are Sheng (and Engsh; Abdulaziz and Osinde 1997) in Nairobi and other Kenyan cities; Nouchi in Abidjan (Kube 2005; Kube-Barth 2009); Flaaitaal or Tsotsitaal in South Africa (Makhudu 2002), where also Iscamtho is identified as distinct; and Indoubil in Kinshasa (Goyvaerts 1988). Also deserving of mention in this context are the urban vernaculars referred to in Dakar as Franlof (a blend of French and Wolof) and in Cameroonian cities as Camfranglais (combining Cameroonian languages, French and English).

The question that remains open for discussion among African sociolinguists is whether these new urban vernaculars could develop into new "national(ist)" (and possibly official) languages. They would appear to have all the necessary ingredients:

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older. Among the oldest scripts used on the African continent are the Ancient Egyptian hieroglyphics; Meroitic; Phoenician (Punic) and its debatable descendant Tifinagh (or Tifinaq), surviving among the Tuareg and increasingly becoming a vehicle for Amazigh nationalism; Greek/Coptic; and the Old Nubian alphabet.

– They are homegrown and distinctly representative of the particular postcolonial independent nation-state.
– They have a distinctly anti-normative appearance in terms of grammar and lexicon, both with regard to the ex-colonial European language and the missionary-type standard varieties of the African languages from which they freely adopt and adapt their grammatical and lexical inventories. This gives them, in a double sense, a proudly defiant "non-colonial" (if not "anti-colonial") sensibility.
– They serve as a shared identifying feature for majority segments of national populations that are both "young" and "urban", and they do so across boundaries linked to inherited ethnolinguistic diversity, which tends to be considered a negative legacy of the (pre)colonial past.
– They have a high potential to become nationwide lingua francas for interethnic communication, even in countries in which this role was or still is played by a hegemonic language, be it a dominant indigenous or a foreign (ex-colonial) language of European provenance.

To put the question bluntly: Will Sheng, Nouchi, Franlof, and Camfranglais eventually emerge as new officialized Kenyan, Ivorian, Senegalian, Cameroonian – the national official languages of these countries? Only time will tell.

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Further Reading

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Index 1: Subjects

Index 2: Languages, language groups, and areas

Languages are given with their name (mostly from the Ethnologue) and the ISO-639–3 code. The genealogical classification of African languages and language groups follows Güldemann (this volume, Chapter 2) and its basic classificatory units U1-U50 and subunits. The style conventions as well as the abbreviations for Greenberg's four classificatory domains and some other language groups are as follows: [-] no ISO code, **Bold** = basic classificatory (sub)unit or higher-order group, CAPITALS = genealogical language pool, UNDERLINED CAPITALS = areal language pool, *Italic* = area
AA = Afroasiatic domain, CL = Creole languages, KS = Khoisan domain, NK = Niger-Kordofanian domain, NS = Nilo-Saharan domain, PL = Pidgin languages, RL = Ritual languages, SL = Sign languages, UL = Unclassified languages, YL = Urban youth languages

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