
The Meaning of Language

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Edited by

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PREFACE

This book is a collection of a number of conference presentations from the *26th Scandinavian Conference of Linguistics* that took place in Aalborg, Denmark, in August 2015 under the auspices of the *Nordic Association of Linguists* (NAL).

I would like to thank Farshad Badie for assisting me in the editing of the book, and I would also like to thank Gerald Delahunty, Charles Prescott and Martin Prior for helping me with the English language.

—Hans Götzsche
Editor

CHAPTER ONE

THE MEANINGS OF LIFE

HANS GÖTZSCHE

Introduction

The main purpose of this chapter is twofold: on the one hand, I shall present the content of this book and its diversity and, on the other hand, I shall take up some of issues concerning the theme of the book: linguistic meaning. The theme has its background in the label of the 26th Scandinavian Conference of Linguistics that took place in Aalborg, Denmark, in August 2015: ‘the meaning of language: the semantics, logic and psychological reality of words and sentences’. The following sections make up an essay on this theme, whereas the chapters, based on some of the papers at the conference, approach the theme by pursuing a number of different paths.

Hans Basbøll’s contribution on Danish linguistics after the Renaissance has its focus on the development of Danish phonology and prosodic morphology, an account that illustrates Denmark’s acknowledged tradition in the language sciences and forms the only consistent account in English. The narrative starts with Jacob Madsen Aarhus (1538–1586) but the ‘linguistics giant’ of the 18th century is Jens Pedersen Høysgaard (1698–1773) who wrote not only in Latin but also in Danish. His main legacy can be said to be his description of the Danish ‘stød’ and his schematic overview of Danish vowels, but his grammatical insights are also significant. Høysgaard’s oeuvre has been an inspiration for later generations of Danish linguists, and the chapter mentions Rasmus Rask and Karl Verner. The portrayal of this period of Danish advances in linguistics will also be of interest for scholars outside Scandinavia.

Stig Eliasson asks the question of what obstacles there can be to morphological borrowing between languages, a topic that has attracted recent attention. This kind of copying does not happen often, in opposition to lexical borrowing, and which factors have an influence on the

phenomenon, whether societal, cognitive or structural, are of special interest from a descriptive and theoretical view. The account is very detailed and adduces data from a number of languages, among them Turkish (Turkic), Basque and Samoan, and it offers the reader a host of details and analyses.

The next chapter by Kambiz Badie looks at linguistic meaning from a perspective quite different from the prevailing viewpoint of the western tradition. The chapter offers ideas about how background knowledge works in order to extract meanings from texts and how such meanings can be transformed. Lars Behnke's contribution is an empirical and experimental study of how Danish learners of German handle similar phonetic segments, and Christina Schoux Casey takes up another topic in speech analysis, viz. New Orleans English Phonology, something that is 'nearly unstudied'. Because of the history of New Orleans the dialectal situation is quite special, i.e. that 'New Orleans remains marginal to the South in terms of phonological features', and the study can be seen as a model for linguistic field work. The chapter by Gerald Delahunty is about language use, what words are used in the genre of 'appeal letters'? Such letters 'deal with extremely exigent situations, e.g. impending executions, they show us how this exigence is represented in the context of other factors, ...'. It is a matter of how words are used in society as rhetorical means, often with scary outcomes or, hopefully, the opposite. Thorsteinn G. Indridason brings us back to some other small-scale details in a specific language, Icelandic, and takes up the behaviour of 'intensifiers', bound and free respectively. The paper by Vilma Symanczyk Joppe on the orthography of German compounds, and her and Robert Külpmann's paper on null objects, are also on grammar issues, whereas another way of doing things is presented by Zhanna Maslova and Denis Minakhin in their contemplations on metaphor and its historical background and cognitive functions. A third contribution on speech sounds is presented by Mitsuhiro Nakamura who brings into focus the 'word-final alveolar stop[s], /t/ or /d/' in British English, i.e. a study with acoustic data. The findings of such kinds of study are essential when trying to understand the variation in language usage and changes over time. And Charles Prescott has yet another perspective on almost the same thing when he examines 'dorsal stop series in Indo-European', viz. a search for reasonable reconstructions of pre-historic language structures, whereas Martin Prior explores the potentials of the interface between language and logic, also touching upon the language and logic of time. In Miguel Vázquez-Larruscaín's chapter we are back at grammatical studies again: now using Optimality Theory, he analyses Norwegian dialects as compared with the other V2 languages

of the Germanic group. And Johanna L. Wood & Sten Vikner close the grammatical theme with a chapter on indefinite determiner doubling, a topic not usually taken up in grammar books, and data has been found in English, Danish, Swedish and varieties of German and Norwegian. The volume concludes with Farshad Badie's formal analyses of possible linkages between Predicate Logic and so-called Occurrence Logic.

In sum, the topics of this book do not cover everything in current linguistics but the volume brings up a number of issues that illustrate the essentials of linguistics. Thereby pointing to the fundamental question: what is meaning?

Meaning?

Assume the following scenario: Alfred tells Brian that 'Peter hasn't fed the dog today' by uttering the corresponding chain of speech sounds in his dialect. It takes place in a specific physical context in which Caroline and the dog are also present, for instance in Alfred's kitchen, and the dog's food is available. If the people present speak Alfred's dialect then they will understand what he says by attaching the intended meaning to his speech sounds; also considering that the sentence is negated, which makes the event referred to ('feeding the dog') non-verifiable. This fact, that words have meanings, has puzzled 'language scholars'¹ and philosophers for millennia and poses a yet unsolved problem since nobody, so far, has been able to explain how and why it is possible. Even more complicated to explain is the scenario in which Alfred meets Brian in the street and Alfred tells Brian the same little story. Then we have a case of displacement, i.e., they talk about things not perceptually (visually or audibly) available in the local environment; not even potentially. This is a major theoretical problem concerning natural languages; being even more intriguing because, as is well known, children start looking for things they cannot see in the local environment before they are 1 year old, which means that toddlers seem to have established the cognitive basis for later using² words about objects only represented in their memory. As for technical languages

¹ Since the term *linguist* is fairly new, and the term *linguistics* even newer, both coming into use after the Middle Ages when modern science emerged then it would not be appropriate to label earlier intellectuals studying language 'linguists', see Koerner and Asher (1995).

² When later *speaking*; they *hear* words referring to unseen things all the time.

(e.g. programming languages) and formal languages (e.g. mathematics) the problem about what meaning is becomes almost insurmountable.

In his review 28/09-15 at Notre Dame Philosophical Reviews³ of Alexis Burgess and Brett Sherman: *Metasemantics: New Essays on the Foundations of Meaning*, Oxford University Press, 2014, Derek Ball, University of St Andrews, makes the following remark: ‘In fact, one of the remarkable features of the collection is the level of reflective disagreement about the right foundational questions to ask: in addition to the editors’ introduction, several of the essays are devoted to distinguishing and defending the significance of different metasemantic questions.’

Accordingly, today there is a fairly high number of approaches to the topic, and endeavours in a search for answers encounter the additional problem that different fields of knowledge use different nomenclatures (or sometimes the same nomenclature but with different meanings), for instance in linguistics and philosophy, thus

This discussion exemplifies a general problem: We use many terms that have very unclear reference, and as a result we don't understand each other.
(Martin Haspelmath, the Lingtyp mailing list, 7 April 2017@08:57 CET)

Semantics

In the short version—and commonly acknowledged by linguists and philosophers—one can say that the label ‘semantics’ denotes ‘the study of the meaning of words, phrases and the larger units of language’, and the current state is that we, as linguists, know that it works but not how and why it works. The state of the art is that, at one extreme, we have formal (and mathematical) and technical (and computational) models (not to mention artificial intelligence and robotics), and, at the other extreme, we have contextual interpretations (in words) of what people say and write; and maybe between the extremes we have cognitive and neuroscience approaches that try to uncover the mental and physiological processes that seem to be the roots of language use and usage, including language meaning.

One may illustrate the problem with an analogy: ‘the blind carpenter’s jigsaw puzzle’. Imagine a blind carpenter who has developed an ability to make jigsaw puzzles by letting his fingers follow the pre-cut grooves

³ <http://ndpr.nd.edu/news/60166-metasemantics-new-essays-on-the-foundations-of-meaning/>

separating the pieces when using the jigsaw (hopefully not cutting off his fingers). In advance, the picture on the jigsaw puzzle has been glued by someone else to the plywood and the carpenter successfully separates the pieces. Now, by accident he drops a number of the pieces on the floor, and he can't find them, so he won't be able to put together the pieces in order to rebuild the picture—which he knows is there but has never seen.

In my view the current state of affairs in linguistics, and especially semantics, is like this. We hope there is a full picture, but we have never seen it, and we have been busy cutting the pieces apart—and we are able to put some of them together—but we don't know how many we have lost, and in the meantime we keep struggling to fit together the pieces we have, at the same time searching for pieces we think we have lost.

Furthermore, a special problem concerns the relationship between different kinds of symbolised languages, namely what may be conceived of under the labels 'formal' and 'technical' languages mentioned above. The question is twofold:

- i. What is the semantics of symbolised languages that must be seen as developed on the basis of natural languages?
- ii. Are symbolised languages more suitable for sketching the semantics of natural languages?

One may notice the following statement by Hinzen:

... designing an artificial language allows no empirical conclusions on human language design. Its design will depend on the designer's purposes The design of human natural language is simply what it is. The artificial language may be specifically designed to enable communication, but this would not necessarily tell us anything about natural language design.

(Hinzen 2006: 25)

Hinzen's statement prompts the following additional questions:

- (i) To what extent is it plausible to assume that the semantics of natural language expressions can be formalised in different logics like Description Logic and Predicate Logic? Special attention should be given to the notion—and yet unsolved problem of—self-reference and the ensuing paradoxical and intriguing puzzles, for instance testing the 'connective of content implication: $p:q$ ', presented by Piotr Łukowski (Łukowski 1997, 2006).

- (ii) To what extent is it plausible to assume that these logics can represent linguistic meaning in pragmatic settings/situations?
- (iii) To what extent is it plausible to assume that these logics can be used as frameworks for models of where linguistic meaning is situated: in cognitive science and neuroscience approaches?

Whether basic scientific concepts should be defined by philosophers or scientists has been the source of much controversy, but in current linguistics there is a general divide between so-called ‘formalists’ and ‘functionalists’ (cf. Newmeyer, 1998). Even though both terms are rather vague the overall picture is that the prevalent formalist approach is the Chomskyan, whereas functionalism is represented by a broad and, in fact, disparate number of approaches that are basically descriptive.

The latest demonstration of the Chomskyan way of doing things is Berwick & Chomsky (2016), and, as usual, Chomsky asks the right questions: ‘What is the nature of language? How does it function? How has it evolved?’ (p. 1). But, as mentioned in Götzsche (2013: 48-64), his answers are, in general, not satisfactory; or, using his own words when criticising others in Berwick & Chomsky (2016): ‘incorrect’ (p. 9), or ‘plain wrong’ (p. 10).

This is so because his basic claims are: (i) ‘... the Basic Property of language: that a language is a finite *computational* system yielding an infinity of expressions, each of which has a definite interpretation in semantic-pragmatic and sensorimotor *systems* (informally, thought and sound)’ (p. 1). (ii) ‘Human language syntactic structure has at least three key properties, all captured by minimalist system *assumptions*: (1) human language syntax is *hierarchical*, and is blind to considerations of linear order, with linear order constraints reserved for *externalization*; (2) the particular hierarchical structures associated with sentences affect their interpretation; and (3) there is no upper bound on the *depth* of relevant hierarchical structure.’ (p. 8). And, furthermore: ‘(2) implies that structure (in part) *fixes* interpretation at the level of “meaning.”’ (ibid.). And, finally: ‘the ... syntactic object is also assigned a label by some *algorithm* that satisfies the conditions of minimal *computation*.’ (p. 10). [my italics, Hans Götzsche]

The puzzles presented by these claims are: (i) What is the justification for saying that ‘language’ is a ‘computational system’? Firstly, the wording seems to be metaphoric (like the notions of ‘hierarchy’, ‘depth’ and ‘fix’), because, so far, we do not know the details of how the brain is able to process what we call mental phenomena or cognitive systems, including linguistic items. The brain may not work like a computer using

software algorithms. Second, why should syntax be perceived as a separate (cognitive) system, working only by interfaces (whatever that is) with a sound system and a semantic system respectively? (ii) What is the justification for claiming that syntax is hierarchical? As is well known, all the way back to Chomsky (1957) sentences have been seen as hierarchical structures of word classes (so-called ‘phrase structures’) but apart from the intuitive idea of word classes as the foundational building elements of linguistic expressions and empirical tests in the vein of Jakobson’s paradigmatic replacements there seems to be no theoretical underpinning of the assumption.

Even though the Chomskyan *modus operandi* has provoked much debate and, with all due respect, must be acknowledged to have inspired much clarification of basic ideas in linguistics and philosophy, its shortcomings may be due to the fact that its conceptual framework is not new. The interesting issue is not that it explicitly refers to Cartesian understandings (see Chomsky 1966) but that its principles are analogous to the compartmental thoughts presented in, for instance, Steinthal (1855) in which it is argued that grammar and logic are separate entities, because the question: ‘... ob Sprechen und Denken identisch sei ... ; ob Grammatik und Logik ein und dasselbe seien, ... ’ (p.144) is answered clearly by: no! (see Steinthal 1855: 154-155); i.e. human thinking (logic) is considered a separate (mental) entity. This is in line with a current approach, viz. the one proposed by Jerry Fodor (2008) as ‘LOT’ (‘Language of Thought’), which assumes that thoughts are, somehow, autonomous entities in the mind:

Just as the semantics of sentences are constructs out of the semantics of words, so the semantics of thoughts are constructions out of the semantics of the concepts that are their constituents.

(Fodor 2008: 19)

One may ask what concepts are if disconnected from words, and the answer seems to be the usual one from a philosopher: ‘... paradigmatic thinking is directed to ascertaining truths.’ (ibid. 8). So we need concepts to have truth functions, and therefore we think by means of concepts. Some linguists also talk about concepts as entities: ‘I have to make it clear, though, that not all concepts and thoughts are meanings of words or sentences.’ And: ‘These sorts of concepts and thoughts can exist on their own in the head ... ’ (Jackendoff 2012: 70). Jackendoff’s book is a ‘linguistics for the layman’ so one might expect this to be the state-of-the-art basic knowledge in linguistics. But what are concepts then? Not visual

images, as is stated on p. 51 seqq. taking up the old friend: the notion of a triangle.

But, one of the insights proposed by Darwin:

A long and complex train of thought can no more be carried on without the aid of words, whether spoken or silent, than a long calculation without the use of figures or algebra.

(Darwin 1871 (*The Descent of Man, and Selection in relation to Sex*. London: John Murray), quoted from Berwick & Chomsky 2016: 4)

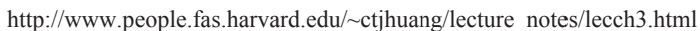
is at odds with this idea of compartmental theorising. Even though the history of philosophy after the Renaissance struggled with the separation of mind and matter, from Descartes to Locke, Berkeley and Hume to name a few, what we call (human) thinking can hardly be separated from the mental representations of aspects of the outer world picked up by our perceptual faculties, nor can it be separated from linguistic expressions; i.e. there seems to be no separate (more or less autonomous, ‘on its own’) conceptual system taking care of ‘thinking’.

Grammar, then?

Traditional grammars are, basically, descriptive; even when they claim they are formal descriptions. The first grammars were partly descriptive generalisations, partly school grammars, and as pedagogical tools they were excellent. But the Chomskyan idea that a grammar is a mental, or cognitive, entity presented the theoretical models of grammars with certain criteria: they should be able to process all the sentences of natural languages, and also avoid producing ungrammatical sentences. These criteria are somewhat difficult to meet and Chomsky’s Generative Grammar has been elaborated on since the middle of the 20th century without having achieved that. There are two reasons for this imperfection.

(A) One is that the syntactical models made very complicated assumptions about how a sentence is built, typically:⁴

⁴ The diagram is a tree structure analysis of a phrase, but since sentences are, by Chomsky, seen as only versions of phrases it does not affect the line of reasoning.



(B) In the example above words are simple entities because the language is English; and the linguistic items are text entities. We might not take up complex languages like Latin, Icelandic or Finnish, but perhaps German, for example:

The underlined parts are, as is well known, expressions of case inflection, the dative and the genitive, and, furthermore, the adjective *klein* has been inflected because of the dative case of the noun phrase: *kleinen*. Imagine,

then, the complex system of verb conjugation of the Romance languages, or just take a look at a simple expression in Finnish:

Ymmärrät(te)kö suomea? ‘do you understand Finnish?’

The first of these words has an elaborated morphology: *ymmärrä-tte-kö* ‘understand’ + ‘you (plural)’ + (interrogative particle), which means that word forms are supposed to be merged by adding a number of inflectional endings and particles to a stem. But Finnish may have much longer words, and Finnish is, from a systematic point of view, fairly easy to learn; just follow the rules. Whereas a language like Icelandic, in which specific endings have more than one meaning, is more complicated and often you do not know if you have found the right inflectional paradigm of the word you want to use. There seems to be a shortage of disambiguating rules.

Traditional grammars are excellent descriptive tools when one wants to learn a language or check one’s own writings. But assume that the brain must set up a cognitive system that is expected to handle these things in accordance with the descriptions just offered.

First one has to put together words from stems + (potentially) some derivative forms + a number of endings + (potentially) some particles. Then one has to put together the words in a non-sequential fashion, and, finally, one must carry out a number of movements in the tree-structure for the words to end up in the right places so that mother tongue speakers don’t get upset. This must take some time; and not many speech sounds may come out of one’s mouth at the end of the day. And it is even more intriguing when considering that brains work rather slowly, in the sense that it is a well-known fact that electronic devices work at a very high speed:

Compared to the speed of electrical information traffic along the wires in a computer (close to the speed of light), conduction velocities of impulses in the brain are slow, about 120 metres per second in the fastest conducting axons.

(O’Shea 2008 p. 28)⁵

⁵ O’Shea, M. (2008): *The Brain. A Very Short Introduction*. New York: Oxford University Press. Quoted in Götzsche, Hans & Ksenya Filatova (2012): ‘On the Ontology and Cognitive Processing of Languages’, in *Cognitive Dynamics in Linguistic Interactions*, Cambridge: Cambridge Scholars Publishing, pp. 81-106.

Compared to electrons brain impulses are, actually, very slow, but the curious thing is that humans are, at least so far, much better at linguistic processing than electronic systems.

Imagine then, that a software system is set up in order to mirror this way of describing linguistic phenomena; maybe the purpose is to make acceptable electronic versions of one's grammar and lexicon, and this may work well. But if the purpose is to make software systems that should facilitate solutions to ordinary and practical linguistic tasks, for instance text translation, use of interactive devices or creating summaries of large amounts of texts, then traditional grammars and lexicons may have a fairly low process efficiency ratio. An alternative is to use stochastic methods but their success rate may vary.

Minds and Machines

We will, below, come back to the claim that we know little about how the brain is able to process our mental life—a claim that is, albeit, disputed—but for now we may just accept it. Then one imperative question is how to handle the issues of human minds as mental universes, cognitive systems as instruments of learning and knowledge, the nature of language, and the issue of human vs. machine intelligence. The question is relevant because it seems empirically sound to say that humans and their brains are able to create meanings in human minds in the form of semantics of words and sentences; whereas we do not know if there is anything like it in machines.

It should be observed that much of the jargon of current terminology in the field of using software systems to carry out tasks otherwise assigned to humans is characterised by tropes, for instance the notion of 'deep learning algorithms', whose meaning has not much to do with 'deepness' or with 'learning'. It should also be observed that there are crucial differences between the way humans solve tasks and the way it is done by so-called Artificial Intelligence (AI) systems; a fact that is in general accepted by scholars in the field, though also this claim may be disputed. An issue is, for instance, how AI software was able to beat the world champion in chess, and, some time ago, how an AI system was able to beat the world champion in the board game Go. And only by the use of sufficient computational power.

One answer is that, as mentioned above, the signals of electronic machines travel at a very high speed, which may give the machine an advantage, but another answer is that the essence of such board games is that the number of different combinations of configurations of the pieces is, at best, very large, but that modern computers are able to calculate a

very large amount of potential configurations in a very short time, by carrying out a large⁶ number of calculations in a combinatorial system. However, even though the number of configurations is very high it must be finite and each single configuration must be discrete. So, although modern computers are very powerful—and will be even more powerful in the future—it may be a characteristic feature of computational machines that they can only provide one with

*a finite set of discrete solutions*⁷

when carrying out a specific task, whereas humans are apparently able to ask questions to which an answer may not be ‘a finite set of discrete solutions’. It may, therefore, be convenient to redefine the notion of ‘intelligence’. As demonstrated by Ken Richardson (1999), the traditional psychological idea of ‘intelligence’ has an almost bizarre origin, including a number of meanings not all of them consistent with the modern idea of ‘abstract thought’ or ‘understanding’, or with the dictionary definition: ‘an ability to acquire and apply knowledge and skills’. Machines work by CPUs, other chips, circuits and memory devices, and a number of software algorithms, whereas brains work like brains—though, for the moment, we do not know how brains work. The idea of taking brains to be a kind of machine and a machine as some kind of brains may be better abandoned. So far it looks as if brains are a little better at specific kinds of combinatorics than machines because a language may, at any given time, be described by a combinatorial system with, not a few hundreds of pieces like in a board game, but with, at least, tens of thousands of words of which the number of configurational combinations is fairly high, even though there are obvious constraints to the combinations yielding certain constructions in language usage. Furthermore, and this is crucial, natural language ‘combinatorics’ can have its principles changed all the time: words may mean different things in different contexts. Accordingly it may be suggested that the notion of ‘intelligence’ as such, even when applied to humans, may better be defined by the relevant feature of machines: the ability to yield ‘a finite set of discrete solutions’, and, if not, it is nothing more than a ‘brand’ and should be substituted by some more appropriate notion.

⁶ I take no stance on the question of exactly how large the respective amounts are.

⁷ I am inclined to call this ‘Götzsche’s first theorem’; but, of course, it needs proof.

Life

What to do with meaning, then? My colleague Farshad Badie has compiled a minor number of contexts in which the expression *semantics* is currently used by the scientific community. Of the 72 contexts only a small number (the nomenclature is not always transparent) seem to be consistent with each other, and a number of fairly opaque formulations appear, e.g.

Semantic Bug: Bugs are the root of all problems in software development. Semantic bugs include some of these bugs plus major planned features for Semantic Forms.

Semantic Hashing

Semantic Alignment “the ability to efficiently exchange data between the technical/operational layer and the business/social layer and to correctly interpret the meaning of the data that has been exchanged in the right context and within a reasonable time”.

Maybe it doesn't matter; we may just say: ‘cobbler, stick to your last’, whatever you call things in your workshop, and don't think too much about other workers calling their lasts by the same word while actually doing something very different (cf. the quote from Haspelmath above). But is such semantic broadening not obscuring things? What is, for instance, meant by the expression ‘semantic web’? Are the electronic circuits actually able to attach *meaning* to software versions of words, thereby also being able to *understand* issues? And is the brain just some version of this mechanism? Some people seem to think so, as can be seen in the recent publication by Stanislas Dehaene (2014) in which, among other things, he puts forward the idea that human consciousness⁸ can be explained directly by certain brain processes. This is based on the evidence that brain scans carried out by the British neuroscientist Adrian Owen demonstrate that otherwise paralysed persons are able to imagine certain things when asked to, and that this is correlated with activity at located brain coordinates. Accordingly it is concluded that such voluntary mental actions represent consciousness. But maybe the question is asked in the wrong way. Suggesting a few fundamental notions may indicate why.

Assuming that humans are what we call organisms in the biosphere apparently they differ from other organisms in two ways: (i) humans are

⁸ Assuming that meanings of words have to do with one being conscious of those meanings.

not plants, on the contrary the kind of organisms we belong to are moving organisms. We seem to have developed neural cells and systems (from primitive nerve net organisms) because we move. So, *animals* (like us) have *brains* because they *move* and *do things*; that is, they have *reactive systems*. (ii) We as humans seem to have *big brains* because we *move* (mainly on land), *do things* (seek and hunt) and, crucially, *make things* (that improve survival); so we have *active* systems. Whereas (maybe not all) animals may have what we call *awareness* of the environment (nerve net creatures may justifiably be assumed not to have awareness) and may be able to *control* what we call *attention*, *humans* may be said to have awareness of the environment and be able to *control attention*, but humans *also* seem to have *self-awareness*, which may be seen as awareness of oneself in a specific environment, and self-awareness may be said to constitute *consciousness*. And it may be rather difficult (seemingly impossible) to imagine consciousness without language, i.e. using linguistic expressions to develop (for humans essential) referring notions and imagining notions like ‘present, past and future’.⁹ So Dehaene’s approach has two shortcomings: (a) it seems to confuse ‘consciousness’ with ‘attention’ (we may not know to what extent paralysed persons have self-awareness), and (b) correspondence between linguistic phenomena and located brain activity does not tell us what the brain is actually doing; because we did not know in 1999, cf.:

‘... she worries that brain imaging is still a relatively crude tool. On its own, she says, it ‘cannot inspire a theory of how the brain works. All it tells you is that if you do this or that, different bits of the brain light up on a scan—it doesn’t tell you why or how or what that means.’

‘She’ is Susan Greenfield, former Director, The Royal Institution, London, and the quote is rendered by the interviewer Alison Goddard in *Predictions* (1999: 151).¹⁰ And to this day we do not know.¹¹

⁹ See publications by Kant, Arthur N. Prior, Soave and Øhrstrøm & Hasle.

¹⁰ Susan Greenfield, in Griffith, S. (ed.) 1999: *Predictions*. Oxford: Oxford University Press (The Times Higher Education Supplement), pp. 149-154. Also quoted in Götzsche (2013) p. 52.

¹¹ The Nobel Laureate Maybritt Moser, NTNU, has indicated (personal communication) that this is true, and Alessandro Treves, Scuola Internazionale Superiore di Studi Avanzati, Trieste, has confirmed (personal communication) the claim.

Conclusion

One can say that all this is important for our understanding of what humans are and what human life is, and it is also important for our understanding of what place humanity has in the universe as conceived of by science and ordinary people. Human life, as we know it, seems to need language with meanings of words in order for us to know that we are humans. My wife's dog, in all likelihood, does not know it's a dog; whereas we know we're humans; who are, moreover, capable of owning dogs.

Therefore one may reasonably infer that my wife and I (apart from the special bodily feature of our articulatory apparatus and some other features) are distinguished from dogs because we are equipped with a fairly advanced neuronal system, whereas her dog's neuronal system is a little less advanced.¹² The dog's system works well, by all means. When the dog takes a high-speed tour in our living room, running around the room several times, it is able to avoid engagements with the furniture, so the processing efficiency of its neuronal system must be impressive. However, concerning the upcoming era of self-driving cars one may wonder what the most complicated task is: to take the car from my work to my home, in a number of steps which, though high, is nevertheless finite; or the living room tour of the dog? The exact tracks of which are never the same. And since both tasks are solved by pattern matching one may wonder who is the most intelligent: the car or my wife's dog? And, is pattern matching the answer to scientific questions?

So, the title of this book should actually be turned on its head: (only) Language has Meaning, in the narrow sense. And the essence of the issues taken up in the book is that human life forms have the ability to create what we call meaning, conveniently assigned to speech sounds in communicative contexts. Therefore one should not ask for 'the meaning of life' but instead ask 'how does life create meanings'?

¹² Should one be in need of an almost indubitable criterion for being a human being the human potential for delusion easily comes up. Animals can, of course, have (e.g. perceptual) illusions but one may need the ability of imagination in order to become deluded.

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CHAPTER TWO

THE DISCOVERY OF DANISH PHONOLOGY AND PROSODIC MORPHOLOGY: FROM THE THIRD UNIVERSITY CARETAKER JENS P. HØYSGAARD (1743) TO THE 19TH CENTURY

HANS BASBØLL

1. Danish phonology and phonetics before Høysgaard (1743)

This chapter offers an outline of important linguistic analyses of the phonology and prosodic morphology of Danish, mostly treating the standard language (understood rather broadly). The focus is on word prosody, not least the Danish *stød*, but also the phonology of segments (vowels and consonants) is included. Studies within the philosophy of language are not treated here (whereby an important mediaeval tradition is excluded, see Hovdhaugen et al. 2000: 16-20), nor are works which are only concerned with general phonetics and phonology (although the boundary is, of course, not sharp). Jens Høysgaard is the central figure of the paper (section 2), with rather short sections on the time before (section 1) and after (section 3, emphasizing the relation to Høysgaard). The chronological endpoint chosen is the end of the 19th century. The paper is to a large extent based upon Basbøll 2016 (which is in Danish).

1.1 Jacob Madsen Aarhus (1586): the first Danish phonetician

The first noticeable Danish phonetician was Jacob Madsen Aarhus (1538–1586). He spent his first years (until 1559) in Aarhus (East Jutland), and then he studied at Copenhagen University (baccalaureus 1563). After that

he was a headmaster and canon in Aarhus until in 1566 he travelled to Wittenberg, Leipzig and Heidelberg. From 1574 Madsen Aarhus was a professor at Copenhagen University. His work *De literis libri duo* (1586) is a learned piece of work with extensive discussions of classical authors (in particular influenced by Petrus Ramus), but it also has original observations of his mother tongue, e.g., that a stressed short vowel in (utterance) final position is followed by a breath (“Om H paa Dansk” [About H in Danish] [all translations from the Danish are my own/HB]):

Paa mit Sprog, d. v. s. paa Dansk, synes Aspirationen at lyde og at maatte skrives ikke blot foran Vokal, men ogsaa efter Vokal i Slutningen af korte Enstavelsesord, ligesom paa Hebraisk; f. Eks. ah (jeg), dah (da), duh (du), dih (de) [p. 156, Latin p. 66]

[In my language, i.e., in Danish, the aspiration seems to sound and should be written not just before vowel, but also after vowel finally in short monosyllables, just like in Hebrew; e.g., ah (I), dah (then), duh (you), dih (they)]

This is an important observation which plays a role in the phonological interpretations of Uldall (1936) and Hjlemslev (1948/1951). Madsen Aarhus discusses in detail why the letters *j* and *v* should be introduced, and he argues specifically about Danish (“Om J paa Dansk” [About J in Danish]):

I vort danske Sprog, navnlig paa Jysk, forekommer denne Konsonant saare ofte. Derfor er Brugen af dette Tegn ogsaa for vort Sprogs Vedkommende særdeles nyttig og nødvendig for den rette og nøjagtige Skrive- og Læsemaade. Foran Vokal: Jact (Jagt), Jeg (Eg), Jæg (jeg), Jord (Jord). Og med forudgaaende Konsonant: Sjeb (Sæbe), ljer (Ler), njes (Næse), tjær (Tjære), djærro (djærv) ... Efter Vokal: maj (Festløv, Maj), māj (Made) ... [p. 167, Latin p. 84f]

[In our Danish language, in particular in Jutlandish, this consonant very often occurs. Therefore the use of this sign (letter) is, also in our language, very useful and necessary for the correct and exact manner of writing. Before vowel: Jact (hunt), Jeg (oak), Jæg (I), Jord (earth). And with preceding consonant: Sjeb (soap), ljer (clay), njes (nose), tjær (tar), djærro (bold), māj ([sort of] meadow) ... After vowel: maj (May) ...]

Here are indicated some Jutlandish pronunciations (e.g. with palatalization in *njes* and *ljer*), and everything shows that he is a keen observer, noticing, e.g., the Jutlandish apocope in *njes*, *tjær* and (with a macron over the vowel) *māj*. He also says (“Om V paa Dansk” [On V in Danish]) (*Vav* is an earlier letter name):

Vort danske Sprog, og navnlig det jyske, gør megen Brug af denne Konsonant. Derfor trænger det ogsaa i høj Grad til det nye Tegn. Vav staar foran Vokal i flg. Tilfælde: vact (Vagt), væt (Vægt), ved (Vid), vid (vid), vod (vaad). – Og med foregaaende Konsonant: svart (sort). Quinde (Kvinde), quol (Kul), hvas (hvas), hvid (hvid). Vav staar efter Vokal i følgende Tilfælde: ... rov (Ro), raav (Rug, Rov). Sav (Saft), sāv (Sav), sōv (sove) ... [p. 177f, Latin p. 103f]

[Our Danish language, and in particular Jutlandish, uses this consonant very often. Therefore this new sign (letter) is highly needed. Vav is found before a vowel in the following cases: vact (guard), væt (weight), ved (wit), vid (wide), vod (wet). – And with preceding consonant: svart (black). Quinde (woman), quol (coal), hvas (keen), hvid (white). Vav stands after vowel in the following cases: ... rov (rest), raav (rye, rapine). Sav (juice), sāv (saw), sōv (sleep) ...]

Finally in the first book (p. 191, Latin p. 127) he offers a scheme of the phonetic classification of the ‘letters’, e.g., with a distinction between ‘lingual’ [tongue] and ‘labial’ [lip] vowels [i.e. unrounded vs. rounded]: “A, E, I” vs. “O, U, Y”.

1.2 An important ms on phonetics from 1727 (GkS 789)

In 1727 a large anonymous manuscript on grammar, phonetics and orthography (GkS [= Gammel kongelig Samling, i.e., Old Royal Collection] 789) was given as a present to King Frederik IV, first published by Carol Henriksen in 1976. This important manuscript has only had little scientific impact, and even after its publication it has not been explored by researchers to the extent it deserves. There are both arguments *pro* and *con* concerning the authorship of H. O. Nysted (1664–1740), see Henriksen (1976: 91–117) and Fischer-Jørgensen (2001: 165–169). The importance of the manuscript is so much greater because it is written in the personal orthography of the author which is meant to reflect the actual pronunciation (in Copenhagen); the orthography is in two versions of which the ‘radical’ is the more interesting.

The first part is a grammar of which the first sections concern writing and speech sounds (1727/1976: 140–243). The second part (1727/1976: 370–411) answers the question whether one should ‘speak as you write, or write as you speak’ by declaring that writing should follow pronunciation. According to Fischer-Jørgensen (2001: 169) the author’s long descriptions of vowels (‘selvtoner’ [lit. auto-tones]) and consonants (‘medtoner’ [lit. syn-tones]) do not constitute a phonetic description (he just has some short comments to the effect that *b d g* are ‘blødere’ [softer] than *p t k*); it is much more a phonological description since he does not want to

distinguish more letters in writing than are needed. The manuscript anticipates (1727/1976: 164) some of Høysgaard's observations (see 2.1) to the effect that e.g. *lykke* 'happiness' has the same vowel (quality) as *øre* (he proposes to write the former word *løkke*). He is aware of some aspects of quantity and stress, but not (always) in a clear way (see Fischer-Jørgensen 2001: 165-182), and he has absolutely no idea that there is anything like *stød* in Danish (see 2.2). In general the reader can be referred to Henriksen's informative and detailed introduction (1976: 1-124).

2. Giant of the 18th century: Jens P. Høysgaard

Jens Pedersen Høysgaard (1698–1773) was born in Aarhus and from 1737 a caretaker (the third out of three) at the University (in Copenhagen). In 1759 he was appointed Bell-Ringer at Trinity (University) Church. In 1743 he presented the first linguistic analysis ever of the Danish *stød* (a laryngeal syllable rhyme prosody with a complex grammatical distribution, see 2.2), and he further developed this analysis, which is applicable even today (see Basbøll 2014a, 2014b), in (1747) and (1769). The two latter works constitute, together with his work on syntax (1752), a comprehensive integrated analysis (of almost 800 pages) of the Danish language—far superior to anything before—organised in 2,022 consecutively numbered paragraphs (see Bertelsen 1926). His most important works are:

1743b: *Concordia res parvæ crescunt*

1747: *Accentuered og Raisonnered Grammatica*

1752: *Methodisk Forsøg til en Fuldstændig Dansk Syntax*

1769: *Første Anhang til den Accentuerede Grammatika*

2.1 The Patriot's entry (1743) and the vowel system

Tres faciunt collegium eller ... Første Prøve [af Dansk Orthographie] [First Attempt/Specimen of Danish orthography] is Høysgaard's first publication (1743a, anonymous). Høysgaard here participates in an ongoing debate on orthography, between Thomas Clitau (1694–1754) and Niels von Hauen (1709–1777), but he pretends that the debate is one between two great orthographists and grammarians of the 17th century: Henrik Gerner (1629–1700) and Peder Syv (1631-1702). Høysgaard treats the following points:

- 1) On the Use of *Vocalen i* and *Consonanten j*. Høysgaard follows Syv: *Bjerg, Høj* etc., not Gerner's *Bierg, Høi*.

- 2) About the doubling of *Vocaler* and *Consonanter*. Høysgaard disagrees with both Syv's *Brøød* and Gerner's *Smørr*, because neither the vowel nor the consonant is double in pronunciation. His solution is presented in 1743b: written accents (Aandelav).
- 3) To differentiate between Numerus Singularis and Pluralis in *Verbis*. Høysgaard follows Gerner: always singularis [as in the spoken language], not Syv.

Høysgaard concludes by saying: “Syv vandt da i den første Post og Gerner i den sidste: men i den anden blev hverken vunden eller tabt” [Syv thus won in 1), and Gerner in 3), but in 2), there was a draw].

Concordia res parvæ crescunt, eller Anden Prøve af Dansk Orthographie, Som viser skrevne *Accenters* Nytte, og *Vocalernes* rætte Brug [Second Attempt/Specimen of Danish orthography, demonstrating the use of written Accents and the proper use of the Vowels] (1743b, anonymous) is much more important than his First Attempt, in fact a scientific sensation. There are two main topics: on “tones” or “written accents” (see 2.2), and on the vowels which will be treated first here:

- 1) In 1743b Høysgaard introduces a new vowel symbol, an “open ø”, as in *för* (tilforn ‘before’) vs. *før* (frisk ‘stout’). This is a just discovered phoneme—Henrik Gerner (1629–1700) alludes to two pronunciations of ø, but does not do it clearly (1678–9/1919: 121).
- 2) Høysgaard prefers *å* (for the low back rounded vowel phoneme in modern terms), or a more IPA-like symbol, in order not to write *aa*—as was the orthography of his time (in fact until 1948). His (compelling) argument was that the vowel is not double (in pronunciation).
- 3) Høysgaard sees as the very first (in print, anyhow, cf. 1.2) that, e.g., the vowel in *list* is the same as in *et*—both pronounced with [e]—and similarly for *bukke* and *knopper*—both pronounced with [o]—etc. This is a new and correct phoneme analysis (cf. Bjerrum 1958), and it represents an important step away from the mixing up of pronunciation and orthography which was the rule of the day. And in 1747 (1747/1920 § 14, p. 264) he is the first to propose a complete Danish vowel system, presented here in Fig. 1, which shows “Vocålernes nærmeste Slægtskab” [the closest relation between the vowels].

However, it is, in Bertelsen’s words (1926: 119)

“hans Øre mere end lagttagelse af Lydenes Fremstillingsmaade, som leder ham til Opstillingen”

[his ear more than observation of the articulation of the sounds which leads him to the system].

Høysgaards vokalsystem 1747

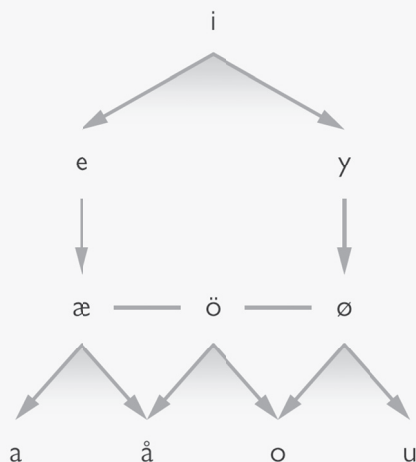


Fig. 1. Høysgaard's vowel scheme (based on 1747/1920: 264).
(Reproduced from *Dansk Sproghistorie* 1: 283, with permission granted by *Det Danske Sprog- og Litteraturselskab* and *Aarhus Universitetsforlag*)

Fischer-Jørgensen (2001: 188) remarks that

“Den lodrette dimension har en slående lighed med den dominerende auditive dimension jeg nåede til ved auditive forsøg med danske vokaler (EFJ 1967)”

[The vertical dimension has a striking similarity to the dominant auditory dimension I found with my auditory experiments with Danish vowels (Fischer-Jørgensen 1967)].

Both Bertelsen and Jespersen thought that real phonetics was articulatory phonetics, and Jespersen (1897–99: 24) concludes that Høysgaard

“trods sit aldrig svigtende fine øre og sin klare følelse for, at sproglæren bør bygges op på iagttagelser om det hørte sprog, dog mere må kaldes en grammattiker end en fonetiker”

[despite his always fine ear and his clear feeling that language description should be based upon observations of the heard language, nevertheless should be called a grammarian rather than a phonetician].

With Eli Fischer-Jørgensen we can, accordingly, conclude that Høysgaard’s vowel system to an important degree is founded upon auditory similarity, and that his point of departure—both concerning the vowel system and the analysis of the *stød*—is basically phonological, not phonetic (2001: 189). But it is also interesting that the vowel system itself can be interpreted as being in accordance with general phonetic dimensions, see Fig. 2 below, where I have replaced Høysgaard’s lines with my own lines, but where the placement of all Høysgaard’s vowels has been kept.

The horizontal line distinguishes between front vowels (above) and back vowels (below) (Høysgaard’s /a/ was a back vowel, as opposed to Modern Danish /a/). The line which is more vertical than horizontal distinguishes between unrounded vowels (to the left) and rounded vowels (to the right). To the left of this line the vowels are placed with increasing openness (lowness) downwards. This interpretation demonstrates that Høysgaard’s vowel scheme can be brought more in agreement with general phonetic dimensions than previously acknowledged (e.g. by Jespersen).

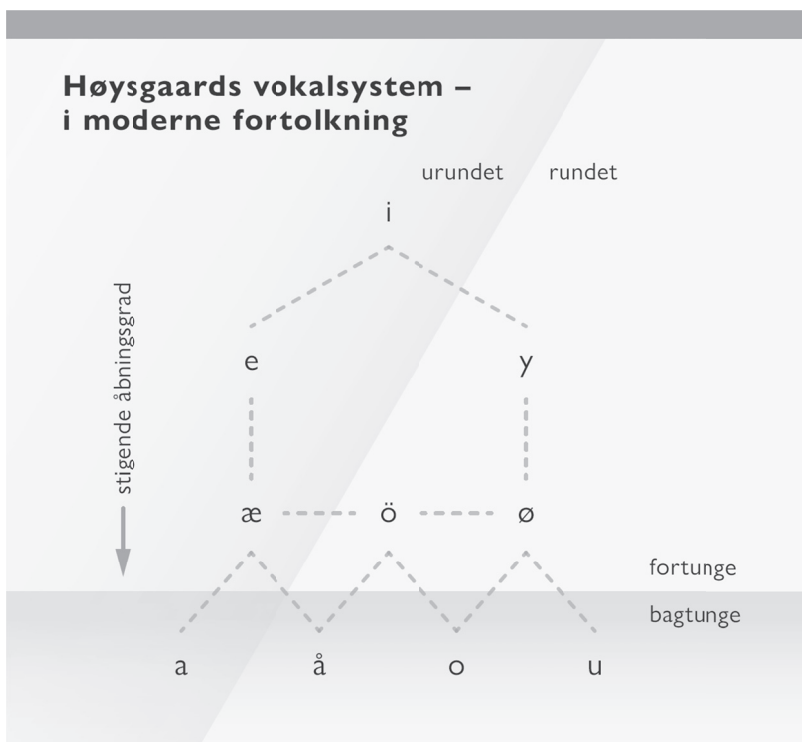


Fig. 2. A modification of Høysgaard's vowel scheme (based on 1747/1920: 264; cf. Fig. 1) in which Høysgaard's lines have been replaced by mine.
(Reproduced from *Dansk Sproghistorie* 1: 283, with permission granted by *Det Danske Sprog- og Litteraturselskab* and *Aarhus Universitetsforlag*)

2.2 The marvellous discovery: Høysgaard and the stød

Stød, a laryngeal syllable rhyme prosody, is, according to Høysgaard, pronounced with a “push” like *et meget lidet hik*, i.e., ‘(like) a very little hiccup’ (1747/1920: 273). The absence or presence of this ‘little hiccup’-like phenomenon can be the only difference distinguishing words having otherwise identical pronunciations, e.g. *ven*, *vend!* ‘friend’, ‘turn!’ [vɛn, vɛnʔ]; *musen*, *musen* ‘the muse’, ‘the mouse’ [‘mu:s(ə)n ‘mu:ʔs(ə)n]; *vandet*, *vandet* ‘watery’, ‘the water’ [‘van(ə)ð ‘vanʔ(ə)ð]. In the traditional Danish pronunciation of Latin, stød occurs (according to Danish rules), e.g. in *in?sula*, *insularum* (without stød), *aman?t* (“?” in orthographic forms here stands for stød).

According to Louis Hjelmslev (1899–1965), every language has a particularly difficult descriptive problem around which the whole linguistic analysis must center (e.g. for French: the interpretation of schwa, h, and the latent and optional consonants; for English: diphthongs and quantity). For Danish, the central structural problem is the stød (Hjelmslev 1948/1951: 12).

Among our very greatest linguists who have tried to understand—and publish on—this enigma of our mother tongue, regardless of their specialisation, are: Rasmus Rask (1787–1832); Vilhelm Thomsen (1842–1927); Karl Verner (1846–1896); Otto Jespersen (1860–1943); and Holger Pedersen (1867–1953).

But there is evidence that the Danish stød is, at least, several centuries older than the time when Høysgaard first described it, as witnessed by a Swedish source from the 16th century which suggests a laryngeal gesture when the Danes ‘cough up’ the words:

Der till medh: så wærdas de icke heller att talla som annat folck, utan tryckia ordhen fram lika som the willia hosta, och synas endeles medh flitt forwendhe ordhen i strupan, for æn de komma fram, sammaledes wanskapa the munnen, då the talla, wridhan och wengan, så att the draga then offwra leppen till then wenstra sidon och den nedra till then höggra sidon, menandes dett wara sig en besynnerlighe prydnung och wellståndh [quoted after Söderberg 1908, my emphasis/HB].

[Also this: nor do they stoop (‘worthy themselves’) to speak like other people, but *press the words forward as if they will cough, and appear partly to deliberately turn the words around in the throat*, before they come forward (i.e. out of the mouth), partly they misshape the mouth when they speak, twist it and sneer it, so that they pull the upper lip to the left side and the lower to the right side, thinking this to be a particular ornament and well-standing. [My emphasis and translation/HB]

The Latin original reads:

Nec ut cæteri homines loqui dignantur, immò *more tussientium, aut verba in medio gutture formantium*, ita de indust<r>ia proloquantur, ut superius labium in sinistrum, inferiusque in dextrum latus distorquentes, ex singulari oris deformitate, singularem gloriam sese assequi posse existiment [Magnus 1554, quoted after the 1617-edn., p. 875, my emphasis/HB]

Høysgaard says (1743b/1920: 223), when he introduces the description of Danish stød:

“Om en anden kan efterforske og befinde, at ikke noget bekendt Sprog udtales med saa mange Toner, som det Danske, saa kan han med det samme overbevise sig selv om, at der behøves skreven Tone i Dansken fremfor i noget andet Sprog. I de Tydskes Tale skal man næppe kunne spore flere end tu ... Grekerne fandt sig beføjede til at skrive deres Toner, endskjønt de havde ikkun tre: hvorimod der i Dansk Tale findes fire, som vi, fordi de ere saa mange, ingenlunde kan betegne ved Bogstave, som de Tydske kan”

[If somebody else can investigate and find that no other known language has as many Tones as Danish, then he would immediately be convinced that written Tones in Danish are needed more than in any other language. In German, there are hardly more than two [long and short vowel/HB] ... The Greeks did write their Tones even though they had only three. Whereas in Danish there are four which we cannot, because there are so many, indicate by letters as the Germans do].

Then Høysgaard enumerates the four accents [i.e. ± stød, ± long vowel/HB], which can be schematised as follows, see Table 1:

Table 1. A cross-classification of Høysgaard’s four ‘Aandelav’ in the two binary dimensions Stød : No stød, and Short vowel : Long vowel.

	Stød (in the syllable)	No stød
Short vowel	<i>vend!</i> (stød “on [n]”)	<i>ven</i>
Long vowel	<i>væn</i> (stød “on [ɛ:]”)	<i>væne</i> (1st syllable)

As a true pioneer of the Enlightenment, Høysgaard was very interested in the practical and pedagogical use of his system. He lists a number of objections to (1743b/1920: 226-229) and benefits (1743b/1920: 229-239) from “written tones”. They are easy to learn to use, both for natives and foreigners (1743b/1920: 236), and even for a child:

Jég har forprøvet det med et barn paa sex aar, og befundet, at børn, som ere nogenledes øvede i at stave, kan paa en halv time lære at udsige hver stavelse ræt efter skrevne Toner [1743b/1920: 228]

[I have tried with a child aged six and found that children who have some exercise of spelling, can, in half an hour, learn to pronounce syllables with their written tones [i.e. Aandelav]]

This bright test person is almost certainly his own daughter, and we can be pretty sure that the teaching/training she has got—by her father— is far beyond average!

In 1747, Høysgaard publishes his first major book (1747/1920), with the following title page:

Accentuered og Raisonnered/ GRAMMATICA, /Som viser/ Det Danske Sprog/ i sin naturlige Skikkelse,/ saa velsom/ dets/ Rime=kunst og Vers=regler;/ Samled/ med/ *Patriotens* Tvende/ Orthographiske Prøver,/ og/ udgiven/ De Fremmede til Villie, som allerede veed no=/get af Sproget, og i sær for de Unges/ skyld, som opdrages enten til Bogen/ eller Pennen.
[Accentuated and Reasoned/ GRAMMATICA, /That presents/ The Danish Language/ in its natural Shape,/ as well as/ its/ Rhyme=art and Verse=rules;/ Collected/ with the Patriot's Two / Orthographic Attempts,/ and/ published/ For the Foreigners, who already know some=thing of the Language, and in particular for the Young/ who are educated either to the Book,/ or to the Pen.]

In this publication (1747/1920: 273) Høysgaard introduces *stød* in the following famous phrase:

“Og dette Aåndelav kálder jeg det Stødende og Stød=tøned, fordi det udføres næsten med samme stød, som et meget lidet hik pløjer at gjøre, såasom i følgende ôrd: ...”

[And this “breath-skill” [accent or tone] I call the Pushing and Push-toned, because it is executed nearly with the same Push as a very little hiccup usually is, as in the following words: ...]

There are, phonologically, three central aspects of *stød* which should be distinguished (in modern terminology):

- 1) *Stødbasis, segmentally*: to have *stød*, a syllable must have long sonority in the syllable rime; Høysgaard did not see this clearly—probably because he classifies the consonants according to their names whereby the obstruents *s*, *f* are grouped with the sonorants.
- 2) *Stødbasis, prosodically*: to have *stød*, a syllable must have primary or secondary stress; Høysgaard saw this clearly and states it as part of his total prosodic system (see Table 2).
- 3) A *stød*-syllable with long vowel can be considered *bimoraic*; Høysgaard (1747: 273) states the interpretation ' + ` = ^ , i.e., a long vowel with *stød* has two phases, first a short *stød*-vowel and then a short vowel without *stød*. This is in agreement with the pronunciation in Høysgaard's dialect, and with Trubetzkoy (1935) [but not with Fischer-Jørgensen's *stød*-analyses from the 1980es (1987); new results by Grønnum & Basbøll (e.g. 2007) show more variation in this respect].

In Høysgaard's last work on the Danish language, *Første Anhang til den Accentuerede Grammatika* [First Appendix to the Accentuated Grammar,

a second appendix never appeared/HB] (1769/1923), published when he was seventy, he uses his initials ‘J. H.’ on the last page. He had now realized that “written accents” would never be introduced as a general part of Danish orthography, but he instead proposed that they should be used in dictionaries, and he presents a large specimen of such an accentuated word list.

In this work, Høysgaard also summarizes his view on ‘Ordenes Materie’ [the Matter (in a philosophical sense) of Words] in a table (1769/1923: 514) that illustrates his view on the prosodic system (in modern terminology). In this table we may disregard the first row which is on letters. The rows at the bottom are said to represent “de frie, omskiftelige, uvisse og ubestemte” [free, changeable, uncertain and indeterminate] partly “Toner, høje og lave efter Behag” [tones, high and low at pleasure] partly “Aandepasninger, haarde og milde” [ways of breathing, hard and mild]. It is true for both of these that they “ere tilfelles for alle Sprog og for alle Ord” [are common for all languages and for all words]. In other words, according to Høysgaard, they are not part of the prosodic system of the Danish language.

Accordingly, the central part of Høysgaard’s table is the one that covers the parts that “egentligen” [properly speaking] are “de faste, visse og bestemte” [the fixed, certain and determinate]. I have presented them in Table 2, which contains the central parts of Høysgaard’s table. They can be divided (as was already done in Høysgaard 1743b, but the terminology and notation is from 1747) into four “Aandelav”: two of them are “visse Danske Ord egne/ især paa Kjøbenhavnsk” [characteristic for certain Danish words/ particularly in Copenhagen], viz. “Standsende [stopping] [1747: Stødende [pushing]]”, like á; and “Dobbelt, som â” [double, like â, i.e. those with stød]. And, finally, two that “have Sted i alle Sprog, dog ikke hvert af dem i hvert Ord” [take place in all languages, but not each of them in every single word], viz. “Kort-jævn, som â” [short-equal, like â], “Lang-jævn, som â” [long-equal, like â, i.e. those without stød].

In addition to Aandelav, Høysgaard applies a distinction between “Tidslængde, der betragtes” [temporal quantity considered] either as “*absolute*, som Vocalens egen Tiid” [absolute, as in the time of the vowel] or “*respective*, imellem Stavelser” [relative, between syllables]. The *absolute* quantities are divided into “Korttoned, som á og â” [short-toned, like á and â] and “Langtoned, som â og â” [long-toned, like â and â]. This clearly corresponds to the distinction between short and long quantity of the vowel; together with the stød-opposition, this gives rise to a 2x2-system, as depicted in Table 1.

The *respective* dimensions of “time-length” are divided into those “med Ophold, héder Lange, som á, à, â, ð” [with interruption, are called long] [corresponding to our modern term stressed], and those “uden Ophold héder Korte, som ã i Agènt [Ägènt]” [without interruption, are called short] [corresponding to our modern term unstressed, such syllables cannot have stød either]. Apart from the terminology, it is an impressive, original and very modern description of the prosodic system of Danish that Høysgaard has presented here, see Table 2:

Table 2. Høysgaard’s system of Danish prosody, based upon his table (1769/1923: 514).

<i>Aandelav</i> (‘Breath-position’): Standsende (‘Stopping’), like á, Dobbelt (‘Double’), like â [with stød]	characteristic of certain Danish words, particularly in Copenhagen
<i>Aandelav</i> (‘Breath-position’): Kort- jævn (‘Short-equal’), like à, Lang- jævn (‘Long-equal’), like ð [without stød]	found in all languages, but not each of them in every word
<i>Tidslængde</i> (‘Time-length’): <i>absolute</i> , as in the vowel’s own time [i.e. vowel quantity]	Korttoned (‘Short-toned’), like á and à [short vowel]
	Langtoned (‘Long-toned’), like â and ð [long vowel]
<i>Tidslængde</i> (‘Time-length’): <i>respective</i> , between syllables [i.e. stress]	med Ophold (‘Interruption’), are called long, like á, à, â, ð [stressed]
	without Ophold (‘Interruption’), are called short, like ã in Ägènt [unstressed]

Høysgaard offers a wealth of observations on stød in morphological alternations, both in inflection and word formation, integrated into all of *Accentuered og Raisonnered Grammatica* (1747). He presents no real stød-synthesis, but provides a lot of cross-references. I take just two random examples: stød change in noun plural formation PL: §99 (1747/1920: 305): SG. *Stól* ‘chair’, *Lánd* ‘country’; PL *Stóle*, *Lànde* which illustrates all four Aandelav. And §136 (1747/1920: 317): “2den Obs: Den 2den og 3die Gråd fáaes ved at lægge re og st til *Pluralem* i den 1ste Gråd, saas: ... *dóvne* af *doven* gîr *dóvnere*, *dóvnest*. Undtag” ... [2d Obs: COMP and SUP are formed by adding re and st to PL of the POS ... Except (1) ...] This is, indeed, a modern analysis (with precise exceptions), essentially

more correct in my view than what is found in modern standard grammars (cf. Basbøll 2014b).

Thus, in summary on Høysgaard's analyses of *stød* (from Basbøll 2014a):

- Høysgaard was the first to identify *stød* phonetically.
- Høysgaard was the first to identify the phonological function of *stød* as contrastive (minimal pairs *en masse*).
- Høysgaard distinguished between stress, tone and *stød*.
- Høysgaard was the first to identify and document the grammatical functions of *stød*.
- Høysgaard's prosodic works contain throughout the (long) text accent indications on many words.

Høysgaard's four syllable types ($\pm$ vowel length, $\pm$ *stød*) are still being used in Danish philology and dialectology, see Andersen 1977 (cf. Table 1).

2.3 Høysgaard's grammars and other works

In this section, I shall offer only very few, and brief, examples of Høysgaard's works outside phonology and prosodic morphology. In his first large-scale grammar (1747/1920), a quotation on case is characteristic:

Det Latinske og andre flere sprøg haver baade efter bemærkelsen og forándringen sex *Casus* ... men i Dansken hár man kun i det høieste tu Endelser at forándre *Nomina*, og tre til at forándre visse *Pronomina* med ... døg ... i henséende til bemærkelsen ... i det ringeste tré [1747/1920 § 94, p. 303]

[Latin and several other languages have both semantically and formally six *Casus* ... but in Danish there are at most two Endings to change *Nomina*, and three to change certain *Pronomina* ... but ... semantically ... at least three]

And on word order, he compares Danish and Latin in the following way:

Det Danske sprog holder en mere naturlig orden end det Latinske og mange andre, og derpaa grundes en stór dæl af dets tydelighed [1747/1920, §389, p. 430]

[The Danish language has a more natural order than Latin and many others, and a large part of its clearness is due to that].

Høysgaard continues to state that a Latin sentence with five words can have up to 120 ($5! = 5 \times 4 \times 3 \times 2$) different orders, but a Danish sentence

normally has only a couple of different orders; he uses the formula [factorial, written with a ‘!’] to state that a Latin 8-words-sentence might have up to 40,320 (= 8!) orders.

Høysgaard’s largest work, and to many specialists of Danish grammar also his most important one, is his 500 page *Methodisk Forsøg til en fuldstændig Dansk Syntax* (1752/1923) [Methodical Attempt to a Complete Danish Syntax]. He introduces this great work in the following modest way:

(... at) denne Syntax hverken er fuldkommen e. fuldstændig. Verket heder kun et Forsøg ... Men, ihvorvel dette Arbeyd bliver altid een eneste Mand, i sær af mine Lige, forvoxen; meener jeg dog, at jeg haver skikket mig deri som en god Handtlanger ... og har beviist, at vort Sprog kan lige saa vel bringes under Regle, som andres.” [1752/1923, §538, p. 11]

[... this Syntax is neither perfect nor exhaustive. It is only called an Attempt ... but even though this work will always be too big for a single man, in particular of my kind, I do believe that I have behaved as a good craftsman ... and have proven that our Language can be brought under Rules just like other languages.]

The leading specialist on Høysgaard, Henrik Bertelsen, has concluded that Høysgaard 1752/1923 is:

“ved Systemets Originalitet og skarpsindige Gennemførelse og ved den Fylde af Stof, Forfatteren har samlet og lagt ind under sine Synspunkter, det mest beundringsværdige af Høysgaards Arbejder og overhovedet et af Aarhundredets betydningsfuldeste grammatiske Værker” (Bertelsen 1926: 186)

[with the originality of the system and the penetrating execution and with the wealth of stuff mastered by the author and integrated into his system, the most admirable of Høysgaard’s publications and doubtless one of the most important grammatical works of that [i.e. the 18th] century]

Høysgaard was not only one of the greatest explorers of the Danish language ever (anonymously), he also published (but more modestly) two related articles on mathematics (on algebraic quadrature and integral calculus), in 1759 and 1767, under his full name (which are quoted by historians of mathematics). His latest work was on Latin grammar, published under his initials J. H., with this title page (Bertelsen 1926: 99f):

Nyt Forsøg til at fastsætte den Regelrette Brug af *CONJUNCTIONERNE QUOD* og *UT*, af *MODUS CONJUNCTIVUS* og af *INDICATIVI IMPERFECTUM & PERFECTUM* i Latinen. Anstillet og udgivet som en Opmuntring for andre, ikke til at opkoge Gammelt, men til at forbedre det,

af J. H. Kiøbenhavn, 1771 ... til Kiøbs hos Klokker Høysgaard her i Landemerket

[New Attempt to define the regular use of the CONJUNCTIONS QUOD and UT, of the MODUS CONJUNCTIVUS and of the INDICATIVI IMPERFECTUM & PERFECTUM in Latin. Constructed and published as an encouragement for others, not to rehash old stuff, but to ameliorate it, by J. H. Copenhagen, 1771 ... to be bought at Bell-Ringer Høysgaard here in Landemerket [street-name]].

2.4 Høysgaard on dialects and language norms

Høysgaard has a keen ear when he compares different ways, in different dialects, to pronounce *stød*, but the text has no small amount of pejorative evaluations. In this respect, he is more typical of his time than in his scientific analyses of the Danish language—where he is breathtakingly original.

Endskjønt det Stødende og Dóbelte kan ikke forblive de samme Aandelave, med mindre de udsiges med *stød*, saa fåaer man døg at formilde *stødet*, og ikke jøkke dem saa ilde úd, som de Sællandske Bønder gjør, hvilke i dèt henséende tåler verre end nogen Jyde. Thi der er mange Jyske *Dialècter*, hvoraf den ene er slættere end den anden; men den gemène Sællandske er lángt mere u-skikkelig i Aandelavet, end nogen af de Jyske [1747/1923 §31(3), p. 276]

[Even though the Pushing and the Double cannot remain the same Aandelav, unless they are pronounced with *stød*, one nevertheless should soften the *stød*, and not wobble the *stød*-words out so badly as do the Zealandish peasants, who speak more badly than any Jutlander. For there are many Jutlandish Dialects, of which one is worse than the other; but the common Zealandish is much less convenient in the Aandelav than any one of the Jutlandish]

Even though Høysgaard is not a specialist of Danish dialects, he undoubtedly knows the language forms he compares here, well:

Men den beste *Dialèct* er efter de lærdeste og omhýgeligste *Orthographisters* skjønnende først dén i *Roeskilde* og dernæst den Kjøbenhávnske. Den *Fyenske* i *Odinse* og den *Lollandske* i *Nachskov* ere ogsaa ypperlige; men den sidste hár en slettere *Accènt* end den første, hvilket Lolliker og Fyenboer ikke saa vél kan dømme óm, som dén, hvis *Dialèct* viger lángst fra dem begge. [1747/1923 §260(1), p. 368]

[But the best Dialect is, according to the most learned and meticulous Orthographists, first the one in Roskilde [on Zealand] and next the one in Copenhagen. The Funish one in Odense and the Lollandish one in Nakskov are also excellent; but the latter one has a worse Accent than the former,

about which Lollanders and Funish people cannot judge as well as the person whose Dialect is farthest away from both these dialects.]

The last phrase seems to imply that Høysgaard, the Jutlander, is the best judge! When it comes to the selection of the very best norm to follow, Høysgaard is not free of the prejudices of his contemporaries, his advice being:

... at man i de beste Danske *Dialecter* ikke rætter sig efter den enfoldigste gemene mând, som forkórter og fordærver ordene, men efter de Lærde og andre vittige folk, såa at [man skal skrive] som man uden tváng og uden *Cacophonie* eller u-behågelig lýd efter den beste *Dialect* paa en Prædike-stól kan eller bør udsige [1747/1923 §260(1), p. 368 seqq]

[... that one, in the best Danish Dialects, should not follow the most simple and common man, who shortens and corrupts the words, but instead the learned and other witty persons [so that one should write] so that one without coercion and Cacophonia or unpleasant sound, according to the best Dialect, in the pulpit can or ought to enunciate]

3. Two 19th century Greats: Rasmus Rask and Karl Verner

3.1 Rasmus Rask: the heritage from Høysgaard

The life and works of the most famous of all Danish linguists, Rasmus Rask, are well known (in contradistinction to Høysgaard's), see e.g. Jespersen 1918, Pedersen 1932, Hjelmslev 1951, Diderichsen 1960, Rischel 1987 and Gregersen 2013 (the present section is partly built upon Basbøll & Jensen 2015). What is less generally known is that Høysgaard is one of Rask's major inspirations. Already when he went to school in Odense (i.e. until 1807 when he went to Copenhagen), Rask knew Høysgaard's early publications (1743a, 1743b, and probably also 1747, according to Bjerrum 1959: 131).

The first work by Rask that bears witness to his debt to Høysgaard is his description of the Funish dialect in which he grew up: *De fynske Bønders Sprog* [Language of the Funish Peasants] (Rask 1938, edited and published by Poul Andersen). Most of this work is earlier than 1814 (Andersen 1938: XX). Rask has set up his own system for phonetic notation, and it is noteworthy that he describes—also in his phonetic transcription—the 'Tonehold' (Høysgaard's Aandelav, see 2.2). According to the editor Poul Andersen (1938: XIV), Rask was 'bedre som Fonolog end som Fonetiker' [superior as a phonologist than as a phonetician]; this

view he builds, among other things, on Rask's consistent distinction among the diphthongs according to their mono- vs. biphonematicity, rather than to their pronunciation. In general, Rask's treatment of the whole of the prosody is remarkable, and on this point Høysgaard's influence is strong.

Rask's orthography in (1938) is much more radical, "speech-like", than his later, published, proposals that shocked his contemporaries. In his main work on orthography, the *Retskrivningslære* (1826), Rask took up many of Høysgaard's important orthographic proposals (e.g. the introduction of the letters *å*, *ö*). He also (1826: 46-54) presents the system of 'Tonehold' and 'Tonefald' [stress], based upon "Højsgård", but so that Rask enlarges the inventory from Høysgaard's four to six 'Tonehold'. The two extra are the *slæbende* [dragging] or *langtrukne* [protracted], e.g. in *fy!* [interjection], *Far* [Daddy], and the *rullende* [rolling] or *nynnende* [humming], e.g. in *holde* [(to) hold], *Byrde* [burden]. This is, from a systematic point of view, clearly a step backwards. Rask says in conclusion:

"Disse Tonehold udgøre måske det fineste og vanskeligste i vor Udtale; sjælden beholdes de uforandrede i alle et Ords Bøjninger og Forbindelser; men sædvanlig ombyttes og forandres de på det mangfoldigste, ja flyttes og bortfalde stundum aldeles" [Rask 1826: 50-51]

[These Tonehold are perhaps the finest and most difficult in our pronunciation; only rarely are they constant in all inflections and compositions of a word; but normally, they change in many ways and sometimes even disappear completely]

The controversies around the terms 'Rask's Law' or 'Grimm's Law' for the Germanic Lautverschiebung are well known. A short discussion can be found in Basbøll & Jensen 2015 (section 2.1), referring to Hans Frede Nielsen's proposal *Rask-Grimm's Law* which is followed in the Large Danish Encyclopedia (Nielsen 1997). If a choice between the two (Rask 1818 and Grimm 1822) must be made, I shall follow Holger Pedersen:

"Og da det er givet, at Grimm har læst Rasks udvikling om dette æmne på en tid, da han selv befandt sig i fuldstændig uklarhed, er det ikke rigtigt at betegne lydforskydningsreglerne som "Grimms lov". Det er Rasks lov. *Og Rask har krav på at anerkendes som den første indoeuropæiske sprogsammenligner, der har haft øjet opladt for lydlovenes betydning*" [Pedersen 1916: 58, emphasis in the original].

[[S]ince it is certain that Grimm read Rask's considerations on this subject at a time when he himself was completely in the dark, it is not correct [*sic*] to refer to the rules for the sound shift as "Grimm's law". It is Rask's law. *And Rask deserves to be recognized as the first Indo-European comparatist*

to have an eye for the significance of sound laws.] [Pedersen 1983 [1916]: 59]

There is no doubt that Rask was a far better phonologist and phonetician than Jacob Grimm, at least at the time of this controversy. The latter even seems to be remarkably naïve with regard to phonetics as he—in the second edition of the first volume of his *Deutsche Grammatik* (1822), i.e. in the very volume where he presents the Germanic ‘Lautverschiebung’ for the first time (four years after Rask’s groundbreaking publication)—demonstrates surprising confusion as to letter-sound relations:

“In unserm worte : schrift z. b. drücken wir acht laute mit sieben zeichen aus , f nämlich stehet für ph” (Grimm 1822: 3)

[In our word *schrift* we express eight sounds by means of seven signs [letters], since *f* stands for *ph*].

The eight sounds in this word are thus supposed to be, according to Grimm: *s, c, h, r, i, p, h, t*. The correct answer is, of course, that there are only five sounds since the letter sequences *sch* and (Grimm’s strange invention) *ph* each correspond to only one sound (a voiceless fricative).

Eli Fischer-Jørgensen treats (2001: 271-279) Rask’s use of written accents in the *Retskrivningslære* (1826) and in his Danish grammar (1830), and she also mentions his use of such symbols in his Italian grammar (1827) and his *Engelsk Formlære* (1832). In the latter, accent symbols are used to indicate vowel quality as well as stress, both aspects being important for the exact pronunciation that was always crucial to Rask, also didactically:

“Det vilde især glæde mig, om den her givne Fremstilling af Udtalen, der for Danske er det vanskeligste ved dette Sprog, måtte bidrage til en rigtigere Udtale, end den, man så ofte hører hos Begyndere” [Rask 1832: Forerindring [not paginated]]

[Above all, it would make me happy if the present description of the pronunciation, which for Danes is the most difficult in this language, would contribute to a more correct pronunciation than that which is so often heard from beginners]

Both in the emphasis on pronunciation (phonetics and phonology), and on pedagogics, there is a clear line from Rask and back to Høysgaard, and more specifically, also the use of “written accents” (e.g. in 1827, 1830, and 1832) is reminiscent of the great Danish Enlightenment linguist.

3.2 Karl Verner: the master of *accents* and *tones*

Karl Verner very early became aware of the importance of natural speech and the enormous distance between spoken and written language, not least with respect to present-day pronunciation, i.e.

“ikke således som den falsk theoretisk lever på skuepladsen, talerstolen og ved dansk læsning i skolerne, men således som den practice lever mellem mand og mand” [1873/1903: 201]

[not such as it lives, theoretically false, in the theater, the auditorium and by reading aloud Danish in the schools, but such as it lives in practice between men]

In the grammar school, Verner—who was the best Latinist in his class—was shaken when the school boys were examined by the great Classical philologist Johan Nicolai Madvig (1804–1886). Nobody understood Madvig’s (Danish) pronunciation ‘*Fi’ne*’ ‘enemy’ (which he wanted translated into Latin). Verner finally dared propose the Latin word *ficus* [fig], promptly corrected by Madvig to *hostis* [enemy]. Verner tells (1872/1903: 170–171) that

Madvig “åbenbart beholdt den tro, at mangelen lå i *vor* undervisning, ikke i *hans* udtale. Jeg kunde dengang slet ikke tænke mig, at Danmarks største filolog talte bornholmsk-svensk, og den skrigende afvigelse fra det skrevne ord (vi skrev i skolen: *Fjende*) bragte mig ind på grublerier over talesproget og skriftsproget, der naturligvis i begyndelsen var meget vilde, så at jeg snart søgte at tale, som jeg skrev, snart slog om til den anden yderlighed og skrev, som jeg talte; begge dele ravgalt. Til uheld kom jeg til at læse Rask’s Retskrivningslære [1826], hvori han mere end i sine andre værker, har hørt det danske sprog med fynske øren og læst det med islandske øjne, og dette bragte mig aldeles vilds.”

Madvig [apparently kept the belief that the problem was in the teaching of *us*, not in *his* pronunciation. At this time, I could not in any way think that Denmark’s greatest philologist spoke Bornholmian-Swedish, and the striking deviation from the written word (in the school we wrote: *Fjende* [enemy]) drove me to speculations about spoken and written language—of course very wild in the beginning so that sometimes I attempted to speak as I wrote, sometimes went to the other extreme and wrote as I spoke; both extremes wildly wrong. To [my] misfortune, I then happened to read [Rask 1826] where he, more than in his other works, has heard the Danish language with Funish ears and read it with Icelandic eyes, and this drew me completely wild.]

The world famous discoverer of ‘Verner’s Law’ was—during his entire career—fascinated by questions of accentology, including the Danish *stød* and its relation to the Scandinavian tonal word accents. He says (1873/1903: 199–200):

Jeg er “nu midt inde i det danske sprogs fineste enkeltheder. Jeg tager ikke i betænkning at erklære det danske sprog for et af de finest byggede sprog i Evropa, og ... at det for en udlænding frembyder næsten uoverstigelige vanskeligheder og i denne henseende står kinesisk nærmere, end nogen troer”

[I am now in the middle of the finest details of the Danish language. I do not hesitate to declare the Danish language to be one of the languages in Europe with the finest construction [lit. building] and ... that it presents nearly unsurmountable difficulties for a foreigner and in this respect is closer to Chinese than anybody thinks]

Verner’s argument here is the innumerable morphological *stød*-alternations which he thinks can and must be accounted for. In this context, he emphasizes the necessity of a much finer phonetic analysis of speech than was available at that time.

In two letters to Vilhelm Thomsen, January 1874 (1903: 205–221), Verner gives a very rough outline of works on “Det såkaldte tonelags natur og væsen, dets historiske oprindelse, og dets forhold til lignende fænomener i andre skand. sprog” [The nature of the so-called ‘Tonelag’, its historical origin, and its relation to similar phenomena in other Scandinavian languages] and on ““tonelagets” historie fra Holberg og indtil nu” [the history of the “tonelag” from Holberg [1684–1754] and until now] (p. 206). Verner has registered all Høysgaard’s accentuated examples [and there are very many, cf. 2.2] and builds upon his great knowledge of language history and of dialectology. He continues with the following specifications (p. 206–207):

- Nature of “Tonelag”: only one modification in Danish: “Tonestød” [±stød] (nothing on *kat*)
- Historical origin:
 - A. Originally (Old Norse) polysyllables: no *stød*
 - B1. Light monosyllables: no *stød*
 - B2. Heavy monosyllables: *stød* (pínsl > pi:’nseł etc.)
 [using Høysgaard’s accents for 18th century Danish]

He wants to compare with other Scandinavian languages, starting with Norwegian, building upon Ivar Aasen (p. 209). He will write in detail on developments in Danish since Høysgaard.

Verner uses the term “tonestød”, see Table 3. He identifies the phenomenon with glottal stop but mentions parallels to Baltic tones (also perceptually). In general, he is interested in the relation to “tones”, and he even gives musical notations at many places.

In sum, throughout his career, Verner intensely studied the works of Høysgaard (he tried to get hold of Høysgaard’s books in all kinds of ways) and was heavily inspired by them. And he was a really great phonetician, much ahead of his time. He wanted to study truly natural speech as closely as possible, also by methods of the natural sciences. He even constructed a machine for “phonometric investigations” (1903: 365-372), and at the end of his life he studied mathematics intensely. He gave (in 1892) an address to the Royal Danish Academy on his mathematical and physical considerations/investigations, but—unfortunately yet perhaps not accidentally—he did not deliver any written report on it (1903: LXXVII). In this context, it is difficult not to think of Høysgaard’s scientific broadness, including mathematics.

3.3 Terminology of “tones” and stød in the 19th century

Thus Rask and Verner had both learned a lot from Høysgaard, putting emphasis on the sound structure of language, but also, more specifically, on the the system of ‘Aandelav’ (which can be interpreted as a combination of [± stød] and [± long vowel], see Table 1). Rask and Verner can be said to represent an evolution, throughout the 19th century, of the view on “tones” and stød, see Table 3. In the table, I include a few other 19th century Danish linguists (and Henry Sweet) not mentioned previously in the text:

Søren Bloch (1772–1862) was Rasmus Rask’s teacher of Danish and Greek in the Latin School of Odense (and his conrector), a leading pedagogue of the time and an independent scholar. In (the 2nd edition of) his small Danish school grammar (1817), he states very clearly (but in a strange terminology), the 2x2-system of Table 1.

Israel Levin (1810–1883), in his small (unfinished) grammar from 1844, distinguished between stress, stød and quantity (in a different terminology). He distinguishes between different kinds of accent (stress), and is also modern in other respects.

L. L. Hommel (1818–1908) is the author of an isolated article (1868) on stød in Danish. Its most important contribution consists of a set of

detailed rules for stød-alternations in inflection, derivation and compounding (i.e. the prosodic morphology).

Henry Sweet (1845–1912) was, according to Jespersen (1897–99: 50) probably the greatest phonetician alive. Sweet in his first work (1874) analyzed Danish phonetics, and in his famous Handbook (1877) he gives Danish ‘glottal catch’ (stød) as his main example of ‘other larynx sounds’ (p. 3-7), and later in the book there is a whole section on Danish pronunciation (p. 161-168).

Otto Jespersen (1860–1943), probably Denmark’s internationally most famous phonetician (also well known as a grammarian and as a general and applied linguist), insists on a sharp distinction between stød and tone (e.g. 1897–99). Jespersen’s terminology and analysis has been highly influential throughout the 20th century.

Table 3. Terminology of “tones” and stød in the 19th century.

Modern term	Stød (vs. No stød)	Vowel quantity: long (vs. short) vowels	Stød+vowel quantity (Høysgaard’s Aandelav) (number)	Stress (dynamic accent)
Bloch 1817	med Tryk [with stress] (vs. med Efterklang [with resonance])	lang (vs. kort) vokal [long (vs. short) vowel]	Accentuationer or Tonefald (4)	Tone (not clearly, § 21)
Rask 1826	[Treated under ‘Tonehold’: standsende [stopping] or langstødende, stødende]	[Treated under ‘Tonehold’: [without stød] skridende [striding] or langjævne [long-equal] (vs. løbende [running] or kortjævne [short-equal])]	Tonehold (6) [The two superfluous are: slæbende [dragging] = langtrukne [protracted], rullende [rolling] = nynnende [humming]]	Tonefald: Syllables with and without ‘Tonehold’ (furthermore: Hovedtone [head-tone] vs. Bitone [bi-tone], e.g. in [the 2d syllable of] Trefod)

Levin 1844	Tonelag: stødende [pushing] (vs. flydende [floating])	Tonehold: long (syllables or vowels) vs. short ('hvor Betoningen stræber bort fra Vocalen' [where the accentuation strives away from the vowel])		Tonefald (Accent) [betonede [Ge. betont] vs. tonløse [Ge. tonlos, unbetont] [also Hovedtone [Ge. Hauptton] vs. Bitone [Ge. Nebenton]]
Hommel 1868	Tonelag: stødende [pushing] (vs. flydende [floating])	Tonehold: lange [long] (vs. korte [short]) Stavelser [syllables]		Tonefald: betonede [Ge. betont] (vs. ubetonede [Ge. unbetont])
Verner 1874/1903	Tonestød (a binary category, does not apply to e.g. <i>kat</i>)	long (vs. short) vowels		Tone
Sweet 1877	glottal catch (x) or 'stødtone' (vs. its absence)	long vowels are rendered with two vowel symbols		stress
Jespersen 1897-1899	stød (vs. absence of stød)	long (vs. short) vowel		tryk [stress]

Some of the terminology, not least Rask's, is reminiscent of Høysgaard's (see 2.2), but the terminology becomes much clearer throughout the century (culminating with Jespersen).

4. Concluding remarks

Otto Jespersen is the great modern phonetician connecting the 19th and 20th centuries. The evolution through the Praguians Trubetzkoy (1890–1938) and Martinet (1908–1999), the glossematicians Uldall (1907–1957) and Hjelmslev—with the structuralist tradition of Danish dialectology—and up to the phonologists and phoneticians around Fischer-Jørgensen

(1911–2010), cannot be taken up here (the narrative is presented in Basbøll 2016, also cf. Basbøll 1989, both in Danish).

Let me sum up with a few personal remarks on the three main figures of this chapter: the great Danish linguists Jens Høysgaard (18th century), Rasmus Rask (early 19th century) and Karl Verner (late 19th century). There are thought-provoking similarities as well as differences between their *curricula vitae* and also their personalities:

Common for the three of them is that they had no regular university career (as opposed to Otto Jespersen, for example).

Høysgaard and *Rask* never finished a regular university exam, whereas *Verner* only took his degree (in Slavonic philology) after strong external pressure. This was, by the way, typical for *Verner*: also his few publications (most importantly his admittance to world fame: ‘Eine ausnahme der ersten lautverschiebung’, published 1876) only got written—and published—after strong pressure (Vilhelm Thomsen deserves grateful mention here, cf. 1875/1903: 282–297).

Høysgaard was a stable member of the university technical staff, rather anonymous (we know little about him).

Rask and *Verner* are both internationally highly recognized linguists, whereas *Høysgaard* is unknown except by specialists, even in Denmark.

Rask and *Verner* only obtained professorships—with salary—late in their lives.

Verner, although he only published very little, wrote quite a deal (in letters), of highly valuable stuff, only published after his death (1903).

Rask was incredibly productive and broad; he was also, like *Høysgaard*, a great grammarian, which *Verner* was not. He, however, was a truly great phonetician (interested in designing instruments for measuring, etc.).

There are also fascinating differences and similarities in their *personalities*:

Høysgaard lived in a family (3 marriages), and seemed to have good order in his economy. He had a long life, as opposed to *Verner*, and particularly *Rask*.

Both *Rask* and *Verner* got their health broken from a poor life as travellers and unstable family conditions: they lived (practically) alone, without wife or partner and children, with poor nurture, etc.

Rask was psychologically unstable and seemed to suffer from paranoia in much of his life.

Verner was disorganized with his scientific papers, etc. After his death, some sheets were found in his pocket, apparently they had been there for a very long time (they were published by Otto Jespersen). *Verner* was somewhat shy, and not—as *Rask*—an organiser or editor.

Their posthumous reputation: All Høysgaard's writings are in Danish and (practically) only on Danish, and only synchronic. His works have never been translated, and they are all printed only in German types (this is true even for the 1979-reprint).

Rask and *Verner* are world famous, probably also due to the dominance of diachronic view-points in the 19th century. *Rask*, furthermore, is highly regarded by the structuralist linguists (like Hjelmslev), to such a degree that he is generally considered the greatest Danish linguist ever.

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CHAPTER THREE

WHEN DO LANGUAGES REFRAIN FROM COPYING MORPHOLOGY? ON STRUCTURAL OBSTACLES TO MORPHOLOGICAL BORROWING

STIG ELIASSON

1. Morphological borrowing

The phenomenon of morphological borrowing has recently attracted wide attention in language contact studies and historical linguistics (Gardani 2008, Johanson & Robbeets 2012, Vanhove et al. 2012, Seifart 2013, 2015, Gardani et al. 2015a, Ralli 2016a, etc.).¹ Morphological borrowing consists in the copying of compositional, derivational or inflectional elements, patterns, or processes from a donor language (DL) to a recipient language (RL). As compared to lexical borrowing, it is markedly infrequent, a situation reminiscent of the relative sparseness in bilingual code-switching of switches involving bound morphemes. A variety of factors affect morphological borrowing:

¹ This is the written, expanded version of the opening plenary at the 26th Scandinavian Conference of Linguistics at Aalborg University on August 19–21, 2015. I am greatly indebted to the conference organizer Hans Götzsche for inviting me to participate in the meeting. To Yaron Matras I owe thanks for valuable comments on methodological issues in contact morphology. ‘Öiwi Parker Jones, Andrew Pawley, Albert J. Schütz, and Svenja Völkel kindly answered queries relating to affixation in various Oceanic languages. For additional remarks, information or suggestions, I thank Peter Austin, Bernard Comrie, Éva Csátó Johanson, Livia Körtvélyessy, Hedvig Skirgård, and Pavol Štekauer. None of those mentioned is responsible for any shortcomings of the paper, however.

- (1) (a) Societal (incl. historical, political, economic, cultural, and sociolinguistic) conditions.
- (b) Cognitive (incl. psycholinguistic) conditions.
- (c) Structural linguistic conditions.

According to Thomason & Kaufman (1988, 35), “it is the sociolinguistic history of the speakers, and not the structure of their language, that is the primary determinant of the linguistic outcome of language contact”. Since, however, morphological borrowing takes place in a domain of grammar that tends to be highly *language-specific*, structural factors carry special interest precisely in contact morphology, and the present paper will therefore focus on these. Following a few introductory comments on basic contact-linguistic concepts, the main aim of the paper will be to discuss to what extent there is a resistance to derivational and inflectional borrowing and to modify slightly the widely entertained assumption that everything can be transferred into any other language. Specifically, I will suggest that high morphological, semantic, and phonotactic complexity of a given RL structural configuration may sometimes constitute a quasi-mechanical absolute obstacle to the direct integration of DL elements into the RL structure (that is, adoption without prior preconditioning change, including expansion of RL structural frames). Data and illustrations will be drawn from Swedish, Basque, Turkish, and Samoan.

2. Theoretical preliminaries

2.1 The universal-transferability hypothesis

Speaking of borrowing in general, i.e., not only morphological copying, several researchers assert that all units and patterns can be transferred between languages. Notably, in their classic monograph, Thomason & Kaufman (1988, 14) submit that “[a]s far as the strictly linguistic possibilities go, *any linguistic feature can be transferred from any language to any other language*” (emphasis, SE). Thomason (1997, 182) elaborates on the point as follows (italics added):

I do not believe that there are any absolute constraints on kinds and degree of linguistic interference. That is, I believe that — given the right social circumstances — *any linguistic feature can be transferred from any language to any other language*; and, in the most extreme cases, all combinations of linguistic subsystems are possible in mixed languages. ... *there are*, as far as I can tell, *no absolute constraints* ...

Similarly, Gardani (2008, 18) holds that “*anything can be transferred*, also between discrete systems” (again italics added). I will refer to the shared assumption in these quotes, which has a long and respectable tradition in linguistics (see Gardani et al. 2015b, 1; Bağrıaçık et al. 2015, 110), as the *universal-transferability hypothesis*. An only slightly weaker version is that of Curnow (2001, 413), who holds that “*in general*, any feature of a language can be transferred to another language” (my emphasis; SE). Johanson (2010, 654) qualifies the assertion a bit further (again italics added):

The contacts between Turkic and non-Turkic languages show that, under appropriate social circumstances, in particular contact that is sufficiently intense and sufficiently long-lasting, *almost any* feature from one language can *ultimately* be copied into another.

That is, Johanson leaves open not only the possibility that (a) some features may actually not be transferred, but also that (b) some features might be copied only with substantial delay. He specifies no causes for the delay, but conceivably these might include linguistic factors, e.g., that prior linguistic change in the RL might be necessary to pave the way for the introduction of a new DL feature. The views of the authors just cited are recapitulated in Table 1. To determine which of these—or other competing—views is correct is no easy task. Matras (2009, 221) mentions that “[a] difficulty that always accompanies the discussion of borrowability is the impossibility to disprove that something may not occur”. Conversely, we face the equally discouraging impossibility of proving that all features of all languages can actually be borrowed into all other languages. In the end, therefore, we are left with the occurrences that we can actually empirically observe. As Matras says, “while you cannot completely rule out the potential existence of further, hitherto unknown examples, our understanding of inflectional borrowing must be informed by those examples that already exist” (p.c., 4/9/2016). Given the great abundance and truly enormous variety of attested linguistic borrowings, the universal-transferability hypothesis may seem a natural initial hypothesis for studies of borrowing between languages.

Table 1. Sample views on the extent of transferability between languages (on the notions lendable and adoptable, see 2.5).

<i>Extent of transferability</i>	<i>Statement</i>	<i>Is every DL feature lendable?</i>	<i>Is the feature adoptable in every language?</i>
<i>Across-the-board</i>	“any linguistic feature can be transferred from any language to any other language” (Thomason & Kaufman 1988, 14)	Yes	Yes
	“anything can be transferred, also between discrete systems” (Gardani 2008, 18)	Yes	Yes?
<i>Slightly restricted</i>	“in general, any feature of a language can be transferred to another language” (Curnow 2001, 413)	No	Not explicitly stated
	“almost any feature from one language can ultimately be copied into another” (Johanson 2010, 654)	No	Not explicitly stated

2.2 Staggered susceptibilities to borrowing

As often noted, however, the likelihood of transfer differs for different types of lexical and grammatical categories and sub-categories (Weinreich 1953, Haugen 1950, Thomason & Kaufman 1988, Field 2002, Gardani 2008, etc.).² Generally speaking, something like the following overall borrowing scale or borrowing hierarchy is now believed to hold:

- (2) LEXICAL FORMATIVES > DERIVATION > INHERENT INFLECTION > CONTEXTUAL INFLECTION

² See Matras (2009, 153–165) for an overview. Note also discussions such as Johanson (2002, 37–40 and passim) (summary in Eliasson 2007, 151).

That is, on the whole, ordinary lexical items are most commonly borrowed, derivational elements less so, and inflectional elements are least likely to be transferred. The preponderance of lexical borrowing has been amply documented in studies of numerous languages across the world.³ Among derivational affixes, the classes of nominalizers, diminutive suffixes, and adjectivizers are most frequently copied (Seifart 2013). As for inflectional transfer, Thomason (2008, 48) judiciously observes:

both the transfer of inflectional categories and the transfer of inflectional morphemes themselves are relatively rare. The reasons presumably lie in the nature of inflection: as the most tightly-structured closed system in any language that has a complex inflectional morphology, inflection coheres in ways that make outside interference harder (harder to learn).

Among inflectional affixes, those which involve inherent inflection, i.e., carry a lexical semantic content (e.g., plural number in nouns, tense, mood, negation), are more prone to transfer than affixes providing contextual inflection, i.e., elements that serve a syntactic function by building the sentence frame or parts of it (Gardani 2008, 2012, Gardani et al. 2015b).⁴

When a given DL item is borrowed, its range of meanings or functions may be reflected only incompletely in the RL (Gardani et al. 2015b, 6, but differently Schulte 2015). Nor are the categories in (2) necessarily transferred as such, as when a DL inflectional or mixed derivational/inflectional feature may be transformed into a derivational one in the RL. A conversion of essentially this sort is found in the Modern Standard Greek verb system, where the Italo-Romance infinitive ending *-ar(e)*, consisting of the stem formative *-a-* and the infinitive marker *-r(e)*, has turned into a purely derivational verbalizer *-ar-*, used primarily with foreign bases, but sporadically also with Greek ones (Ralli 2016b, 102, but also see Gardani 2016, 238–241). A similar development, this time in nominal morphology, may have occurred in Swedish, where the Latin mixed derivational/inflectional noun and adjective ending *-is* in, e.g., *finis* ‘end’, *ignis* ‘fire’, *navis* ‘ship’, *gravis* ‘heavy’, *rudis* ‘raw’ appears to be the prime source (Hellquist 1999, 414, Inghult 1968, 9–10) of the very productive, purely derivational Swedish suffix *-is* as in (3):

³ In the Scandinavian realm, cf., e.g., Eliasson (2005) on Swedish language contact in the Baltic.

⁴ On the terms inherent and contextual inflection, see Booij (1996).

(3)	alkis	'boozer'	< alkoholist	'alcoholic' (n.)
	buskis	'slapstick'	< buskteater	'knockabout comedy' ⁵
	dagis	'daycare center'	< daghem	'daycare center'
	godis	'candy'	< godsaker	'candy'
	grattis	'congrats' (interj., n.)	< gratulerar (etc.)	'(I) congratulate'
	kompis	'pal'	< kompanjon	'partner'
	poppis	'trendy'	< populär	'popular'
	snabbis	'quickie'	< snabb	'quick'
	snackis	'talking point'	< snacka	'chat' (v.)
	sotis	'jealous'	< sot	'soot'

Provided that Latin *-is* is the main source, the Swedish suffix *-is* retains no DL inflectional properties at all, and is then an instance of partly category-changing rather than fully category-preserving copying.

2.3 The non-dispreference vs. the dispreference view of inflectional borrowing

How likely it is that category-preserving copying of inflection can occur, has been much debated. Two diametrically opposed opinions exist, what we may call the non-dispreference view and the dispreference view.

Thomason (2015) eminently argues the case for non-dispreference. She submits that even though inflectional units and properties are not copied as often as derivational and lexical ones, such borrowing is by no means uncommon. She points out that there exists “no global dispreference for morphological diffusion”, and “[i]n certain types of contact situations, even inflectional morphology passes readily from one language to another” (ibid. 27). Crucially, “[b]ilingual speakers readily transfer morphological patterns and morphemes from one of their languages into the other at structure points where the two languages are typologically congruent” (ibid. 43).

In contrast, on the dispreference view as set out by Matras (2015), inflectional borrowing is uncommon: “[s]traightforward cases of borrowed inflectional morphemes are hard to find”, “[b]orrowed inflectional morphemes are usually limited ... to borrowed vocabulary”, and they “do not diffuse to inherited lexemes” (ibid. 75). This largely concurs with

⁵ Literally, ‘bush theater’.

Weinreich's (1963, 31) assessment that "[t]he transfer of morphemes which are as strongly bound as inflectional endings in many European languages seems to be extremely rare". Under the dispreference view, the borrowing of inflections is for the most part accidental, it may come about because a given DL inflectional affix happens to resemble an inherited RL inflection, or it may involve a small subset of DL lexical items that carry over their full DL inflections into the RL. Inflectional borrowing is, moreover, for the most part seen as a by-product of other types of borrowing.⁶

2.4 Productivity as a criterion in defining borrowed affixes

Exactly when a derivational or inflectional morpheme should be considered borrowed, is a question of some relevance. A criterion often used is that the morpheme should be at least minimally productive in the native RL lexicon. As Seifart (2013) puts it, "[a]n affix is considered as effectively borrowed only if it is used on at least some native stems, i.e. it is not considered as borrowed if it only combines with equally borrowed stems, forming complex loanwords". Likewise, Gardani (2012, 72–73) says that "[w]e only speak of inflectional borrowing when the morphemes borrowed are added to native lexical bases of the recipient language ...". He elaborates (*ibid.* 73):

Inflectional borrowing is conceivable only if the morphemes borrowed have spread to native words. This constraint rules out cases of morphemes that have been imported from the source language together with their lexemes (in contrast to Kossmann's 2010 Parallel System Borrowing).

⁶ Beyond this, Matras (2015) assigns a unique socio-communicative role to inflectional transfer. As opposed to derivational morphology, inflectional morphemes are rarely borrowed, because, he says, there is little functional or communicative reason to borrow them. Derivational borrowing purports "to replicate procedures of meaning derivation from the source language in the recipient language", but the purpose of inflectional borrowing is "to re-draw social boundaries" (*ibid.* 76). For, to Matras, inflectional morphology serves as a marker of linguistic identity and language loyalty: "The motivation to 'borrow' inflectional morphology is inherently linked to re-negotiating language boundaries, which in turn is part of a process of re-negotiating identity" (*ibid.* 76). For a few comments, see Eliasson (2016).

As formulated, the productivity criterion does not require current productivity. Many languages possess nativized bound morphological elements that are no longer active, but are nevertheless regarded as affixes. An example is the borrowed Swedish nominalizer *-else* illustrated in the left column of (4), with imperative forms of the related verbs in the next column:

(4)	grämelse	gräm	'mortification'	'mortify'
	händelse	händ	'event'	'happen; occur'
	rörelse	rör	'movement'	'move'
	skapelse	skapa	'creation'	'create'
	skrivelse	skriv	'formal letter'	'write'
	styrelse	styr	'board; committee'	'steer'
	varelse	var	'(living) being'	'be'

The adopted element *-else* corresponds to the inherited Swedish suffixes *-sel* and *-sle* as in *styrsel* 'firmness' and *gömsle* 'hiding-place', it has its ultimate origin in Low German, and was also added to native Swedish stems, yielding nouns such as *födelse* (< *föd* 'give birth to'), *styggelse* 'abomination' (< older Sw. *styggas* (*vid*) 'detest'). The termination *-else* is no longer productive (Söderbergh 1968, 44, 88), but this fact does not preclude its being considered a suffix in the modern language. Formally, as the examples in (4) show, *-else* is easily isolable, and it has a reasonably determinable range of meanings, besides occurring in a set of fairly frequent words.

A slightly more intricate problem involves the termination *-ing* that is part of many English lexemes that have been copied into modern Swedish. Examples are given in the first column of (5), while the second column lists adapted forms with the corresponding Swedish ending *-(n)ing*.⁷

⁷ The parenthesized forms are included in the Swedish Academy Word-List SAOL: "**shopp_{ning}** variantform till [variant form of; SE] *shopping*" (SAOL, 1136); "**tajm_{ning}** ... hellre än [preferable to; SE] **tajm_{ing}**" (SAOL, 1338; indicates morpheme boundary). In addition, we may note that the Swedish suffix *-ning* has an allomorph *-ing*, occurring after stems with surface forms in *-Cl*, *-(C)n*, *-Cr* (excluding usually *-rr*) and sometimes after *-Vr* as in *förädl-ing* 'refinement', *kärn-ing* 'churning', *ren-ing* 'purification', *ändr-ing* 'change', *när-ing* 'nourishment', *parker-ing* 'parking' (but *par-ning* 'mating', *stör-ning* 'disturbance', etc.). This formal overlap with the English suffix *-ing* means that from its written form alone we cannot tell whether a word such as *sampling* 'sampling' is a direct import from English or a coinage in Swedish from the verb

(5)	<i>-ing</i>	<i>-ning</i>	
	doping	dopning	‘doping’
	jogging	joggning	‘jogging’
	mobbing	mobbning	‘bullying’
	ranking	rankning	‘ranking’
	shopping	(shoppning)	‘shopping’
	timing, tajming	(tajmning)	‘timing’

The textual frequencies of the English-derived *-ing* and the Swedish *-ning* form for a given base vary. Sometimes, the adapted forms are preferred (*dopning*, *mobbning*), in many other cases the English forms are favored (*shopping*, etc.), as seen in Table 2.

Table 2. Illustrative usage frequencies of a sample of word pairs ending in the suffix forms *-ing* and *-ning*. Source: *Korp* (cf. Borin et al. 2012); from a selection of 122 corpora comprising approximately 127 million sentences.

Example		<i>-ing</i>	<i>-ning</i>
<i>doping</i>	vs.	<i>dopning</i>	3 127
<i>jogging</i>	vs.	<i>joggning</i>	5 699
<i>mobbing</i>	vs.	<i>mobbning</i>	557
<i>ranking</i>	vs.	<i>rankning</i>	2 842
<i>shopping</i>	vs.	<i>shoppning</i>	10 452
<i>timing/tajming</i>	vs.	<i>tajmning</i>	1 406
			141
			330

Furthermore, as mentioned in footnote 7, in contrast to the English-derived *-ing* forms, the native *-ning* variants are pronounced with tonal accent (‘accent 2’), a feature that often, though by no means always, signals that a word is morphemically complex. We might ask, then, whether the tone-less forms terminating in *-ing* are morphemically

sampla ‘sample’ (< *sampel* ‘sample’ (n.)). In the spoken language, lack of tone (traditionally, accent 1) as in [ˈsamˌplɪŋ] suggests a direct whole-word borrowing, whereas presence of tone (accent 2) as in [ˈsamˌplɪŋ] might either arise from loanword adaptation (through addition of tonal accent to a bisyllabic or a morphemically complex word) or else point to an internal Swedish coinage (where tonal accent accompanies the Swedish suffix *-(n)ing*). On the other hand, the immediate source of the noun *dumpstring* [ˈdɵm(ˈ)pstrɪŋ] ‘dumpster diving’ is the Swedish verb *dumpstra* ‘dumpster dive’, itself an adaptation from English. On *-ing*-suffixation in German and French, see the exemplary, intriguing study by Heinold (2009).

indivisible. Morphological considerations speak against that, however. Compare (6).⁸

(6)	dopa	‘dope’ (v.)	mobba	‘bully’ (v.)	shoppa	‘shop’ (v.)
	dopare	‘sports doper’	mobbare	‘bully’ (n.)	shoppare	‘shopper’
	dopning	‘doping’	mobbning	‘bullying’	(shoppning	‘shopping’)
	doping	‘doping’	mobbing	‘bullying’	shopping	‘shopping’

For even speakers employing the nominalizations *doping*, *mobbing* or *shopping* use the verbs *dopa*, *mobba*, *shoppa* with the verb-forming suffix *-a* as well as the agent nouns *dopare*, *mobbare*, *shoppare* with the agentive suffix *-are* ‘-er’. In other words, the English termination *-ing* is structurally fully identifiable and isolable in Swedish derivational paradigms, even though the morph itself is not productive in the native Swedish lexicon. Can the English-derived morph *-ing* despite its lack of productivity be regarded as a borrowed suffix in Swedish? The answer is that, from a structural and *perceptual* point of view, this is the case.

Consequently, in cross-linguistic statistics on the number of borrowed affixes in miscellaneous languages, the criterion of productivity will not yield an entirely complete picture, since it leaves out loan affixes that have never become productive, but are shown to be affixes by other RL-internal criteria. Nor, of course, does it account for the much more plentiful cases of foreign morphology that is totally restricted to borrowed lexemes and never interacts overtly with the RL morphological system, but can nevertheless be perceived by the RL speakers. On the other hand, the productivity criterion is difficult to replace and it is convenient to use. When, in the discussion below, the primary concern is whether a given DL affix has become productive in the RL lexicon or not, this is done with the

⁸ The root morphemes *dop-*, *mobb-* of *dopa*, *mobba* do not occur as independent words in Swedish. Swedish *dop* means ‘baptism; christening’ (with the associated verb *döpa* ‘baptize; christen’), whereas the English noun *dope*, when referring to narcotics, is rendered in Swedish as *knark*, *narkotika*, *dopingmedel*, and *dopningsmedel* (note the Swedish compound marker *-s-* with the *-ning* form). The Swedish noun *mobb* < English *mob* means ‘mob, rabble’. But with *shoppa*, compare the noun *shop* ‘shop’, def. sg. *shoppen*, pl. *shoppar*, listed in SAOL (p. 1136).

understanding that consideration of productivity by itself in no way exhausts the topic of foreign morphological interaction with a given RL.

2.5 The two dimensions of structural borrowability

In addition, the matter of borrowability is more complex than it might at first seem. For many purposes, we may rely on a general notion of structural borrowability that does not consistently differentiate between factors proper only to the DL and factors pertaining to the RL alone. The degree of overall structural borrowability is, however, contingent on the particular combination of DL *lendability* and RL *adoptability*, as crudely suggested by the two simple scales in Figure 1.

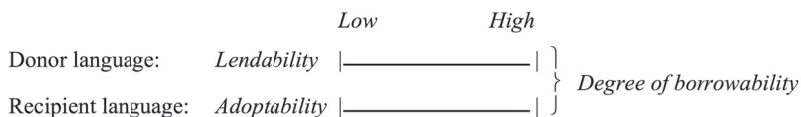


Figure 1. Degree of structural borrowability as a function of donor-system lendability and recipient-system adoptability.

Hypothetically, when structural lendability and adoptability are both high, as between two typologically closely similar languages or between two dialects of the same language, we might assume that the degree of borrowability should in principle be high. If the sociolinguistic conditions are appropriate and concrete communicative needs exist, the option of borrowing may also materialize. When, however, lendability is high, but adoptability is low, or vice versa, it seems less likely that transfer will take place. From a purely structural viewpoint, transfer would be least expected, when both structural lendability and structural adoptability are low.

In determining structural borrowability, typological difference or similarity at specific structure points is decisive, not in the first place overall typological similarity of the languages or similarity in other structural domains. For any given pair of languages in contact, Thomason (2015, 29) suggests that “the more similar two morphological structures are, the more likely they are to be the target of morphological transfer”.⁹ Transfer is assumed to be favored, then, at structure points, where a high

⁹ But cf. Thomason (2015, 36) on situations of “typological departure from the pre-existing structures”.

degree of *local* DL lendability is coupled with a high degree of RL *local* adoptability.¹⁰

2.6 Major structural properties affecting borrowability in morphology

Numerous factors have been seen as enhancing borrowability and thus increasing the chance of morphological copying. Some of the more important ones are summed up in Figure 2.

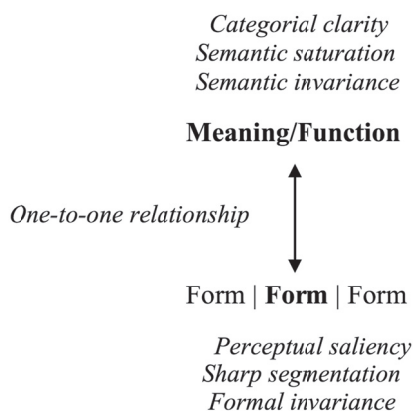


Figure 2. Major conditions favoring transfer of affixes.

The presence in linguistic forms of the properties indicated in Figure 2 leads to high lendability and adoptability.

Especially interesting is what happens in the potential RL. Properties of RL morphology that tend to bar alien affixes include tightly structured, closed sub-systems, inflectional sub-systems that already satisfactorily indicate crucial parts of the DL notion though in other ways,

¹⁰ Cf. Field (2002, 40–42), Thomason (2015, 30, 32–33, 37, 43), and Clements & Luís (2015, 219). But note doubts by Matras (2009, 221) with reference to Field regarding “proposed constraints on ‘system incompatibility’ and predictions that borrowing is only possible if the borrowed morpheme can be accommodated into the morphological structure of the recipient language”. Nevertheless, Matras’ counter-evidence (ibid. 220–221) involves various *bypassing strategies* rather than direct insertion into prospective RL morphological slots of the kinds that will be at issue in this paper.

morphological sub-systems that are intimately intertwined with other sub-systems, and so forth.¹¹

2.7 Summary

A prime issue in contact linguistics is whether just anything can be transferred between languages (universal-transferability hypothesis) (2.1). Customary borrowing scales or hierarchies (2.2) imply that the most promising place to find test cases is morphology, notably inflectional morphology. The non-dispreference view holds that inflectional morphology is more open to adoption than commonly assumed, while the dispreference view takes the incorporation of alien inflectional elements in the native lexicon to be utterly rare (2.3). Productivity is often used as a criterion for determining when an affix has been borrowed, though this must be done with the proviso that it provides no touchstone of all kinds of overt morphological copying (2.4). To be able to characterize affix borrowability in greater detail, we introduce a distinction between lendability and adoptability, that is, between what is readily proffered by the DL and what is easily integrated in the RL (2.5). Finally, we note that factors that define lendability may be decisively counteracted by RL factors that tend to bar adoption (2.6). After these preliminaries, we will now consider some striking cases of structural resistance: first, the reluctance in many languages to borrow derivational prefixes (section 3), and then, the eschewal of inflectional borrowing in a highly morphology-rich language (section 4).

3. Resistance to derivational borrowing in three typologically diverse languages

3.1 Avoidance of foreign derivational prefixes

The borrowing of derivational affixes, as determined by the productivity of DL affixes with native RL bases (2.4), is commonplace in languages. Particularly favored is the borrowing of suffixes, whereas prefix transfer is less common. This imbalance is no doubt related to the overall imbalance

¹¹ For further discussion of conditions favoring or disfavoring transfer, see Weinreich (1953, 31–37), Heath (1978, 105–107, 110), Johanson (2002, 44–47), Eliasson (2012, 288), Seifart (2012, 474), Ross (2014, 275–276), Pakendorf (2015, 158–159), Kossmann (2015, 257), and others.

between suffixation and prefixation in languages worldwide (Bybee et al. 1990, Dryer 2013, but note Cysouw 2009).

Disinclination to absorbing prefixes can even be discerned in some European languages that do contain native prefixes that could serve as models for transfer. An example is Sardinian. While standardized Romance languages demonstrate, primarily in recent centuries, a growth in the number of prefixes of learned (mostly Latinate) or French origin, Sardinian did not, according to Pinto (2012), participate in this development. Although Sardinian has three productive prefixes: *a(d)-*, *in-* (“spatial/conceptual”), and *(i)s-*, “only loan suffixes have been copied to native bases (9 but only 4 productive ones) and no prefixes” (ibid. 241). Pinto states that in this regard “Sardinian reflects the historical-sociolinguistic situation of non-standard Romance varieties which show a reduced number of prefixes not incremented by contact in a productive way” (ibid.).

Moving beyond western Indo-European languages, we will in this section deal with resistance to derivational-prefix borrowing in three genealogically unrelated languages, Turkish (Turkic), Basque (an isolate), and Samoan (Austronesian: Polynesian), exemplifying three typologically distinct native behaviors in regard to presence or absence of prefixation. Turkish lacks prefixes altogether, derivational as well as inflectional. Basque possesses ancient inflectional prefixes, but no or few native derivational ones. Samoan has some productive derivational prefixes (one of them amazingly productive), but most are becoming increasingly fossilized, and the language employs no inflectional prefixes used across all paradigms belonging to a particular morphological category. All three languages make extensive use of reduplication of one sort or other (Müller 2004, de Rijk 2008, 876–882, Mosel & Hovdhaugen 1992, 218–237), but this circumstance seems to have limited bearing on whether foreign derivational prefixes are adopted or not. The spectrum of affixation in the three languages is summarized in Table 3.

Table 3. Main tendencies of native affixation in Turkish, Basque, and Samoan.

<i>Language</i>	<i>Prefixes</i>		<i>Suffixes</i>	
	<i>Deriv.</i>	<i>Infl.</i>	<i>Deriv.</i>	<i>Infl.</i>
Turkish	–	–	+	+
Basque ^a	–	+	+	+
Samoan ^b	+	–	+	+

^a Indisputably original native derivational prefixes are few, verging on non-existent. Pattern replication from Romance may be responsible for *ber(r)-/bir(r)-* ‘re-’ and *ez-* ‘in-, im-’ (cf. Eliasson 2012, 296). Inflectional

prefixes are found in a small set of finite verbs; in non-finite verb forms, a prefix *e-* is widespread.

^b Several non-productive and some fossilized derivational prefixes exist in Samoan in addition to a few productive ones, above all the prolific causative prefix *fa'a-*. Quasi-inflectional use of the prefix *fe-*, indicating plurality, appears in several plural forms of verbs (Pratt 1893, 17, Marsack 1962, 36, Mosel & Hovdhaugen 1992, 180–181).

Different languages may disseminate prefixes in different contact situations, but English is nowadays the prime intermediary for many languages. The western derivational prefixes that are dispersed are mainly of classical origin. Typical English examples of such learned prefixes and quasi-prefixes are those in (7) (a selection of Spanish counterparts is found in Penny 1991, 237–241):

- (7) anti-, co-, contra-, counter-, cross-, de-, dis-, ex-, extra-, hyper-, hypo-, il-/ir-/im-/in-, inter-, intra-, mega-, mis-, non-, quasi-, post-, pre-, pro-, re-, semi-, sub-, super-, trans-, ultra-

To illustrate the discussion of prefix borrowability below, I will pick the western prefix *anti-* (originally < Classical Greek preposition *ἀντί* ‘opposite, over against’).¹² The focus on a learned prefix means that we will usually be concerned with political, historical, cultural, technical, medical and similar terminology, some of it introduced through more or less conscious lexical planning. The languages examined here handle the challenge of expressing western prefixes in various ways. I will discuss the three languages in turn.¹³

3.2 Resisting foreign derivational prefixes in Turkish

Our first language is Turkish. We first recall that Turkish utilizes total and partial reduplication extensively as in *yavaş yavaş* ‘quite slow’ < *yavaş* ‘slow’, *bom-boş* ‘quite empty’ < *boş* ‘empty’, *dım-dızlak* ‘quite naked’ < *dızlak* ‘naked’, etc. (Müller 2004). Despite its many partial initial reduplications, which might remind us of prefixes, Turkish is, as we just saw, thoroughly suffixing. Lewis (1991, 55) notes:

¹² For the properties of this prefix in English, see Lehrer (1995, 138, 143–144) and Bauer et al. (2013, 417).

¹³ Similar issues arise in other languages as well; see, e.g., Versteegh (1997, 181–182) on rendering Western prefixes in Arabic.

[t]he only regular¹ use of prefixation is to intensify the meaning of adjectives and, less commonly of adverbs. The prefix ... is modelled on the first syllable of the simple adjective or adverb but with the substitution of **m, p, r, or s** for the last consonant of that syllable.

¹ i.e. excluding such curiosities as the recent coinage **ön-görmek** 'to foresee'

Speaking of the Turkic language family generally, Johanson (1998, 36–37) adds that these languages normally lack “real” prefixes: “Elements preceding primary stems are mostly nominal elements that can also occur as free forms, e.g. *ön* ‘front’ in the Turkish loan translation *öngör* ‘foresee, provide for’ ⇐ French *prévoir*”. Moreover, Göksel & Kerslake (2005, 67) sum up the utterly restricted role of foreign prefixes in native Turkish word-formation:

Apart from the reduplicative prefixes ..., the only prefixes Turkish has are of foreign origin:

antidemokratik ‘antidemocratic’
postmodern ‘postmodern’
gayrimüslim ‘non-Muslim’
bihaber ‘unaware’, ‘ignorant’
namütenahi ‘infinite’

With the exception of *anti*-, which has some degree of productivity, these prefixes occur only with loan words.

All the bases in the quote are independent words in Turkish (e.g., *haber* ‘knowledge’, *mütenahi* ‘finite’). Göksel & Kerslake give no examples of *anti*- with a native Turkish stem. Nevertheless, for the most part western words with the prefix *anti*- are either taken over as whole lexemes in Turkish (*antiseptik* ‘antiseptic’, etc.) or else rendered in other ways (cf. İz et al. 1992, part II, 22, Avery et al. 1997, 33–35).¹⁴ Consistently suffixing in its native lexicon, Turkish strongly disfavors the adoption of foreign derivational prefixes.

¹⁴ Incidentally, from popular medical texts, translated from English into Turkish, Pekçoşkun (2015) records the structural calque *süper-pıhtılaşma* for E ‘super-clotting’ (even with a hyphen, although Turkish compounds are not normally hyphenated) (< *pıhtılaşma* ‘coagulation’) and the pseudo-prefixal hybrids *biyokorumu* ‘biosecurity’ (< E *bio*- and Turkish *korumu* ‘security’) and *nanoküre* ‘nanosphere’ (< E *nano*- and Turkish *küre* ‘sphere’).

3.3 Restrained recourse to foreign derivational prefixes in Basque

Our next language, Basque, has an abundance of native derivational suffixes (Aulestia 1989, a34–a44), many inflectional suffixes (*ibid.*), and a certain number of inflectional prefixes, while native derivational prefixes are rare. De Rijk (2008, 893) observes:

The paucity of derivational prefixes—most noticeable when trying to translate into Basque technical words with Romance prefixes—is partly compensated for in the use of paraprefixes. Paraprefixes, or quasi prefixes, are words that combine with a relatively great number of other words to form useful compounds. In Basque, paraprefixes are fewer in number and less important than parasuffixes. Leaving aside as much as possible neologisms not yet totally at home in Basque, as well as technical jargon, we will confine ourselves here to *ez-*, *basa-*, *erdi-*, and *sasi-*.

Examples involving these four preposed elements appear in (8).¹⁵

(8)	<i>basa-</i>	‘wild-’ (<i>< baso</i> ‘woods’):	basalore	‘wild flower’	lore	‘flower’
	<i>erdi-</i>	(<i>< erdi</i> ‘half’):	erdiberdin	‘similar’	berdin	‘same’
	<i>ez-</i>	‘in-, un-’ (<i>< ez</i> ‘not’):	ezongi	‘unwell’	ongi	‘well’
	<i>sasi-</i>	‘pseudo-’ (<i>< sasi</i> ‘bramble’):	sasimahats	‘wild grape’	mahats	‘grape’

Moreover, whereas Basque has incorporated quite a few derivational suffixes, it has adopted foreign derivational prefixes only sparingly (cf. summary in Eliasson 2012, 271–273, 296). To continue with our chosen type of example, the prefix *anti-* shows up in several Basque loanwords including those in (9) (*Elhuyar hiztegia*, part I, 41–42, part II, 40–41).

(9)	antibiotiko	‘antibiotic’	(<i>biotiko</i> ‘biotic’)
	antiinperialismo	‘anti-imperialism’	(<i>inperialismo</i> ‘imperialism’)
	antikatoliko	‘anti-Catholic’	(<i>katoliko</i> ‘catholic’)
		(adj.)	
	antikontzeptibo	‘contraceptive’	(Spanish: <i>anticonceptivo</i>)
	antikristau	‘anti-Christian’	(<i>kristau</i> ‘Christian’)
		(adj.)	

¹⁵ Further see Aulestia (1989, a44–a45).

antipapa	‘antipope’	(Spanish: <i>antipapa</i>)
antisemitismo	‘anti-Semitism’	(<i>semitismo</i> ‘semitism’)
antiseptiko	‘antiseptic’ (adj.)	(<i>septiko</i> ‘septic’)
antizikloi	‘anticyclone’	(<i>zikloi</i> ‘cyclone’)

Internal Basque coinages with *anti-* include the ones in (10) (see Morris 1998, 46):

- (10)
- | | | |
|----------------|---------------------|---|
| antiaitasantu | ‘antipope’ | (<i>Aita Santu</i> ‘Pope’,
<i>aita</i> ‘father’, <i>santu</i>
‘holy’) |
| antigorputz | ‘antibody’ | (<i>gorputz</i> ‘body’ <
Latin <i>corpus</i>) |
| anti-izoztaile | ‘anti-freeze’ (n.) | (<i>izoztu</i> ‘freeze’, <i>-tzaile</i>
‘-er’ ¹⁶) |
| antilapurkin | ‘anti-theft device’ | (<i>lapurtu</i> ‘steal’,
<i>-kin</i> ‘device’) |
| antisorgailu | ‘contraceptive’ | (<i>sortu</i> ‘conceive’,
<i>-gailu</i> ‘-er’,
<i>gailu</i> ‘device’ ¹⁷) |

Actually, the introduction of Latinate or Greek prefixes constitutes a Basque word-formation dilemma, which Trask (1997, 266–267) describes in a passage worth citing in full, as it delineates all the essential facets of the problem:

A major problem ... has been that of finding Basque equivalents of the common European prefixes like *pre-*, *contra-*, *trans-*, *syn-*, *anti-*, *co-*, *super-*, *inter-* and *sub-*. Basque has no word-forming prefixes of its own, and it is far from obvious how these useful morphs should be rendered in Basque. Only in a few cases is an obvious solution available, as when ‘post-war’ is expressed as *gerra-ondoko* (*gerra* ‘war’ + *ondoan* ‘after’ + *-ko* [adnominalizer; SE]), exactly parallel to indigenous formations like *afalondoko* ‘after-dinner’ (adj.), from *afari* ‘dinner’. This policy of using the native postpositions to render prefixes can be successfully used in some other cases, as in *nazioarteko* ‘international’ (*artean* ‘between’) and

¹⁶ Cf. Spanish *anticongelante*. In Basque also *izotz-aurkako* or *izotz-kontrako* (< *izotz* ‘ice’, *aurka* or *kontra* (postpositions) ‘against’, *-ko* suffix).

¹⁷ The suffix *-kin* was once favored by language purists (e.g., *idazkin* ‘typewriter’), but in modern coinages *-gailu* tends to be preferred, as in *ordenagailu* or *konputagailu* ‘computer’. See de Rijk (2008, 906–907, 911–912).

historiaurreko ‘prehistoric’ (*aurrean* ‘in front of’). But it doesn’t always yield attractive results, especially with nouns. The noun ‘prehistory’ might logically be rendered as *historiaurre*, literally ‘history-front’, but many speakers find such formations very awkward and prefer the more radical solution provided by *aurrehistoria*, in which *aurre* ‘front’ is treated as a prefix, even though no such prefix had previously existed and even though the result has a decidedly anomalous form. Still others dislike both forms and simply borrow *prehistoriko* from Romance, though this way out is definitely frowned on by a large number of Basques. Only time will tell what solution will prevail, but a solution must certainly be found.^[18]

In view of the great social and linguistic pressure on the language, it seems likely that the number of hybrid formations with modern borrowed prefixes will gradually increase. Specifically, as compared to the situation of Turkish up to now, the structural resistance to contact-induced prefixal derivation in Basque appears more prone to eventually crumble. If it in fact does, strong social pressure overrides linguistic structure in line with Thomason & Kaufman’s (1988, 35) dictum cited in section 1 above.

3.4 Eschewing western derivational prefixes in Samoan

In contrast to Turkish but also to Basque, Samoan has a fair, though still limited, number of indigenous derivational prefixes. With a few striking exceptions, these prefixes are, however, on the wane in the language. Mosel & Hovdhaugen (1992, 169) observe on Samoan bound morphemes generally:

The bound grammatical morphemes in Samoan are mostly non-productive and they have often either no predictable meaning at all or their meaning or function depends on the lexemes they are attached to. To a great extent the multimorphemic stems in Samoan are lexicalized and the morphological segmentation is largely diachronic and not part of the active linguistic competence of most speakers of Samoan today.

The authors (ibid. 171, 173) distinguish between relic and non-relic prefixes in Samoan. Relic prefixes in their view are isolable initial word-elements, possibly originating in true prefixes, which nowadays occur only

¹⁸ *Elhuyar hiztegia* (part I, 544) renders ‘prehistory’ as *prehistoria*, or “better” [transl., SE]: *historiaurre* (cf. also part II, 537). See also Hualde & Ortiz de Urbina (2003, 350) for examples of preposed location nouns in neologisms such as *gainbegiratu* ‘supervise’ (< *gain* ‘top’ and *begiratu* ‘look at’).

in few words and lack a well-defined meaning or function. An example is the semantically indistinct morph *ga-* [ŋa-] in words such as *galulu* ‘tremble’ (cf. *lūlū* ‘shake’) and *gatete* ‘tremble’ (< *tete* ‘tremble’) (ibid. 172). The non-relic prefixes, a good dozen, are reproduced in the Appendix below with information on their meaning or function, their degree of productivity, and with examples. They include a set of basically unproductive prefixes: (‘)*ā-* (future), *ana-* (past), *au-* (lacking something), *au-* (continuous or repeated activity), *ma-* (able to), *ma-/mā-* (de-ergative), *ta-* (plural patients), and *ta-/tā-* (verbalizer).¹⁹ Some of these are quite infrequent. The range of application of two further prefixes, *ta* ‘i- (forming distributive numerals) and *to* ‘a- (classifier with numerals used of human beings), is essentially circumscribed by the size of the class of numerals, similarly to a closed system. The more widely productive prefixes, finally, are *fe-* (plurality of events), *tau-* (typically related to), and most particularly the multifunctional, but basically causative, prefix *fa* ‘a-, which is extremely productive. The enormous frequency of *fa* ‘a- is evident from the fact that out of a total of 468 pages in the Samoan-English part (vol. I) of Ma‘ia‘i’s (2013) comprehensive two-volume dictionary, *fa* ‘a-formations occupy approximately 85 pages, i.e., 18% of the entire volume. Examples of *fa* ‘a-formations of various types are:²⁰

- | | | | | |
|------|--------------------|-----------------------------|---------------|-----------------------|
| (11) | <i>fa</i> ‘amoe | ‘lull to sleep’ | <i>moe</i> | ‘sleep’ (v., n.) |
| | <i>fa</i> ‘aalofa | ‘pity, feel sorry for’ (v.) | <i>alofa</i> | ‘love’ (n., v., adj.) |
| | <i>fa</i> ‘alua | ‘twice’ (adv.) | <i>lua</i> | ‘two’ |
| | <i>fa</i> ‘afāfine | ‘effeminate male; gay’ | <i>fāfine</i> | ‘woman’ |
| | <i>fa</i> ‘afanua | ‘map; outline’ (n.) | <i>fanua</i> | ‘land’ |

In short, then, Samoan presents a rather puzzling situation, where some putative prefixes are hardly recognizable as such, most other prefixes appear to be moribund, yet at the other extreme one prefix, *fa* ‘a-, is profusely productive.

¹⁹ De-ergative *ma-* and *mā-* are here grouped together, as are verb-forming *ta-* and *tā-*, but note Mosel & Hovdhaugen (1992, 185, 189).

²⁰ In certain constructions, *fa* ‘a- can precede the article *le* ‘the, a’ and the negative particle *lē* ‘not’ (Milner 1966, 43, 44, Mosel & Hovdhaugen 1992, 119, 169, 178), making *fa* ‘a- in this respect more like a particle or clitic. Examples are *fa* ‘alenu ‘u ‘village’ (adj.) (< *nu* ‘u n. ‘village’) and *fa* ‘alēaogā ‘cancel’ (< *aogā* ‘of use, useful’) (Milner 1966, 44). To this extent, it differs from genuine prefixes in the listing in Appendix.

How, then, do western prefixes fare in contact with Samoan? To pursue our chosen example still a bit further, Cain (1986, 14) lists ‘*aneti-*’ ‘anti-’ as a prefix as well as five adapted whole-word loans, in which it occurs:

- | | | | |
|------|-----------------|--|--|
| (12) | ‘anetikerisiano | ‘anti-Christian’
(n., also adj.) | (<i>kerisiano</i> ‘Christian’) |
| | ‘anetikeriso | ‘Antichrist’ | (<i>Keriso</i> ‘Christ’) |
| | ‘anetimāmona | ‘anti-Mormon’
(n. and adj.) ²¹ | (<i>Māmona</i> ‘Mormon’) |
| | ‘anetipate | ‘Antipathes,
black coral’ | (< <i>Antipathes</i> ; ≠ <i>pate</i> ‘bat’,
etc. < E) |
| | ‘anetipope | ‘antipope;
antipapal’ | (<i>pope</i> ‘pope; papal’) |

At least up to recently, however, ‘*aneti-*’ seems to have attained little or no native productivity even in contexts like politics or medicine, where one might have expected it. For instance, all English entries beginning with *anti-* in Fauolo & Aitaoto’s (2008) bilingual guide to cancer-related terms are translated in other ways into Samoan (ibid. 22):²²

- | | | | |
|------|---------------------|---------------------|---|
| (13) | faaitiiti lugā/fula | ‘anti-inflammatory’ | (<i>fa’aitiiti</i> ‘reduce’, <i>lūgā</i> ‘inflamed’,
<i>fula</i> ‘swell’) |
| | faaitiiti alatoto | ‘antiangiogenic’ | (<i>fa’aitiiti</i> ‘reduce’, <i>alatoto</i> ‘blood vessel’) |
| | te’e siama | ‘antibacterial’ | (<i>te’e</i> ‘be hostile’, <i>siamā</i> ‘germs’
[< E <i>germ</i>]) |
| | fualaau tui | ‘antibiotic’ | (<i>fualā’au</i> [also: <i>vailā’au</i>] ‘drug’,
<i>tu’i</i> ‘strike’) |
| | te’e vairusi | ‘antiviral’ | (<i>te’e</i> ‘be hostile’, <i>vairusi</i> ‘virus’
[< E <i>virus</i>]) |

²¹ Cain (1986, xiii) indicates that his dictionary includes loans introduced by the Mormon church in a special list, but that “[i]t is questionable whether that vocabulary has the chance of becoming more generally accepted and used”. Whether the word ‘*anetimāmona*’ derives from that list, does not emerge from the lexical entry.

²² Fauolo & Aitaoto’s orthography is retained in the Samoan headwords; the spelling of the constituent elements given within parentheses follows Milner (1966).

Nor does Ma‘ia‘i (2013) in the Samoan-English part of his dictionary, record any Samoan words at all beginning with *‘aneti-* (vol. I, 18), and in the English-Samoan part no English word beginning with *anti-* is translated into Samoan using *‘aneti-* or a similar phonological form (vol. II, 488–489). Instead, Ma‘ia‘i—by profession a medical doctor—furnishes beside descriptive phrases Samoan translations of English formations with *anti-* such as the following:

- | | | | |
|------|---------------|------------------|---|
| (14) | fa‘atū‘iola | ‘antibiotic’ | (<i>tu‘i</i> ‘strike’, <i>ola</i> ‘live; life’) ²³ |
| | sua-fa‘atautā | ‘antibody’ | (<i>sua</i> ‘liquid; juice’, <i>tautā</i> ‘restrain; keep back’) |
| | fa‘amāuima‘i | ‘antiseptic’ | (<i>māui</i> ‘subside’, <i>ma‘i</i> ‘infection’) ²⁴ |
| | fa‘amāuiafu | ‘antiperspirant’ | (<i>māui</i> ‘subside’, <i>āfu</i> ‘sweat, perspire’) |
| | tinēiafu | ‘antiperspirant’ | (<i>tinei</i> v. pl. ‘extinguish’, <i>āfu</i> ‘sweat, perspire’) |

Conceivably, the absence of formations with *anti-* in Ma‘ia‘i’s dictionary could derive from a striving for linguistic purism (cf. Ma‘ia‘i 2013, vol. I, iii). Nevertheless, borrowed prefixes are hard to pin down even elsewhere in Samoan sources. The same goes for other Polynesian languages. Thus, in their dictionary of loanwords in Māori, Moorfield & Ka‘ai (2011, 6–7) do not record a single native formation utilizing a nativized form of the English prefix *anti-*. Similarly, Moorfield (2011, 270) lists two English items with the prefix *anti-*, *antiperspirant* and *antithesis*, which in a typical Polynesian way are translated into Māori as *patu mōrūruru* (*patu* ‘kill, killing’, *mōrūruru* ‘odor of sweat’) and *kupu tauaro* (*kupu* ‘word’, *tauaro*

²³ Cf. the term *fualaau tui* from Fauolo & Aitaoto (2008, 22) cited in (13).

²⁴ Milner (1966, 327) translates ‘antiseptic’ by *vaimanu‘a*, a combination of *vai* ‘water’ and *manu‘a* ‘wound’, but also by the word *vaimū* (< *vai* ‘water’ and *mū* ‘inflamed’), whose meaning on p. 310 is given as “Iodine (or similar preparation)” (similarly, Allardice 1985, 101, 107, 226). The words have been in use for some time. The German naturalist and ethnographer Augustin Krämer (1903, 123) renders *vai manu‘a* as “Wundwasser” and *vai mumū* as “Arznei bei Entzündung”, in the English translation “[I]otion for wounds” and “[m]edicine for inflammation”, respectively (Krämer 1995, 141). In Krämer’s work, these words refer to substances obtained from specific named indigenous medical herbs or plants.

‘opposite’), respectively.²⁵ More generally, the Austronesian language specialist Andrew Pawley notes: “I can’t think of any western derivational prefixes that have been borrowed in Samoan (or Maori or Tongan or Fijian or any Oceanic language)” (Andrew Pawley, p.c. 11/26/2015).

The deeper reasons for the Samoan dislike of foreign prefixes are not all that easy to determine. After all, particularly the Samoan prefix *fa’a-* is inordinately prevalent and might be expected to serve as a strong native model, on which to pattern the incorporation of foreign prefixes. Nevertheless, apart from *fa’a-* and a few others, prefixation in Samoan is mostly weak, in part eroding and sometimes even fossilized. Moreover, several Samoan prefixes have a fairly specialized function. Derivational patterns in English and Samoan do not coincide, and what from the English point of view would be gaps in derivation (cf. Appendix), is in Samoan handled by other means. As emerges from the examples with *anti-*, one typical way of rendering English prefixal derivation in Samoan is to resort to lexical compounding or phrasal constructions.²⁶

3.5 Derivational prefix borrowing: Conclusion

A language that with great ease absorbs foreign derivational prefixes, in particular in learned contexts, is Russian, which itself possesses an abundance of native derivational prefixes. For instance, the prefix *anti-* is made natively productive in *antivoennyj* ‘anti-war’ (< *vojna* ‘war’), *antigeroj* ‘antihero’ (< *geroj* ‘hero’), *antinarodnyj* ‘anti-national’ (< *narod* ‘nation, people’), *antiobščestvennyj* ‘anti-social’ (< *obščestvo* ‘society’), *antitelo* ‘antibody’ (< *telo* ‘body’), etc., paralleling the native, less common prefix *protivo-* (< *protiv* prep. ‘against, opposite’) as in *protivoobščestvennyj* ‘anti-social’, *protivovozdušnyj* ‘anti-aircraft’ (< *vozdux* ‘air’), *protivozačatočnoe sredstvo* ‘contraceptive’ (< *začatok*

²⁵ To cite just one further Polynesian language, the same pattern is seen in Hawaiian *pale palahō* ‘antiseptic’ (< *pale* ‘ward off’, *palahō* ‘rotten, putrid’), *pale mūhune* ‘ino antibiotic’ (< *pale* ‘ward off’, *mūhune* ‘pathogen’, *ino* ‘foul’). Whereas Parker Jones (2009, 784–785) notes for Hawaiian that the suffix *-kona* (< E *-(a)thon*) appears with a native base in *helekona* ‘walkathon’ (derived from *hele* ‘go, walk’), he gives no example of the preposed elements *heko-* (< E *hecto-*), *keni-* (< E *centi-*) and *polai-* (< E *poly-*) occurring with native stems. He informs me (Parker Jones, p.c. 12/20/2015) that the last three prefixes were introduced by the Hawaiian Lexicon Committee to meet the need for scientific terminology in immersion schools.

²⁶ These two processes are in Polynesian often hard to distinguish.

‘embryo’, *sredstvo* ‘means’).²⁷ Here, high lendability primarily of English is matched by high adoptability of Russian. In stark contrast to Russian are Turkish and Samoan, but also Basque. Turkish, as we recall, is exclusively suffixing in both inflection and derivation. Basque in addition allows prefixes in verb inflection, but is—excepting a few ancient fossilized items—virtually devoid of long-standing native derivational prefixes. That derivationally suffixing languages resist derivational prefixation is reasonably easy to understand. On purely structural grounds, Basque might therefore be expected to be only slightly more prone to accepting derivational prefixes than Turkish. But while Turkish is a major language securely anchored in a large population with many monolinguals, the minority language Basque is spoken by Spanish-Basque and French-Basque bilinguals, who to boot often resort to Spanish or French even in Basque-speaking contexts (cf. Barreña et al. 2013, 14, 27). Hence, when Basque makes foreign prefixes natively productive to some extent (albeit usually artificially), this may above all have extra-linguistic causes. More puzzling, though, is foreign prefix resistance in Samoan, which possesses well over a dozen non-relic derivational prefixes (Appendix), one of these, *fa’a-*, moreover exceedingly productive. Nonetheless, compared to many other languages, Samoan has relatively little affixation, strikingly so in its inflectional morphology, some of its derivational prefixes have quite special uses, others carry an unclear function and meaning, being obsolescent or moribund, and still others are of low lexical frequency. Favored means of expression are rather compounding and phrasal constructions. Finally, the extensive use of reduplication in Turkish, Basque and Samoan appears to have had little effect in creating any disposition towards prefixation. The situation in the three contrasted languages is summed up in Table 4.

²⁷ On the Russian prefixes *anti-* and *protivo-* see Kaliszan (1980, 18–26), Švedova (1982, 227, 231–232, 305 and 230, 235, 310, respectively) and Ryazanova-Clarke & Wade (1999, 188–190).

Table 4. Productivity of foreign derivational prefixes with native bases in three typologically distinct languages.

<i>Language</i>	<i>Productivity</i>	<i>Conceivable structural reasons for lack of productivity</i>
<i>Turkish</i>	Essentially none (only marginal examples)	Language exclusively suffixing: lack of true native prefixes throughout, both derivational and inflectional ones
<i>Basque</i>	Fairly weak (but examples do occur)	Derivationally strongly suffixing: basically total lack of indubitable native derivational prefixes (inflectionally prefixing-suffixing, but inflectional prefixes only found in verb conjugation)
<i>Samoan</i>	Thus far apparently none	Very little morphology in general. Derivationally weakly prefixing and suffixing: (a) Few truly productive derivational prefixes in the language (although one prefix, <i>fa'a-</i>, immensely productive) (b) Many prefixes on their way out of the language, several totally fossilized (c) The semantic functions of the few productive native Samoan prefixes are not all that congruent with those of the English prefixes, hence straightforward native, conceptual-functional slots tend to be missing (d) Strong preference for morphological compounding and syntactic head-modifier constructions Inflectionally weakly suffixing

In sum, speakers of suffixing languages may resist prefixation strongly (Turkish), but, in accordance with what Thomason & Kaufman (1988, 35) suggest (section 1 above), structural resistance may be gradually overcome under heavy long-term cultural and linguistic dominance (Basque). Like Turkish, Samoan is successfully resisting, but is not under as strong pressure of a dominant language as Basque is under Spanish. Despite general, truly massive derivational-prefix resistance in Turkish and Samoan, but in view of Basque seemingly giving way, the universal-transferability hypothesis does hold up here.

4. Barriers to inflectional borrowing in Basque

4.1 Impermeable morphological structure

We now turn to inflectional borrowing. One of the inflectional categories often spread between languages is plural (e.g., Matras 2009, 212–213, 218, Gardani 2012). In line with this and taking Spanish and Basque as examples, we might expect that Spanish plural formation could influence the plural inflection of Basque. Plural inflection in Basque, which is phrasal and given only once in the noun phrase, is illustrated in (15) by a portion of the paradigm of the noun *leku* ‘place’ (adapted from Hualde & Ortiz de Urbina 2003, 173):

(15)	<i>Case</i>	<i>Ordinary plural</i>	<i>Proximate plural</i> (indicating closeness, etc.)
	<i>absolutive</i>	leku ak	leku ok
	<i>ergative</i>	lekue k	leku ok
	<i>genitive</i>	lekue n	leku on
	<i>dative</i>	lekue i	leku oi
	<i>benefactive</i>	lekuentz at	lekuontz at
	<i>comitative</i>	lekue kin	leku okin
	<i>instrumental</i>	lekue z	leku oz
	<i>locative</i>	lekuet an	lekuot an
	<i>ablative</i>	lekuetat ik	lekuotat ik
	<i>allative</i>	lekuet ara	lekuot ara
	<i>directional</i>	lekuetar antz	lekuotar antz
	<i>terminative</i>	lekuetar aino	lekuotar aino
	<i>relational</i>	lekuet ako	lekuot ako

As seen in the second column of (15), in the absolutive case of regular plural forms, the notion of plurality is carried by the closing suffix *-k* (cf. the singular *leku-a* ‘the place’), while in oblique cases plurality is expressed by the non-closing suffix *-e-* (followed by case suffixes). Moreover, in addition to the regular plural, certain varieties of Basque have a proximate plural (‘the places here’, etc.; see Morris 1998, 453 for meanings), which is expressed by the morpheme *-o-*, as opposed *-e-*, or in one case *-a-*, in the regular plural forms. Furthermore, both the regular and the proximate absolutive plurals end in *-k*. In contrast, the contact language Spanish has the plural allomorphs *-s*, *-es* (with epenthetic vowel), and, rarely, *-Ø*. However, the highly lendable, agglutinative plural formation found in Spanish is not transferred to normal varieties of Basque. The reasons for the lack of adoptability may partly have to do with Basque

phonotactics, but above all with the structure of the Basque noun phrase paradigms.

First, consider some of the phonotactic effects of adopting the Spanish plural allomorph *-s* in Basque. Relevant are Basque consonant clusters in word-final and word-medial position. The final clusters consist of (a) sonorant (*l*, *r*, *n*) + voiceless stop or affricate or (b) sibilant fricative + voiceless stop, as shown in Table 5.

Table 5. Word-final consonant clusters in Basque (summary of information from Saltarelli 1988, 278 and Hualde & Ortiz de Urbina 2003, 34–35; examples mainly from the former work; the etymological source added in a few cases). The digraphs *ts*, *tz*, and *tx* designate unitary affricates in Basque (apico-alveolar [tʃ], lamino-alveolar [tʃ̺], and palato-alveolar [tʃ̺̟], respectively).

<i>Cluster type</i>	<i>Cluster</i>	<i>Example</i>	<i>Gloss</i>
Liquid + affricate	-ltz	beltz (< *beletz)	‘black’
	-ltx	beltx	‘blackish’
	-rtz	hortz	‘incisor tooth’
	-rts	herts ^a	‘close’ (v.)
Nasal + affricate	-ntz	antz	‘resemblance’
	-ntx	Bilintx	(byname)
Liquid + stop ^b	-rt	bart (< <i>barda</i>)	‘last night’
	-rk	nork (< <i>nor</i> ‘who’)	‘who’ (erg.)
	-lt	Laxalt (< <i>Lasalde</i>)	(surname; <i>-alde</i> ‘area’)
Sibilant fricative + stop	-st	bost (< <i>bortz</i>)	‘five’
	-sk	kosk egin ^c	‘bite’ (v.)

^a Example from Hualde & Ortiz de Urbina (2003, 34); OEH gives only *herts* (OEH under *herts*; accessed 3/12/2016).

^b Hualde & Ortiz de Urbina (2003, 35) also mention final clusters consisting of a nasal and a stop, *-nt* and *-nk*, in northern dialects.

^c The word *kosk* ‘crunch, munch, sound of biting’ is onomatopoeic (see, e.g., Aulestia 1989, 359).

Trask (1997, 88) observes that “[t]he only common final cluster is *-rtz*; *-ltz* and *-ntz* are less common, and a handful of others occur very occasionally: *-st*, *-rt* and one or two others” (see also *ibid.* 174). Similarly, he says that “[t]he rare final clusters are mostly of the type liquid or *n* + affricate; at least some of these clearly derive from syncope, as with *beltz* ‘black’ < **beletz*” (Trask 1997, 163).

Basque medial clusters, likewise, usually consist of (a) sonorant (*l*, *r*, *n*) + stop or affricate or (b) sibilant fricative + stop, but there are also some additional, less common combinations. Table 6 displays the main patterns.

Table 6. Two-member medial clusters in modern Basque
(slightly modified from Trask 1997, 88; *x* = [ʃ]).

-lp-	-lt-	-lk-	-rp-	-rt-	-rk-	-np-	-nt-	-nk-
-lb-	-ld-	-lg-	-rb-	-rd-	-rg-	-nb-	-nd-	-ng-
-ltz-	-lts-	-ltx-	-rtz-	-rts-	-rtx-	-ntz-	-nts-	-ntx-
-sp-	-st-	-sk-	-xp-	-xt-	-xk-	-zp-	-zt-	-zk-
Less common:		-lf-	-rl-	-rn-	-rm-	-sn-	-sm-	-xm-

Trask (1997, 88) further notes that “there are a few three-consonant clusters in medial position: *-ndr-*, *-rst-* and a few others”. He adds that “[m]ost of these derive either from word-formation or from syncope, and they tend strongly to be reduced” (ibid. 164).

As emerges from this summary of Basque consonant combinatorics, some phonotactic hitches will arise, if one attaches, inserts or substitutes the Spanish plural *-s* in various slots in the forms in (15). For instance, while merely substituting *-s* for Basque plural *-k* is reasonably unproblematic phonotactically, attaching the allomorph *-s* to the absolutive and ergative forms *lekuak*, etc., would yield an illegal word-final cluster *-ks#*, inserting it would yield an attested, but uncommon *-sk#* cluster, and substituting the Spanish word-final *-s* for the Basque word-internal vowels *-a-*, *-e-*, *-o-* throughout would reduce the syllable number and yield the deviant word-final clusters *-sn#* (genitive), and *-sz#* (instrumental)²⁸ as well as the peculiar medial combination *-sntz-* (benefactive). To restore syllable count and pronounceability, all of the last-mentioned clusters would have to be repaired by vowel insertions.

More serious complications arise in regard to the system of Basque paradigmatic contrasts. The plain Spanish agglutinative ending *-s* does not anchor readily in the complex Basque pattern of expressing definiteness, proximity, and plurality, as exemplified in (15). In the Basque absolutive form *lekuak*, it is primarily the *-k* that carries the notion of plural, whereas in the remaining non-local case forms, the concept of definiteness and plurality is indicated by *-e-* (in the local cases, the plural reference is aided

²⁸ Medially, but not finally, two fricatives are combined only in recent loans such as *eszeptiko* ‘skeptical’ (< Sp. *escéptico*), *piszina* ‘swimming pool’ (< Sp. *piscina*), etc. (see Hualde & Ortiz de Urbina 2003, 35).

by *-ta-*, which element also appear in indefinite local cases, but not in the definite singular ones). Even though Spanish *-s* might easily replace the special form of Basque absolutive plural *-k*, no straightforward substitution for Basque plural marking throughout is possible. What is more, when we take the Basque proximate inflection into account, another discrepancy between Spanish and Basque appears. To the extent that no singulars with *-o-* exist (but cf. Trask 1997, 199, Hualde & Ortiz de Urbina 2003, 122), the *-o-* in Basque *lekuok*, etc., signifies the category plural, but it simultaneously expresses the category proximate, being in other words a cumulative (or portmanteau) morph. However, the simple non-cumulative Spanish morpheme *-s* does not manage to cover the semantic contents of the two cumulative morphs *-e-* and *-o-* in Basque. The substitution of Spanish *-s* for all plural markers in (15) will in fact totally wipe out the definite/proximate distinction in the Basque plurals.

Other transfer scenarios could be tested, but create similar snags. Despite the extremely high lendability of the Spanish plural marker, difficulties of Basque adoptability pile up. The process would get inconveniently entangled in Basque phonotactics, but more significantly play havoc with the complex Basque system of paradigmatic contrasts. Actually, without radical prior reorganization and change, the specific structure of the RL Basque is basically impermeable and effectively blocks adoption.²⁹ Not everything is directly adoptable in every other language, and the idea of unconstrained across-the-board adoptability is in serious question.

4.2 Multiply anchored recipient-language affixes

Also wider, *cross-paradigmatic* relations of inflections create problems for the universal-transferability hypothesis. As a case in point, we may consider how the categories of first and second person are expressed in synthetic verbs and personal pronouns in early Basque, in comparison to how they are manifested in Old Spanish.

First, recall the Old Spanish data. The first and second person pronouns are reproduced in (16) (cf. Penny 1991, 119–120, 124).

²⁹ In contrast, there is no absolute structural hindrance to the Spanish-derived sex-marking (as in *sorrist-o/sorrist-a* masc./fem. ‘lousy’) marginally encountered in western Basque varieties (Hualde et al. 1994, 109; see also Eliasson 2012, 278–279).

(16)		<i>Subject</i>	<i>Indirect object</i>	<i>Direct object</i>
	<i>Sg.</i>			
	1st	yo	me	me
	2nd	tú	te	te
	<i>Pl.</i>			
	1st	nos(otros)	nos	nos
	2nd	vos(otros)	(v)os	(v)os

Examples illustrating the first and second person present tense forms of the Old Spanish regular conjugations are given in (17) (see Penny 1991, 151–152).³⁰

(17)	<i>Sg.</i>	1st	canto	debo	salgo
		2nd	cantas	debes	sales
	<i>Pl.</i>	1st	cantamos	debemos	salimos
		2nd	cantades	devedes	salides

The corresponding early Basque pronouns and verb inflections appear in Figure 3.

As seen in Figure 3, the early Basque affix system is internally tightly knit. The exception is the suffixes in the singular (in the rightmost column of Figure 3), whose phonological shapes are unrelated to those of the corresponding prefix forms. These suffixes also exhibit systematic context-dependent -(C)V-/C alternations. For the rest, the affixes are externally neatly tied in with the pronoun system. Furthermore, they are arranged in verb forms in accordance with the basic morphotactic pattern (18) (see Trask 1997, 106).

(18) #ABSOLUTIVE+ ...+VERB STEM (+DATIVE)(+ERGATIVE)(+...)#

In conjunction with variations of shape, the position of the person marker in the verb complex (18) decides on whether it will have an absolutive, dative, or ergative reading.

³⁰ The second person plural forms later developed into *cantáis*, *debéis*, and *salís*, respectively (Penny 1991, 138). For the spelling of intervocalic, etymological /b/, cf. Penny (1991, 86).

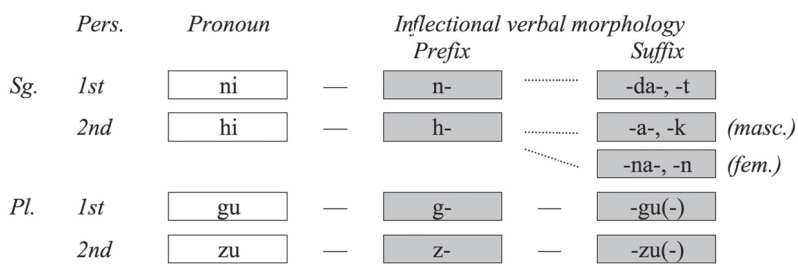


Figure 3. First and second person markers in early Basque synthetic verbs and links to the pronominal system. (Affix system shaded. Continuous lines connect morphs of similar phonological shapes, dotted lines suppletive morphs.) System partly reorganized in Modern Basque.

It is evident that the Spanish and the Basque verb inflection systems are based on different principles. Table 7 lists some major formal discrepancies.

Table 7. Comparison of first and second person markers in Old Spanish and early Basque verbs.

<i>Property</i>	<i>Spanish</i>	<i>Basque</i>
<i>Affix position in relation to base</i>	Suffixes	Prefixes and suffixes
<i>Positional differences functionally significant</i>		Yes (prefix slot vs. suffix slot 1 vs. suffix slot 2)
<i>Unpredictable variation in phonological shapes of verbal affixes</i>	Formal distinction between 3 conjugations	Suppletion in the singular: <i>suffixes</i> differ in shape from <i>prefixes</i>
<i>Synchronic allomorphic links to pronoun system</i>	Opaque or none	Most verbal affix shapes clearly tied to those of corresponding pronouns

As emerges from Table 7, the Spanish verb paradigms do not tally well with the Basque ones. Furthermore, the Basque affixes are structurally well entrenched. Finally, from a purely phonological point of view, Spanish endings if inserted into the Basque paradigms would severely disfigure the Basque verb forms. Only very radical linguistic change in Basque could pave the way to a wholesale introduction of Spanish verb

endings. Accordingly, despite a millennium of highly intense language contact, no true borrowing of Spanish finite verb endings into the standard Basque verb system has actually been attested.³¹

5. Summary and concluding remarks

In research on language contact, it is often assumed that any linguistic property and element can be transferred between languages, an assumption that we have referred to here as the *universal-transferability hypothesis* (2.1). At the same time, it is widely acknowledged that the likelihoods of transfer are not the same across all language components, differences that are expressed in the various borrowing scales or borrowing hierarchies proposed in the literature (2.2). Compared to lexicon, derivational and inflectional morphology is less prone to transfer. Notably inflectional morphology, which is a markedly *language-specific* component of grammar, tends to resist borrowing. As for the extent, to which inflectional elements may be transferred, two views stand against each other (2.3). On Thomason's (2015) *non-dispreference view*, even inflectional morphology is copied with ease in certain types of contact situations. On Matras' (2015) *dispreference view*, clear-cut cases of foreign inflections having spread to the native RL lexicon are utterly rare. Under either view, inflectional morphology will be the most promising area, in which to search for possibly absolute limits to transferability. To decide when a morphological element has actually been borrowed, the standard criterion is attested productivity with RL bases; exceptionally, however, copied affixhood may emerge from RL paradigmatic considerations (2.4). The degree of structural borrowability, a key notion underlying the various borrowing scales, is a function of DL *lendability* and RL *adoptability* (2.5). That low lendability coupled with low adoptability should be detrimental to transfer is to be expected, but also factors that suggest a high degree of lendability may be forcefully counteracted by RL factors that tend to bar adoption (2.6). The specific character of the RL is, in other words, crucial to contact morphology and morphological transfer.

To test resistance to derivational borrowing (3.1), this paper explores propensities for *derivational-prefix borrowing* in the three typologically diverse languages Turkish, Basque, and Samoan. Exclusive native

³¹ On the Basque mixed derivational/inflectional *non-finite* perfective suffix *-tu*, believed to have come from Latin *-tu(m)*, see Eliasson (2012, 282–283, 285), with references.

suffixing and compounding in Turkish further nearly total resistance to making foreign derivational prefixes productive (3.2). Likewise, largely ailing prefixal derivational morphology and preferences for compounding and phrasal constructions contribute to total foreign prefix resistance in Samoan (3.4). Basque, on the other hand, in spite of its near lack of native derivational prefixes, experiences intrusion of an extraneous prefixation pattern and of some actual foreign derivational prefixes (3.3.). The Turkish and Samoan cases show that even in derivational morphology, which is the most borrowing-prone part of morphology, reluctance to adopt affixes may be utterly severe. Nonetheless, at the same time Basque—a minority language in a type of contact situation, where in practice every Basque speaker is bilingual—illustrates how extremely strong social pressure might eventually foreshadow possible typological change.

To test resistance in inflectional morphology, the paper first looks at complex nominal paradigmatic structure in Basque that in combination with phonotactic particulars leads to repelling Spanish plural inflections (4.1). The next case, also from Basque, involves resistance to incorporating Spanish verb inflections in a finite verb paradigm that is not only paradigmatically highly complex, but whose endings are also cross-paradigmatically well anchored in the pronominal system (4.2). In both instances, despite more than a thousand years of increasingly intense Spanish or Romance linguistic domination, not a single Romance inflectional ending has entered the Basque inflectional paradigms in question.

The lendability/adoptability patterns in the five cases examined here are summed up in Table 8.

A common premise in contact linguistics is that the more similar two DL and RL morphological structures are, the more likely is transfer (cf. 2.6). The reverse of this supposition is that the more two DL and RL structures differ, the less likely it is that transfer takes place. The latter formulation raises the question whether the differences can be so great, or add up to such an extent, that category-and-structure-maintaining copying is in principle no longer possible. In particular, can a morphological configuration in a potential RL be morphologically, semantically, and phonologically so complex and paradigmatically so well anchored that the total structure constitutes an almost quasi-mechanical, absolute blockage to the direct absorption of transferable material (that is, transfer without prior, preconditioning change)? Judging from cases like the Basque ones described in sections 4.1 and 4.2, this might well be true. If cases similar to the Basque ones just discussed can be regularly attested in a wide and diverse range of morphology-rich languages and no counter-examples of

relevant sorts can be found, then the universal-transferability hypothesis in its absolute form would seem to be correspondingly weakened.

Table 8. Summary of lendability/adoptability patterns for the morphological elements and language pairings examined in the paper (adoptability defined here in terms of the productivity, if any, of DL affixes with RL native bases).

<i>Domain of morphology</i>	<i>Potential DL(s)</i>	<i>Potential donation discussed</i>	<i>Lendability</i>	<i>Potential RL</i>	<i>Observed adoptability in potential RL</i>
<i>Derivation</i>	English, French, etc.	Prefixes	High	Turkish	Quite low
	English, Spanish, French, etc.	Prefixes	High	Basque	Limited
	English	Prefixes	High	Samoan	None
<i>Inflection</i>	Spanish, etc.	Plural suffix	High	Basque	None
	Spanish, etc.	Finite verb endings	Low	Basque	None

Special abbreviations

- adj.
- deriv.
- DL
- E
- infl.
- interj.
- L
- n.
- RL
- Sp.
- Sw.
- v.
- adjective
- derivational
- (potential) donor language
- English
- inflectional
- interjection
- Latin
- noun
- (potential) recipient language
- Spanish
- Swedish
- verb

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Appendix: List of native non-relic prefixes in Samoan

Examples and information on meaning and productivity, condensed from Mosel & Hovdhaugen (1992, 173–190), with some additions from Milner (1966). Single page numbers refer to Mosel & Hovdhaugen (1992).

<i>Prf.</i>	<i>Meaning/ function</i>	<i>Example</i>	<i>Base form</i>	<i>Productivity of prefix</i>
(<i>ʻ</i>) <i>ā-</i>	future	(<i>ʻ</i>) <i>ātaeao</i> ‘tomorrow morning’	<i>taeao</i> ‘morning’	
<i>ana-</i>	past	<i>anataeao</i> ‘this morning’ (for further exam- ples, also see 134)	<i>taeao</i> ‘morning’	“in a number of phrases referring to time past” (Milner 1966, 19)
<i>au-</i>	lacking some- thing	<i>aunifoa</i> ‘toothless’	<i>nifo</i> ‘tooth’	“not productive” (174)
<i>au-</i>	continuous or repeated activity	<i>autago</i> ‘grope’	<i>tago</i> ‘take’	“not completely unproductive” (174)
<i>faʻa-</i>	causative (and other functions)	<i>faʻamoe</i> ‘send to sleep’	<i>moe</i> ‘sleep’	“the most common prefix in Samoan” (175)
<i>fe-</i>	plurality of events (“plurality of action” (167))	<i>fealofagi</i> ‘love one another’ (<i>-(C)i</i> deriv. suffix; 205–207)	<i>alofa</i> ‘love’	“productive especially in reciprocal constructions of the pattern <i>fe=V=(C)aʻi</i> ” [equal sign marks a morpheme boundary] (180)
<i>ma-</i>	‘able to’	<i>mafai</i> ‘can’	<i>fai</i> ‘do’	“found in two words and ... probably the same as the ... adverb <i>ma</i> ‘able’” (184)
<i>ma-</i>	de-ergativizer	<i>maulu</i> ‘dash in’	<i>ulu</i> ‘enter’	“a non- productive prefix” (101), “not productive but ... quite common” (184)

<i>Prf.</i>	<i>Meaning/ function</i>	<i>Example</i>	<i>Base form</i>	<i>Productivity of prefix</i>
<i>mā-</i>	de-ergativizer (probably variant of de- ergative <i>ma-</i>)	<i>māisi</i> ‘be split’	<i>isi</i> ‘split’	“not productive” (185)
<i>ta-</i>	plurality of pa- tients or action	<i>tasisi</i> ‘raise, hoist’ (pl.)	<i>sisi</i> ‘raise, hoist’	“hardly productive today and seems to be losing ground” (186)
<i>ta-</i>	verbalizer	<i>tavae</i> ‘kick’	<i>vae</i> ‘leg, foot’	“a non- productive prefix” (102)
<i>tā-</i>	verbalizer (perhaps variant of verbalizer <i>ta-</i>)	<i>tāpuni</i> ‘shut’	<i>puni</i> ‘blocked’	
<i>ta‘i-</i>	derives distribu- tive numerals from cardinal numerals	<i>ta‘ilima</i> ‘five ... each’, ‘five at a time’, ‘every five’	<i>lima</i> ‘five’	“numerals (in- cluding <i>fia</i> [‘how many?’])” (Milner 1966, 230)
<i>tau-</i>	typically related to	<i>taulima</i> ‘bracelet’	<i>lima</i> ‘arm (with hand)’	“quite productive” (190)
<i>to‘a-</i>	“Cardinal and distributive numerals often ... have the pre- fix <i>to‘a</i> =, when used for counting human beings” (117– 118)	<i>to‘alima</i> ‘five (people)’	<i>lima</i> ‘five’	“In spoken Samoan the prefix tends to be dropped” (190). “The tendency to omit <i>to‘a</i> = (especially in spoken Samoan) seems ... to have increased significantly during the eighties” (118)

CHAPTER FOUR

INTERPRETING POEMS AND LITERARY FORMS: AN OPERATOR-DRIVEN SEMANTIC TRANSFORMATION PERSPECTIVE

KAMBIZ BADIE

Introduction

Interpreting a text is a crucial cognitive ability which manifests well in a wide range of issues such as “generation of new ideas”, as well as “creation of new pieces”, and besides that “emergence of new feelings/sentiments”. The central point in all these fields is a sort of transformation with regard to a number of concepts or semantic entities that are expected to yield new content with its own semantic structure. Obviously, based upon the complexity of a text’s content and the subject overriding this content, results of interpretation may become more complicated, making an “idea” tend to a “feeling” as the result. Such a transformation is supposed to be supported by a variety of operators each being responsible for transforming a number of semantic entities as the input into a new content as the result. Operators should be such that can cover a wide spectrum of transformation type mechanisms that are essential to cognitive activities.

What we are concerned with, at the first place, is to set a framework for justifying the process of semantic transformation with no particular emphasis on whether or not the result of transformation is supposed to be unique. Our major presupposition is that when certain patterns with certain semantic structures such as images including meaningful objects, texts or literary pieces, which follow certain relational structures between their constituents, are exposed to a perceiver, expectations may exist that he/she may end up with a new semantic structure (though at one glance different), with a new content. The important thing is, at the first place, to show that such a transformation can occur under activation of certain operators.

Summarization as an Approach to Transforming a Text into New Semantic Units

Text summarization has been developed within the scope of text mining to transform the original text into some semantic units standing for its summary (Inderjeet & Maybury (2000), Barzilay & Elhadad (1999), Hovy & Chin-Yew (1998), Chin-Yew & Hovy (2000), Mandar et al. (1997), Gregory & McCoy (2000), Gregory & McCoy (2002), Barker & Cornacchia (2000), Lloret et al. (2008)). Such a summary, though far shorter than the original text, should be comprehensive enough to represent the significant information included in the original text. Summaries can be either “extracts” containing the terms which have directly appeared in the original text (Gupta & Lehal (2010), Murray et al (2005), Ledeneva et al. (2008), Mihalcea (2005), Ferreira et al. (2013), Filatova & Hatzivassiloglou (2004)), or “abstracts” representing an abstraction of the original text’s content (Ganesan et al. (2010), Carenini & Cheung (2008), Moawad & Aref (2012), Genest & Lapalme (2011), Genest & Lapalme (2012)). In this sense, any sort of summarization with the purpose of extracting abstracts can be regarded a sort of text interpretation as well. Within the scope of such a sort of summarization, a wide range of approaches have been proposed based on extracting the commonalities between different sentences (as minimal semantic units) at a high abstraction level for all categories of “noun”, “adjective”, “adverb” and “verb” (Günes and Radev (2004), Wang et al. (2008), Garg et al. (2009)). Some approaches have also been proposed that try to figure out which specific predicates at a high abstraction level may have the ability to justify presence of similar predicates in the text (Genest & Lapalme (2011), Greenbacker et al. (2011), Munot & Sharvari (2015)). In such a case, “causality” or “reason” is supposed to represent the expected abstraction. In the meantime, a variety of approaches exist which function on the ground of characterizing the specific contexts that comprise certain propositions in the text with certain peculiarities (Nygaard et al. (2014), Zhang & Barnden (2012), Naderi et al. (2006)), thus presenting them as the constituents of the desired abstract. Looking into these approaches, the significance of such operators in deriving an abstract out of an original text becomes clear. It should however be noted that, when the original text tends to be of a literary type, such as a piece of poem, a noticeable amount of so-called background knowledge seems to become necessary to make such operators become activated in a meaningful way. Let us say, that the status of operators’ activation would largely depend on some types of background knowledge which might not have shown up in the text in a

direct manner. What I intend to elaborate in this paper is to show how such type of background knowledge may be employed to allow operators to be effectively utilized for extracting the required abstracts.

What Types of Operators Can Realize Semantic Transformations?

Basic Idea. The human mind will response to the co-presence of some concepts or semantic entities in a way that make them converge into some new entities, which are supposed to be related to them in some way. These new entities, standing for new ideas or new feelings, are expected to play a role in further inference processes with the purpose of building new decisions or announcing new concepts.

Types of Operators

- a. An operator responsible for transforming an ensemble of concepts (semantic entities) into some common features. For instance, when “Biology”, “Physics”, “Genetics”, “Chemistry” etc. are presented as inputs, the human mind may make a transition to new concepts such as “cognizing the surrounding environment” as a common feature shared by all these concepts. In a similar situation when “olive”, “cheese”, “tomato”, “crispy bread” etc. are presented as inputs, provided that the person likes all these things, his/her mind may converge into “good/favorable taste” which is a feature shared by all of them.
- b. An operator responsible for characterizing a class concept with regard to a number of concepts (semantic entities) as inputs. For instance, with regard to the previous example, ‘Natural Science’ can be offered as a class concept. Also, the ensemble of “green”, “red”, “blue”, “brown” etc. may be transformed into “color” or “natural quality” as an output concept.
- c. An operator responsible for characterizing the scenarios including a set of facts as semantic entities. For instance, having “contemplating over points”, “propounding questions” etc. as some input facts, “spirit of research” can be characterized as a scenario within which these facts are consistent.
- d. An operator responsible for extracting a possible relation between a set of facts as semantic entities. For instance, having “love” and “hatred” as two input facts, concepts such as “contrast”, “difference”, “conflict” etc. can be extracted as the possible relations between these facts. Also, having “opening a book”, “getting engaged with reading”, and “going

from one page to another” as the input facts, one may end up with the concept of “order priority in reading” as the relation existing between these facts.

- e. An operator responsible for characterizing an entity through linking some semantic entities as inputs. For instance, having “car”, and “handle” as inputs, “car’s handle” can be characterized as the result of such a linking. In another example, co-existence of “flower” and “leaf” as inputs, may make us end up with the concept “Petal” as the linking result. Obviously, to justify this linking, it is most essential for the entities to be benefited by some commonalities.
- f. An operator with a schematic structure responsible for characterizing the possible message(s) behind a set of facts as inputs. For instance, having “insistence on something strange or unusual” as the input may lead us to messages such as:
 - (i) “Doubt exists with regard to the common type of that thing”.
 - (ii) “There is lack of hope with regard to the common type of that thing”.
 - (iii) “One is tired of the common type of that thing”.
 - (iv) “One hopes to find something novel that does not exist among the ordinary types of that thing” and so on.

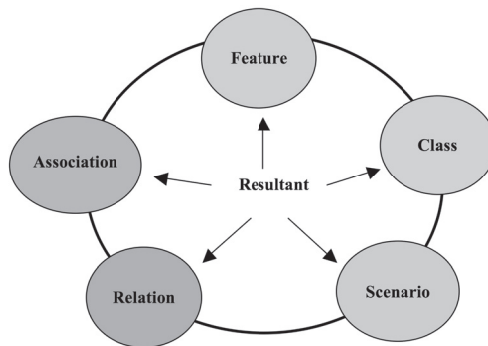


Figure1. Types of resultant for semantic transformation process

Taking the above types of operators into account, it can be easily seen that the resultant of a semantic transformation process can be either a “feature”, a “class”, a “scenario”, a “relation”, a “hybridation” or an “association” as depicted by the corresponding examples. (Figure1)

Some Scenarios

- a) Suppose a scenario wherein there is a favorable sunshine in the sky and a child is smiling somewhere in a farm.

As is well known a “child’s smile” can stand for a number of semantic entities like “innocence”, “hope”, “gaiety” etc. But, by all means, “sunshine” may also stand for entities like “hope” and “gaiety”. Considering these facts together, while taking into account the operators already discussed, some new semantic entities may emerge as illustrated in Figure 2(a).

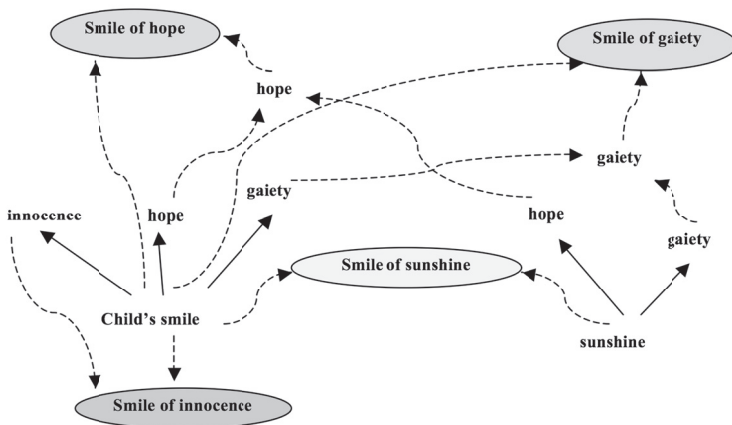


Figure 2(a). New semantic entities emerged in the scenario of “sunshine”.

(a child’s smile) ^ (sunshine).

(child → innocence), (smile → hope), (smile → gaiety), (sunshine → hope),
(sunshine → gaiety).

(smile is bound with sunshine)

- 1) (smile of hope)
- 2) (smile of gaiety)
- 3) (smile of sunshine)
- 4) (smile of innocence)
- 5) (sunshine brings hope)
- 6) (sunshine brings gaiety)
- 7) (sunshine brings smile)

- b) Suppose a scenario exists wherein there is a dry flower laid within a book of poems, and on the corresponding page some poems have been written with regard to “man in search of meaning”.

As is well known “flower” can stand for semantic entities like “odor” and “color”. Also, “poem” may stand for entities like “meaning” and “wisdom”. Considering these facts together, and again taking into account the previously-mentioned operators, some new semantic entities may show up as illustrated in Figure 2(b).

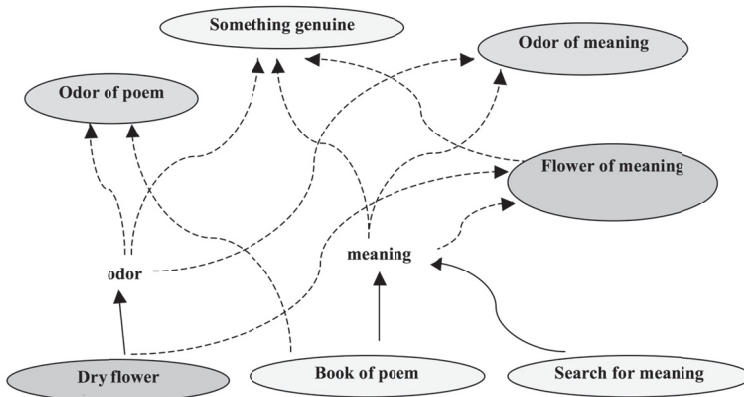


Figure 2(b). New semantic entities emerged in a scenario of “book of poems”.

[Dry flower (into odor) within a book of poems (into meaning)] ^
 [written on the page some poems with regard to man in search for meaning (into something genuine)]

odor meaning something genuine

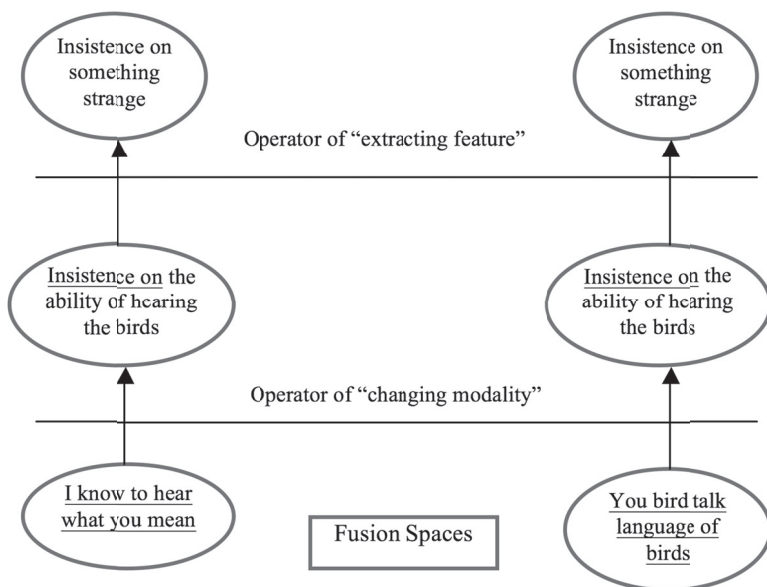
- 1) (glorious odor of meaning)
- 2) (odor of poem)
- 3) (odor of search for meaning)
- 4) (flower of meaning)
- 5) (poem is just like a flower)

Interpreting Mystical Poems as the Aim of Semantic Transformation

As an example consider a mystical Persian poem of Rumi whose translation into English is: “You bird, talk language of birds. I know to hear well what you mean (what your message is)”. The entire process of semantic transformation, which is essential to interpreting this poem, is illustrated in Figure 3(a). As can be seen in this figure, changing the modality of the two portions in the corresponding poem leads us to the fact of “Insistence of the ability of hearing the birds”. On the next stage, since “Hearing the birds” itself is strange in nature, the operator responsible for extracting features yields “Insistence on something strange” as the result of the transformation. At this time, taking into account the type of operator with a schematic structure, we may have the following facts as the possible messages behind this fact.

- a. Having doubt about the common (ordinary) type of the corresponding thing (“human being” in this case as the common type of listener).
- b. Lack of hope with respect to the common type of the corresponding thing.
- c. Being tired of the common type.
- d. Having the chance to find something novel that does not exist among the common types of that thing.

It should, however, be noted that, depending on the content of other poems following this poem, more specific messages compared to those mentioned above, are also conceivable.



Poem (I): You bird, talk language of birds
I know to hear what you mean.

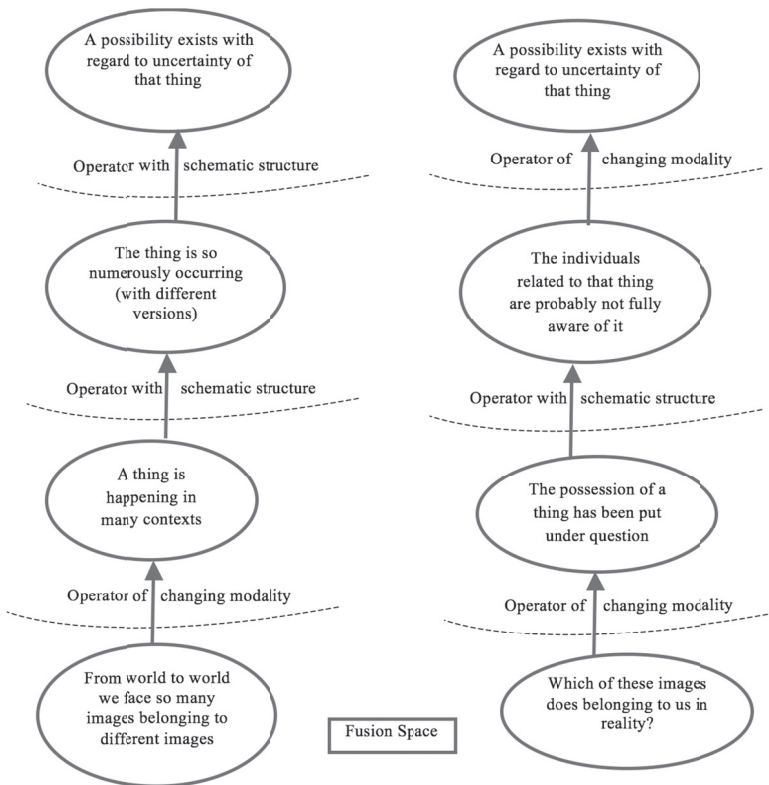
ای مرغ بگو زبان مرغان من دانم رفر تو شنیدن

Figure 3(a). Process of interpreting poem (I) based on semantic transformation.

Let us consider another mystical poem again belonging to Rumi the translation of which into English is: "From world to world we face so many images belonging to different faces, which of these images does belong to us in reality?". With regard to the first part of this poem, changing the modality of the related text we may end up with the fact that "A thing is happening in many contexts". An operator with a schematic structure may take us to the fact that "The thing is so numerously occurring (with different versions)". Once more applying an operator with a schematic structure we may at this time end up with the fact that "Possibility exists with regard to uncertainty of that thing". With regard to the second part, changing its modality, "The possession of a thing has been put under question" may be derived as a message. At this stage, applying an operator with a schematic structure may take us to the fact that "The

individuals related to that thing such as the one who possesses it, the one who is an object for it, or the one who is informed of it, is probably not fully aware of this thing (holds a sort of uncertainty in grasping the nature of that thing)". The entire process of semantic transformation for extracting the message behind this poem is illustrated in Figure 3(b).

Fusing the facts derived from the two parts, "uncertainty exists with regard to the things (images) in the surrounding world" can be extracted as the final message.



Poem (II): From world to world we face so many images belonging to different faces

Which of these images does, in reality, belong to us?

Figure 3(b). Process of interpreting poem (II) based on semantic transformation

Concluding Remarks & Future Prospects

Semantic transformation can be viewed as a ground for an issue of interpretation that manifests well in issues like “idea generation”, “creation of new pieces” as well as “emergence of new feeling”. Operators ruling over such a process are to be deeply rooted in areas such as Semantics, Psychology and Wisdomics which are concerned with semantic entities in a serious way. As future research programs, the following issues can be of high concern:

- a. How such operators can be stored in a way to well appear in or participate in the process of transformation?
- b. How schematic structures may be derived using a meta-domain theory and how they may influence such a process of transformation?
- c. What could be the role of so-called “context” in deriving the very schematic structures which help transformation processes becoming realized in a reasonable way?

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CHAPTER FIVE

ON THE INFLUENCE OF SIMILARITY ON PHONETIC TRANSFER DURING THE ACQUISITION OF GERMAN WORDS BY DANISH LEARNERS¹

LARS BEHNKE

Cross-linguistic similarity in Foreign Language Learning

When native speakers of Danish decide to learn German as a foreign language, most of them will quickly find that it is, after all, not that foreign. The typological similarity and genetic proximity of the two languages should become more or less evident on all structural levels. As a consequence, transfer, i.e. the use of L1-elements in the L2, turns out to be an effective learning strategy. For the description of the (potential and actual) learning outcomes, linguists are usually more interested in those instances of transfer that lead to discernible deviances from the target language, i.e. “negative” transfer. L2-learners, on the other hand, rather look for similarities in order to facilitate the learning process, as, e.g., Ringbom (2007) reminds us. A sufficient amount of instances of L2-adequate transfer, i.e. “positive transfer”, can have an accelerating effect on the learning process and increase the learners’ willingness to apply L1-elements in the L2 (cf. Odlin 1989, Young-Scholten 1985, Corder 1979, 32f.).

Other linguists focus rather on the difficulties in learning a closely related language. Laroche (1981) goes as far as to ask if a target language can be too close to be learnt at all, where “learning” supposedly means “reaching L2-adequacy”. Viewed from a broad perspective, there is reason

¹ I wish to thank students and teachers at Balsmoseskolen, Smørum and Studie-skolen, Copenhagen for their kindness to participate in this experimental study.

to believe that the learning process towards L2-adequacy comes to a halt (or is at least slowed down) in the case of closely related languages, because successful communication at a non-adequate level makes further advances unnecessary. But there are also perceptual reasons for the supposed difficulties to learn a closely-related language, or rather specific elements of it. In his studies on L2-sound acquisition Flege (1995) observes, that sound similarity between L1 and L2 makes it difficult to create an adequate L2-category, different from the one of the corresponding L1-sound. While cross-linguistic similarity can be a stimulus for transfer and result in a faster learning progress than with distant languages, it can in the long run also become an obstacle for the attainment of complete L2-adequacy.

This paper addresses the question of the effect of cross-linguistic similarity on L2-learning on a smaller scale. I wish to present the results of a preliminary experimental study, in which I analysed the L2-realizations of selected “difficult” sounds of German in two different lexical environments: in cognates, i.e. words which show a Danish-German semantic and formal similarity and in non-cognates without such similarity. The question behind this is whether phonetic transfer can be seen as a by-product of lexical transfer and thus be predicted from the similarity of the embedding structure.

Similar sounds in similar words – A hypothesis on L2-sound acquisition in Danish-German cognates

The assumption that phonetic transfer can, at least in part, be predictable by lexical factors can be supported by two observations: Firstly, according to Odlin (1989, 77) it is first of all words that are responsible for the learner’s subjective assessment if the language that has to be learnt is similar to his or her L1 or not. The similarity of isolated sounds (as well as syntactic structures, morphological elements, semantic features etc.) seems to be secondary in this respect. Secondly, sounds are usually learnt as parts of words and not in isolation or as parts of smaller or larger units than words. This holds at least for first language acquisition (cf. Bybee 2001, 15), but phonetic exercises in foreign language instruction also make frequent use of words as reference units for teaching sound contrasts.

This study is interested in instances of negative phonetic transfer from German to Danish (i.e. foreign “accent”). Given the priority of words in the learning process and their role for similarity judgements, I hypothesize a “cognate effect”, which predicts, that negative transfer phenomena are likely to be more persistent if they are embedded in newly learnt cognates

than in newly learnt non-cognates as a consequence of an overgeneralization of transfer that begins in the lexicon. This is in line with Ringbom (2007) who observes that learners who have realized that an acquired L2-word is parallel to one of their own, assume 1:1-relations on all other structural levels that this word helps to build and ignore the mismatches until the further learning process proves them wrong (cf. also Laufer-Dvorkin 1991, 14).

As an example, let us assume the Danish learner's task is to learn the German L2-words *Klippe* 'cliff' and *Grippe* 'flu'. The word-medial plosive /p/ presents some difficulty for a Danish learner, because it will have to be realized with aspiration in this position ([kl'ɪpʰə], [gɾ'ɪpʰə]), and although aspiration of plosives is well known in Danish, it is normally (cf. realisation before pause) restricted to initial positions (cf. Grønnum 2005, 49f.). In word-medial position² Danish has only the unaspirated allophone [b]. As "accented" L2-realizations of the words one would expect something like [kl'ɪbə] and [gɾ'ɪbə]³. Now ger. *Klippe* has a Danish cognate *klippe*, while ger. *Grippe* has not (dan. *influenza*). It is therefore assumed that the proposed negative transfer is more persistent in *Klippe* than in *Grippe*, so that at a certain point in the learning process one would expect the parallel use of the accented L2-form [kl'ɪbə] and the unaccented, L2-adequate form [gɾ'ɪpʰə], because the missing lexical similarity of the latter to its Danish equivalent offers no stimulus for generalizing transfer from the lexical to the phonetic level.

The German lexicon has a fairly high number of lexical entries that could well qualify as German-Danish cognates due to intense language contact between Middle Low German and Danish in the late Middle Ages. Grønnum (2005) explicitly includes – in her description – the Middle Low German loanwords of that era into her description of Modern Danish phonology.⁴ Some researchers exclude loanwords from their definition of "cognates" and reserve the term for genetically related words only (cf. Bond 2005, 55f.). Since the difference probably plays no role from the learners' perspective, as Odlin (1989, 26) argues, they will nevertheless be included here.

² In Danish phonology this position is described as „syllable-final“, because the phonological syllable includes the position before unstressed [ə] (cf. Grønnum 2005, 253ff., Basbøll 2005, 43).

³ We will ignore the difference in vowel quality of the stressed vowel here.

⁴ The ease with which these were integrated into Danish is attributed to the structural similarity of both languages (cf. Braunmüller 1993, Molde 1997, 77).

As can be seen from the above, the present study focuses on phonetically dissimilar sounds in lexically similar and dissimilar environments. This is not to say, that the sounds themselves do not represent different degrees of cross-linguistic similarity. Flege has done extensive research on how learners create representations of L2-sounds, which has led to his *Speech Learning Model* (Flege 1995). The model states that sound correspondences are perceived on the allophonic level and that new (and L2-adequate) sound categories can be established if the learner discerns some phonetic difference between that sound and its closest correspondent in the L1. For similar sounds without any perceivable difference (i.e. similar, but not “identical” sounds) learning results in “merged” sound representations that will be the basis for sound realizations in both the native and the target languages (cf. Flege 1986).

It is evident, though, that the learner’s assessment of sound similarity cannot be predicted on the basis of a structural comparison of the sounds involved. Odlin (1989, 114) offers a revealing example in this respect. According to him, native English learners of French are inclined to perceive a phonetic similarity between the (English) postalveolar approximant [ɹ] and the (French) uvular fricative [ʁ] once they appear in cognates like e.g. *route* (cf. also Young-Scholten 1985, 7).

Flege’s Speech Learning Model, which tries to predict if L2-sounds are produced adequately or not, does not make any reference to the lexical or any other structural level the investigated sounds help to build, so that the results of this preliminary study could contribute to further research on the interrelations between the two levels and, potentially, the integration of a lexical factor into the model.

This study is, of course, not the first to deal with the influence of cognate status on L2-sound acquisition. Amengual (2012) and Flege & Munro (1994) analyzed the VOT in initial [t] in cognates like *teléfono* or *taco* in utterances produced by Spanish-English bilinguals. Amengual found that the VOT of [t] in span. *teléfono* was significantly longer (and therefore “more English”) than in non-cognates, while Flege & Munro found shorter VOT-values in engl. *taco*. Carroll (2013) asked English learners of German to pronounce German names, part of which share a common historical origin. She found greater German-English sound resemblances in historically related names, which indicates an activation of the English sound categories. Hammerly (1982) observed that English learners of Spanish make more audible “mistakes” in the production of /r/ in *Americana* or /s/ in *visita* than in words without an English equivalent. All these studies indicate that cognate status hampers the L2-adequacy at some point in the learning process. This study differs from most of the above mentioned in

that it tests its hypothesis on the basis of “bilateral” cognates and not on internationalisms, i.e., the cognates chosen here cannot be assumed to be known in other languages than the contacting ones and their cognate status is likely to be realized by the learners only “at first sight” and is not assumed beforehand.

Experimental study

For the present study five sounds of German were selected whose adequate articulation is known to cause problems for Danish learners (cf. Colliander 1996; 2003). Following Flege, the level of abstraction was the allophonic level, since sound correspondences are perceived here. Three plosives and two fricatives were chosen. The plosives were the aspirated [p^h], [t^h] and [k^h] in word medial position like *Puppe* ['pʊp^hə] ‘doll’, *Motte* ['mɔt^hə] ‘moth’ or *Glocke* ['glɔk^hə] ‘bell’. As in the above mentioned example *Klippe* negative transfer is expected because Danish learners are likely to apply the rule of Danish that allows only unaspirated [p], (and eventually [d] and [g]) in this position. The fricatives were the voiced [z] in word-initial position like *Sessel* ['zɛsəl] ‘armchair’ and word-medial position like *Pinsel* ['pɪnzəl] ‘paintbrush’ and the unvoiced uvular [χ] in word-medial position like *Kachel* ['kaxəl] ‘tile’, final position like *Loch* [lɔχ] ‘hole’ and prefinal position before [t] like *Docht* [dɔχt] ‘(candle) wick’. German [z] is always voiced in intervocalic positions, in initial position it is in free variation with its unvoiced counterpart [s], with North German varieties preferring the voiced variant (cf. Kohler 1995, 155). [χ] is described by Kohler (1995) as one in a class of three allophones, together with the palatal [ç] and the velar [x]. Its distribution is restricted to positions after the vowel [a(:)] and [ɔ]. Neither of the two fricatives is a systematic allophonic variant of a Danish phoneme (cf. Basbøll & Wagner 1985). The usual substitution for [z] is [s] and [k] for [χ].

Two groups of informants took part in the experiment. All of them were residents in the Copenhagen area and were learning German as a foreign language via instruction. English was their first foreign language. The groups differed in age and level of proficiency: Group A (14 informants) had an average age of 15,1 years and had been learning German for 2,5 years. Outside the classroom, where their German lessons took place, none of them had considerable contact with German(s). Group B (11 informants) showed a wider age-range with an average of 39,5 years. They were regular participants in German courses on B2-level at a private language school. Apart from their weekly course, they were practising German in private or work-related contacts with Germans and occasionally

through the media. These differences made it possible to test transfer mechanisms at different learning stages (cf. also Flege 1995, 268f.).

As for the lexical items 75 “rare” words (cognates and non-cognates) were chosen that contained one of the above mentioned sounds. In a pre-test informants were asked to translate into German some specific Danish sentences, in which the German translation was provided except for the word in question, the Danish original of which was repeated in brackets, as in the following example:

- (1) På Capri er der en berømt blå grotte.
Auf Capri gibt es eine berühmte blaue _____ (grotte).

After the test the correct solutions were presented by the instructor and repeated by the informants. Informants were asked to learn them for the next lesson. Each informant was given a recording of the 75 sentences as a learning material.

To make sure that the words to be investigated in the following experiment were unknown to the informants, only those 36 words were chosen, the scores of which for correct answers in the pre-test were the lower ones, with an even distribution of sounds, positions and cognate/non-cognate status being ensured (see the list in the appendix). The words shared a trochaic foot, but differed in the vocalic environment of the investigated sounds.

The actual experiment was camouflaged as a word learning test. In individual sessions informants watched nine slides with four Danish sentences that had to be translated into German, much like in the pre-test, but with new and simpler sentences. The four words to be inserted into the gaps appeared in random order at the top of each slide. Each word was read aloud by the instructor at the beginning. Informants were informed that the entire test would be recorded (with a TASCAM dr-05 recorder with external microphone), including the German native instructor’s utterances, which provided the necessary reference values.

The sounds in question were afterwards selected and analyzed with PRAAT (Boersma & Wenink, <http://www.fon.hum.uva.nl/praat/>). Transfer phenomena were assessed according to two acoustic and/or articulatory parameters:

- plosives: VOT and manner of articulation
- [z]: center of gravity (CoG, i.e. the mean frequency at a given phase) and duration
- [χ]: manner of articulation and CoG

One might miss [voice] as a feature for [z], but due to the fact that voice is optional in initial positions, duration seemed the more reliable feature as a manifestation of its lenis-character.

As negative transfer, it was expected that the CoG-value for the learners' L2-realizations of German [z] was higher than for the German reference sounds, the duration of [z] longer, the VOT for plosives shorter and the manner of articulation of German [χ] plosive. The tendency to plosive lenition (cf. Phrao 2012) was the reason for including manner of articulation as a parameter for the plosives, where fricative and approximant realizations would count as negative transfer. The CoG-values of [χ] realizations were classified as L2-inadequate if they differed from the German reference values, because one cannot easily speak of transfer here, since no fricative substitution for [χ] was expected by contrastive analysis. For the gradual features VOT, CoG and duration negative transfer was assumed if the measured values for the learners' L2-realizations were significantly more "Danish-like" than the German reference values.

Results

Concerning plosives, the following data were obtained: For manner of articulation two different realizations were differentiated on the basis of both visual and auditory impressions provided by the spectrogram and sound files: plosive (where the spectrogram showed a sharp line indicating a sudden release of air) and non-plosive, which included three different realizations: a) weak plosive (where a plosion was audible, but no clear sharp line was displayed in the spectrogram, indicating a weak release), b) fricative (without visible or audible plosion, but the characteristic noise), c) approximant (without plosion, but with ongoing visible vocal cord vibration during the articulation).

The German reference values for the sounds showed 100% plosive realizations for all three plosives. The L2-learners showed only 79% plosive, 13% weak plosive, 4% fricative and 5% approximant realizations, indicating negative transfer. A comparison between cognates and non-cognates in the two groups showed that neither of them produced significantly more non-plosive realizations in cognates than in non-cognates (Group A: 32% for cognates vs. 28% for non-cognates; Group B: 10% for cognates vs. 19% for non-cognates). This result was confirmed by an analysis of the separate plosives, so that the expected cognate effect could not be observed according to this parameter. A comparison between the two groups revealed a significantly higher percentage of L2-adequate realizations in

cognates for the more proficient Group B, while non-cognates showed no significant differences between the groups.

For the VOT-values only those realizations were analyzed that were marked “plosive” according to the above mentioned definition. Surprisingly, the average duration of the VOT in L2-realizations did not differ significantly from the German realizations or was even longer (the first number indicating the mean values for learners’ L2-realizations, the second for the reference sounds): [p]: 39 msec vs. 36 msec; [t]: 60 msec vs. 53 msec ; [k]: 51 msec vs. 48 msec. Perhaps the overall picture would have been different, had the L2-realizations that were classified as “non-plosive” been integrated, but no analysis was possible here with the available technical means.

The separate analysis of VOT-values in cognates and non-cognates again revealed no significant longer VOT in non-cognates for any of the three plosives for Group A. Group B realized [t^h] and [p^h] with a marginally shorter VOT in cognates, which would only be a weak confirmation of the proposed cognate effect. Furthermore, Group A showed almost consistently significantly longer VOT-values than the German reference value, regardless of cognate status. Group B, on the other hand, showed significantly longer or L2-adequate values only in non-cognates, while plosives in cognates were produced with either L2-adequate or shorter VOT-values.

Turning to the fricative [χ] three values were assumed for the analysis for manner of articulation: a) fricative (i.e. L2-adequate), b) plosive and c) zero, where neither a plosion nor a friction was visible or audible. Again, the overall picture does not provide evidence for the cognate effect in any of the analyzed positions. Single lexemes like *Stachel* ‘sting’ (a non-cognate) showed even contrary tendencies, with a significantly higher percentage of plosive realizations than for cognates in Group B. Only if one takes plosive and zero realizations together as instances of negative transfer (which is not unreasonable to do, since zero could indicate a long, unreleased closure), there is a significantly higher percentage of L2-adequate realizations for non-cognates, but only for Group A and only in the position before /t/. All in all, this parameter provides no convincing evidence for the existence of a cognate effect either.

For the analysis of CoG, only the fricative realizations were analyzed. The mean value for CoG in the three positions was consistently lower for the learners’ L2-realizations than for the German reference words, which might be indicative of less turbulence in their production. In some instances the auditory impression indicated a rather fronted, palatal articulation, which might have caused the occasional higher CoG-values, espe-

cially in Group A. The overall picture is not very clear with much lexical variation. The comparison of CoG in cognates and non-cognates does not reveal any significant difference.

The evidence presented so far seems to indicate that the hypothesized cognate effect is nothing but a theoretical construct without any basis in reality. This picture changes, though, when we have a look at the L2-realizations of [z].

The first parameter, duration, shows the expected negative transfer in both analyzed positions: the mean duration of the learners' L2-realizations is significantly longer than that of the German reference sounds (initial position: 162 msec vs. 86 msec; medial position: 106 msec vs. 64 msec), as would be expected from a more [s]-like articulation. The comparison between cognates and non-cognates reveals an interesting difference between the two groups. For Group A no significant difference could be attested: The mean length was 176 msec for cognates vs. 178 for non-cognates in initial and 112 msec for cognates vs. 119 msec for non-cognates in medial position. Group B, on the other hand, produced significantly shorter and more L2-adequate realizations of [z] in non-cognates than in cognates (mean values for initial position: 164 msec in cognates vs. 129 msec in non-cognates; for medial position: 101 msec in cognates vs. 83 msec. in non-cognates). If this is in line with the proposed cognate effect, this would indicate that it is characteristic of an advanced stage of learning.

The CoG-values do not contradict the findings for duration. As would be expected the mean values for each word were significantly higher than in German, but no significant difference between cognates and non-cognates was found. But Group B still showed significant lower CoG-values in individual lexemes than Group A.

Discussion and conclusion

This preliminary experiment has demonstrated, that there is no evidence of greater persistence of negative transfer in cognates than in non-cognates, with the exception of [z], which proved to be more L2-adequate in terms of duration for non-cognates in the articulation of more proficient speakers. This could lead to, at least, four different conclusions: 1) There is no cognate effect at all, and the results found for [z] will have to be explained differently; 2) The selection of words classified as cognates was not careful enough, since their psychological similarity was not tested beforehand in independent ratings (cf. Friel & Kennison 2001). For some words like *Stachel* 'sting' there existed Danish homonymic forms for the

expected L2-realization (*stakkel* ‘poor’), which might have prevented the occurrence of negative transfer, which was expected; 3) More acoustic features should be analysed with more precise technical equipment in order to achieve a fuller picture; 4) There is a cognate effect, but it can only be observed with sounds that are perceived as more similar than others.

In order not to dispense with the idea of a cognate effect, Flege’s assumption that a higher degree of cross-linguistic similarity between corresponding sounds causes learning problems could warn us not to abandon the thought all too hastily. Although it was not tested independently there is good reason to believe that speakers perceive the differences between [x] and [k] or [p^h] and [b] as more salient than that between [z] and [s] (cf. Jessen 1998 for a description of the phonetic differences). Nevertheless, Colliander (1996, 52) claims, that German [z] causes almost insurmountable difficulties for a Danish learner. If [z] and [s] are perceived as more similar than the other pairs, then we could modify our initial hypothesis and say that a phonetic transfer is triggered by lexical similarity only if the perceptual difference between the corresponding sounds is not too salient in itself. If it is, then the phonetic dissimilarity would hamper the transfer mechanism triggered by lexical similarity.

But why should such a cognate effect occur only at an advanced level of proficiency? The experiment showed that beginners do not make any systematic difference between cognates and non-cognates when trying to articulate German [z]. A possible explanation for this could be that the L1 might not be systematically involved in the earlier stages of the learning process and that it requires a more advanced level to make use of one’s mother tongue and draw analogies from it as an advanced learning strategy. At least for some learners it might be the case that all new L2-words look equally “foreign”, no matter if there is a corresponding element in their L1 or not. Corder (1979, 28) makes a similar point, where “distance” is once more treated as an advantage for L2-learning:

In the earlier stages [learners] seem to err in regarding the mother tongue as more unique than it is in fact. As he progresses the more realistic his assessment of the uniqueness of his mother tongue becomes and the more willing he is to borrow from it, or as we might say, the more realistic his assessment of language distance becomes.
(Corder 1979, 28)

A further clue to this is that the range of the learners’ L2-realizations of the selected sounds in our experiment is far wider for the beginners’ group

(A) than for the more proficient one (B), including many instances that could not be predicted by contrastive analysis and cannot be interpreted as transfer. The beginners' attempts to articulate words with, e.g., [χ] included not only the predicted [k], but also [ç], [ʃ] or zero. It seems, that these sounds are rather the results of attempts at "imitation" (cf. Odlin 1989, 115) than the result of an activation of L1-sound representations. If this is the case, then lexically determined negative phonetic transfer would be a clue for a more advanced level of learning.

More research could provide answers to the questions raised by this preliminary experiment. If there is some grain of truth in the proposed cognate effect, then Flege's Speech Learning Model would have to be supplemented by a lexical factor. The effect would suggest that phonetic transfer cannot be studied as if the sound structure of language was autonomous, but in its interrelations with other, embedding structures.

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Appendix: Analyzed Danish-German cognates and non-cognates

<i>Cognates</i>		<i>Non-cognates</i>	
<i>German</i>	<i>Danish</i>	<i>German</i>	<i>Danish</i>
Sorte ['zɔʰtə]	sorte ['sɔ:ʰd]	Sessel [z'esl]	lænestol ['læ'nə,sdø'l]
Säbel [z'ɛ:bəl]	sabel ['sa:'bəl]	Sarg [za'k]	kiste ['ki:sdø]
Pinsel [p'inz]	pensel ['pen'səl]	Saite [z'aetə]	streng ['sdræn']
Kachel [k'aχ]	kakkel ['kagəl]	Sense [z'enzə]	le ['le:]
Rochen [ʁ'ɔχn]	rokke ['rʌgə]	Wirsing [v'r'zɪŋ]	savoj [sa'vɔj]
Drache [dʁ'aχə]	drage ['drɑ:wə]	Stachel [ʃt'aχ]	brod [brʌð]
Schach [ʃaχ]	skak ['sgəg]	wach [vaχ]	vågen ['våwən]
Koch [kɔχ]	kok ['kʌg]	Loch [lɔχ]	hul ['hål]
schwach [ʃvaχ]	svag ['sva:(j)]	Gracht [grʌχt]	kanal [ka'na:l]
Tracht [tʁaχt]	dragt ['drʌgd]	Docht [dɔχt]	væge ['vɛ:(j)ə]
Kuppel [k'ʊpl]	kuppel ['kubəl]	Puppe [p'ʊpə]	dukke ['dægə]
Klippe [kl'ipə]	klippe ['klebə]	Kappe [k'apə]	hætte ['hɛdə]
Steppe [ʃt'ɛpə]	steppe ['sdebə]	Grippe [gr'ipə]	influenza [enflu'ensa]
Grotte [grɔ'tə]	grotte ['grʌdə]	Motte [m'ɔtə]	møl ['møl]
Kutter [k'ʊtə]	kutter ['kudʌ]	Natter [n'atə]	snog ['sno:]
Gitter [g'ite]	gitter ['gidʌ]	Klette [kl'ɛtə]	burre ['burʌ]
lecker [l'ɛkɐ]	lækker [lɛgʌ]	Höcker [h'œkɐ]	pukkel ['pægəl]
Glocke [gl'ɔkə]	klokke ['klægə]	Spucke [ʃp'ʊkə]	spyt ['sbød]

CHAPTER SIX

“YOU MUST BE SOME KIND OF [Kɪɛ̃ːzɪ], YEAH”: TOWARDS A NEW ORLEANS ENGLISH PHONOLOGY¹

CHRISTINA SCHOUX CASEY

Introduction

New Orleans, Louisiana presents a particularly interesting site for phonological inquiry because it has been nearly unstudied, and also because, for 300 years, it has been a linguistic island in the American Gulf South.² The varieties found in the city are not part of either American Inland Southern or Coastal Southern English. This is due in part to the influence of colonial French, and in part to the fact that the city has historically been closer to New York City and Charleston, South Carolina than to nearby Baton Rouge, Louisiana or Jackson, Mississippi in terms of settlement patterns. The *Atlas of North American English* describes New Orleans as a “distinctive subregion” of the South, and characterizes New Orleans English as “marginal to the South in many respects.”³

Drawing on four years of observation, and on interview and reading passage data collected from 71 New Orleanian participants, this chapter reports preliminary findings that New Orleans remains marginal to the South in terms of phonological features. In particular, the phonology of New Orleans African American English (NOAAE), and a variety known as Yat English, remain divergent from other Southern varieties, possessing French lexical items and the so-called COIL/CURL reversal, as well as

¹ This chapter is dedicated with gratitude to Dr. Henry Lacey.

² Richard Bailey. *Speaking American*. (Oxford: Oxford University Press, 2011).

³ William Labov, Sharon Ash & Charles Boberg. *Atlas of North American English (ANAE)*. (Berlin: Mouton de Gruyter, 2006): 241, 260.

distinctive intonational and prosodic features.

The chapter first gives a brief account of the city's settlement history and Francophone heritage, major factors influencing the city's speech. Then, a preliminary description is given of attested features in two varieties in the city, in comparison to features of supralocal, general African American English (AAE).⁴

Settlement History

The varieties of English found in New Orleans, Louisiana, are unique among American Englishes because the city was an international, Francophone colony for eighty years before the Louisiana Purchase made Louisiana part of America. France founded the colony of New Orleans in 1718, on land originally used as a trading post by Native Americans. The original colonial French population was enlarged by enslaved Africans and sailors, traders, and settlers from across the Caribbean.⁵ The population was predominantly composed of Creoles, a contested term that includes people of mixed colonial European and African descent, with the term *Creole* used for light-skinned people, and *Creole de couleur* used for darker-skinned people.⁶ The city of Creoles was ceded to Spain in 1763, but was returned to France in 1801. In 1803, Napoleon sold New Orleans to the United States as part of the Louisiana Purchase. In 1809, the population doubled when 9,000 Francophone residents of Saint-Domingue (now Haiti), immigrated to New Orleans following Toussaint L'Ouverture's successful overthrow of the French colonizers.⁷ Concomitantly, the New Orleans slave depot was one of the largest in America, bringing thousands

⁴ Because of space constraints, and because the chapter explores phonological and phonetic features rather than syntactic features, which show greater social stratification and stigmatization, differences between AAE and African American Vernacular English are not described.

⁵ Arnold Hirsch & Joseph Logsdon. *Creole New Orleans: Race and Americanization*. (Baton Rouge: Louisiana State University Press, 1992). Richard Campanella. *Geographies of New Orleans: Urban fabrics before the storm*. (Lafayette, LA: Center for Louisiana Studies, 2006).

⁶ Virginia Dominguez. "Social Classification in Creole Louisiana." *American Ethnologist* 4 (1977): 589–602.

⁷ Thomas Fiehrer. "Saint-Domingue/ Haiti: Louisiana's Caribbean Connection." *Louisiana History: The Journal of the Louisiana Historical Society* 30 (1989): 41.

of enslaved Africans to the city, some of whom remained there.⁸ Because of this mix of French and Spanish colonialism and American slavery, the historians Arnold Hirsch and Joseph Logsdon argue that New Orleans developed as a “distinctive cultural entrepôt, where people from Europe and Africa initially intertwined their lives and customs.”⁹

New Orleans in the early nineteenth century was primarily Francophone, but English gained ascendancy as the number of English speaking emigrants rose, so that by 1820 French speakers remained just barely in the majority.¹⁰ For decades, French and English competed for dominance as the primary language,¹¹ and although the city gradually became English-monolingual, French reflexes remain scattered through the lexicon. Emigrants continued to enlarge the city, particularly Irish, Germans, and Italians. By 1860, more than 25,000 Irish-born people, and 11,000 German-born, had arrived.¹² At the turn of the twentieth century, 15,000 Italians, predominantly Sicilians, settled in the city.¹³ Then, in the decades after the American Civil War, more than 40,000 former slaves emigrated to the city, primarily from rural plantations.¹⁴ These “American blacks,” mostly uneducated and Anglophone, in contrast to the urbane, educated, Francophone *creoles de couleur*, doubled the population of color in New Orleans. African Americans, Anglo-Americans, Creoles, Italians, Germans, and Irish constitute the largest historical demographic groups in New Orleans.

New Orleans English Varieties

In the early twentieth century, as French eroded, the speech of the city, particularly of the non-upper class, coalesced into a distinctive variety of English. The variety was distinctive because it sounded like in no other

⁸ John Blassingame. *Black New Orleans*. (Chicago: University of Chicago Press, 1973). Walter Johnson. *Soul by Soul: Life Inside the Antebellum Slave Market*. (Cambridge: Harvard University Press, 1999).

⁹ Hirsch & Logsdon, *Creole New Orleans*, x.

¹⁰ Campanella, *Geographies*, 2006.

¹¹ Shane Lief. “English as a ‘para-hegemonic’ Language in 19th Century New Orleans: A Reassessment of ‘The Foundation of English in the Louisiana Purchase: New Orleans 1800-1850.’” *Southern Journal of Linguistics*, 36 (2012): 37–44.

¹² Campanella, *Geographies*, 248.

¹³ Campanella, *Geographies*, 321.

¹⁴ Burton Peretti. *The Creation of Jazz: Music, Race, and Culture in Urban America*. (Urbana: University of Illinois Press, 1994): 25.

place in the South, or the country. New Orleans' phonological distinctiveness was demonstrated not only by the presence of French-influenced lexemes but also by its lack of participation in Southern American sound changes, including the Southern Vowel Shift, the Back Upglide Shift, the *pin-pen* merger, and by the presence of features found in older New York City English.¹⁵

Settlement patterns and longstanding commercial and social ties between Northern cities and New Orleans (particularly New York at the height of the cotton trade, spanning 1820-1860¹⁶) may have contributed to similarities between Northeastern and New Orleans speech. The linguist George Reinecke suggests that the arrival of New England merchants in the nineteenth century affected local speech, as New Orleanians strove to imitate the socially prominent Northeastern merchants.¹⁷ Older New York City features¹⁸ found in New Orleans include the COIL/CURL reversal, in which the CHOICE¹⁹ and NURSE vowels are reversed, so that *oil* is pronounced [ɜɪ] and *girl* is pronounced [gɔɪ]. Other features include a split short-*a* system (in which the TRAP vowel is divided into tense and lax classes that depend on a number of phonetic and other conditions), and the replacement of the unrounded LOT vowel with higher, rounded CLOTH vowel (*coffee talk* pronounced as [kɔfi tɔk]). Two other features are found in New York, nonrhoticity (*bar* produced as [ba:]), and eth-hardening (/ð/ and /θ/ produced as [t] or [d]; *that* produced as [dæt]), but are also found in other varieties, making the origin of New Orleans nonrhoticity and eth-hardening unclear.

While the origin of some features may be obscure, the variety containing them became locally known as *Yat*, (from the expression *where y(ou) at?*), or *Ninth Ward* speech, from one of its neighborhoods of origin. *Yat* refers to both the dialect and to its speakers.²⁰ Thirty years ago, a folk dictionary claimed that most people “in the New Orleans area talk some

¹⁵ Labov, Ash, Boberg, *ANAE*, 241.

¹⁶ Berger, *Maritime Connection*; Hall, *Manhattaner*; Kent 1979, C-1.

¹⁷ Joan Kent. “Talkin’ New Orleans: Where Y’at?,” *New Orleans Times-Picayune*, 1979, C-1.

¹⁸ Eugene Babbitt. *The English Pronunciation of the Lower Classes in New York and Vicinity*. (Norwood, NJ: American Dialect Society 1896).

¹⁹ Lexical set terms taken from John Wells. *Accents of English vol. 3: Beyond the British Isles*. (Cambridge: Cambridge University Press, 1982).

²⁰ Originally derogatory, the term indexed working-class social status. Today, the term is used proudly amongst Yat speakers, but is still considered pejorative if used condescendingly by an outsider.

form of Yat. Virtually all working class and lower middle class whites grow up speaking it...[m]any Downtown Blacks also talk Yat.”²¹ A 1994 monograph similarly describes Yat English as widespread and non-upper class, and defines a Yat speaker as “a native New Orleanian who has not standardized his or her English to any extent and is not overly educated.”²² In 1979, Reinecke claimed that Yat English “is now spoken by nine-tenths of the people in New Orleans.”²³ These accounts suggest that Yat was a city-wide dialect spoken by a majority of New Orleanians.

Yat is the dialect most often referred to in discussions of New Orleans speech, as when Labov, Ash, and Boberg refer to “*the* New Orleans dialect” (italics mine). However, population shifts due to World War II-era housing development and White flight to suburban areas has resulted in many fewer Yat speakers within city limits. In the mid-1990s, DePascual et al. noted that Yat was “quickly disappearing” from its neighborhoods of origin.²⁴ Yat is now predominantly a White, suburban dialect, even as Felice Coles writes that Yat is “gaining recognition as a symbol of being truly native to the city.”²⁵ Yat English is frequently talked about in various genres, including television segments, books, and newspaper features, which reflexively create and strengthen its status as *the* city dialect although Yat is now primarily a suburban variety. In fact, in her study, Katie Carmichael replaces Yat with the term “Chalmatian English,” taken from the town of Chalmette in suburban St. Bernard Parish, which emphasizes the variety's now suburban location.²⁶

There has been little to no research to date on individual varieties of New Orleans English other than Yat (Chalmatian) English. Impressionistic

²¹ Justin Lemotte. *New Orleans talkin': A Guide to Yat, Cajun, and Some Creole*. (New Orleans: Channel Press, 1985): 5.

²² Linda DePascual, Greenfield, J., Miller, S., Molnar, B., Robley, C., Starnes, M., & Wester, J. *New Orleans Neighborhood Talk: Examining the Original Dialects of the New Orleans Ninth Ward Neighborhood*. (New Orleans, LA: Loyola University of New Orleans, 1994): 21.

²³ Kent, “Talkin’ New Orleans,” C-1

²⁴ DePascual, et al., *Neighborhood Talk*, 39.

²⁵ Felice Coles. Solidarity Cues in New Orleans English. In Cynthia Bernstein, Thomas Nunnally, & Robin Sabino (eds.), *Language Variety in the South Revisited*. (Tuscaloosa: University of Alabama, 1997): 224. Felice Coles. “The Authenticity of Yat: A ‘Real’ New Orleans Dialect.” *Southern Journal of Linguistics*, 25 (2001): 74–85.

²⁶ Katie Carmichael. *I never thought I had an accent until the hurricane': Sociolinguistic Variation in Post-Katrina Greater New Orleans*. (Ph.D. diss., Ohio State University, 2014).

observation and local folk linguistic ideology suggest that other varieties do exist. These informal taxonomies are still being identified, so that the following features have been recorded or observed, but not fully corroborated, with the exception of Yat English features. The following section sketches phonological features observed in Yat and NOAAE. Some syntactic features documented in Yat English appear to be shared with NOAAE, particularly absence of *be* and *do*, non-inversion in questions, and absence of subject-verb agreement. Jessica White-Sustaíta suggests that this is because New Orleans African American English “had an important influence on the development” of Yat English, due to historically racially integrated residential patterns.²⁷ Settlement patterns in the city’s small footprint before swamps were drained and the city expanded were unusually dense and physically integrated, although not socially, and these facts may have contributed to similarities among the city’s speech varieties. Erik Thomas argues that before World War I, African American English as a whole was “first tied to a rural lifestyle.”²⁸ New Orleans African American English was certainly influenced by the speech of the predominantly rural “American blacks” who migrated to the city after the Civil War. But it also developed with influence from the speech of formerly Francophone urban Creoles, and influenced and was influenced by White New Orleanians, due to dense 19th and 20th century residential patterns. It is possible that before White flight to the suburbs after the federal enforcement of desegregation in the late 1960s, Yat English was spoken by many African Americans and Whites alike, as Lemotte’s folk dictionary claims. In contemporary New Orleans, however, residential segregation is pronounced, and African Americans do not associate their speech with Yat, which is now considered a White variety. This association of Whiteness and Yat is now a demographic fact; St. Bernard Parish, the county in which Chalmette lies, is over 96% White, and the local council and police force have prioritized the exclusion of African Americans as residents. So, while there are similarities between the varieties, differences are apparent between Yat and New Orleans AAE. As White-Sustaíta notes, “no native or long-time resident of New Orleans would fail to perceive differences at all levels of the two dialects.”²⁹ For

²⁷ Jessica White-Sustaíta. “Sociohistorical perspectives on Black and White speech relations in New Orleans.” *Southern Journal of Linguistics* 36 (2012): 51.

²⁸ Erik Thomas. “Phonological and Phonetic Characteristics of African American Vernacular English.” *Language and Linguistics Compass* 1 (2007): 451.

²⁹ White-Sustaíta, “Sociohistorical,” 51.

example, while African American New Orleanians are frequently asked whether they are from the Caribbean Islands, White New Orleanians are typically asked whether they are from New York or New Jersey.

While there has been little academic research on New Orleans English,³⁰ observation suggest that some of the major varieties within the New Orleans metropolitan area include Yat English, New Orleans African American English, Creole English, and Mainstream American English.³¹ Many New Orleans residents suggest there are also micro-varieties in the city, finding distinctions in the speech of Uptown neighborhoods lying closer to or further from the Mississippi River, and in the speech of those who attended particular parochial and private high schools. Comments such as “I could tell he went to St. Aloysius” (or other schools) are common. Generations of families often attend the same high school, which may be responsible for the creation of the strong social and linguistic cues associated with them. Some New Orleanians identify differences in pronunciation between Uptown and Downtown neighborhoods, such as a young Creole man, who discussed a raised LOT vowel as a “Downtown” shibboleth.

One major giveaway of a real Downtowner generally is that they’ll say ‘I’ve gawt’ [got], in other words, instead of saying ‘I’ve got [gat] five dollars’ [they’ll say] ‘I’ve gawt five dollars,’ and we always used to laugh at that, cause it’s just so funny, because you can instantly tell where they’re from just through the sound.

No research to date has substantiated these folk claims, but differences in neighborhood varieties are widely discussed by city residents.

The English of Creole New Orleanians has rarely been studied. An exception is a 1969 study of the English of native speakers of New Orleans Creole French.³² Douglas found that the English of Creoles was marked

³⁰ With the notable exception of Connie Eble’s work, see references.

³¹ Mainstream American English, sometimes called Standard American English or ewscaster English is an abstract idea. Generally, Mainstream English lacks regional and non-White phonetic and syntactic features. For a discussion of standard and vernacular dialects, see, for example, Walt Wolfram & Nathalie Schilling-Estes, (eds.). *American English: Dialects and Variation*. (Malden, MA: Blackwell, 2006).

³² Connie Douglas. *A Linguistic Study of the English Used by New Orleans Speakers of Creole*. (MA thesis, University of New Orleans, 1969). See also Madeleine Aubert-Gex. *A Lexical Study of the English of New Orleans Creoles*

especially by French-influenced pronunciation of consonant and vowel sounds, including unaspirated [p, t, k]; interdental [t,d]; absence of word-initial [h]; and full vowels, as well as by the presence of tag elements at the end of a phrase (e.g., “What you doing in there, you?”), the use of French words and phrases, and repetition (e.g., “That cat was black, black”).³³

While Douglas noted “New Orleans speakers are very prone to remark ‘You know, Creoles always say *eeez* for *his*,’”³⁴ the English pronunciation of New Orleans Creoles today is less French-influenced. Further, most New Orleans Creoles today consider themselves both Creole and African American,³⁵ and New Orleans African American and Creole English are closer than in the past. Some features that remain particularly characteristic of Creole English include the use of many French terms, including *cher(e)* (‘dear’) as a term of endearment, and *’tit* (from *petite*) as a diminutive, so that *’tit John* refers to the son of *Big* or *Gros John*. Despite the use of individual French words, however, Creole New Orleanians are English-monolingual today, and the use of French is primarily a matter of demonstrating pride and heritage.³⁶

Table 1 lists phonetic and phonological features of both varieties, next to proposed features of supralocal AAE for purposes of comparison. Because not enough data are available on the English of contemporary Creoles, and because most Creoles also consider themselves African American, a list of features is not given for Creole English separately from NOAAE.

based on the Malin Questionnaire. (M.A. thesis, University of New Orleans, 1983).

³³ *Ibid.*, 122-125.

³⁴ *Ibid.*, 122.

³⁵ Arnold Hirsch. “Fade to black: Hurricane Katrina and the disappearance of Creole New Orleans.” *Journal of American History* 94 (2007): 752–761.

³⁶ Even the pronunciation of the city’s name is a local shibboleth of heritage. Pronouncing New Orleans as [nju ‘ɔ:. li. ənz] or [nju ɔr. ‘i. ənz], with four distinct syllables, tends to identify a speaker as belonging to a family with long roots in New Orleans, while the pronunciation [nu. ‘a.lɪnz] with three syllables, is the most common. Mainstream American English speakers produce [nu. ‘ɔ.lɪnz], while [nu ɔl. ‘lɪnz] is restricted to song lyrics and tourists.

Table 1: Feature comparison of New Orleans varieties to general AAE.

<i>General AA English</i> ³⁷	<i>New Orleans AA Eng.</i> ³⁸	<i>New Orleans Yat Eng.</i> ³⁹
monophthongization of the PRICE vowel <i>I</i> as [ah]	attested for some speakers	attested for some speakers
monophthongization or lowering of the CHOICE vowel before /l/ <i>oil</i> as [al] or [oʊl]	unattested	unattested
raising of the TRAP vowel <i>mat</i> as [mæt]	no data	common before nasals, /b/, and /d/, part of split short- <i>a</i> system
merger of KIT and DRESS vowels <i>pin</i> = <i>pen</i>	unattested	unattested
lowering of FACE vowel <i>crazy</i> as [kɛɪzi]	common, with lengthening to triphthong <i>crazy</i> as [kɛɪ ³ :zi]	unattested
syllable-final and word-final nonrhoticity <i>four</i> as [fɔv:]	common	common
l-deletion or vocalization <i>feel</i> as [fiə]	common	common
word initial th-stopping, and substitution of /f/, /v/, or deletion for medial or final /ð/ and /θ/ <i>then</i> as [den]; <i>mouth</i> as [mauf]	common	common
devoicing of word-final voiced stops <i>mad</i> as [mæt] or [mætʔ]	no data	no data
word-final consonant cluster simplification <i>left</i> as [lɛf]	common	common

³⁷ All general AAE data from Thomas, “Phonological and Phonetic,” and from John Rickford. *African American Vernacular English*. (Malden, MA: Blackwell, 1999): 4-5.

³⁸ All NOAAE data taken from author’s own unpublished field observations and sociolinguistic interview data, collected between 2009-2012.

³⁹ All Yat English data from Katie Carmichael. “Notes from the Field: Yat English Features in Chalmette, Louisiana.” *Southern Journal of Linguistics* 36 (2012): 191-199.

<i>General AA English</i>	<i>New Orleans AA Eng.</i>	<i>New Orleans Yat Eng.</i>
deletion of unstressed vowels in initial position <i>enough</i> as [nʊf]	attested for some speakers	no data
substitution of /skr/ for /str/ <i>street</i> as [skrit]	attested for some speakers	no data
substitution of /θ/ for /θr/ word-initially <i>through</i> as [θu]	no data	no data
unattested	COIL/CURL reversal <i>oil</i> as [ɛl]; <i>girl</i> as [gɔɪl]	COIL/CURL reversal <i>oil</i> as [ɛl]; <i>girl</i> as [gɔɪl]
unattested	attested for some speakers	raised THOUGHT vowel <i>law</i> as [lɔ:]
unattested	unattested	untensed TRAP vowel in open syllables, part of split short- <i>a</i> system
unattested	unattested	unmerged TRAP, DRESS, and Face vowels pre-rhotically <i>marry</i> ≠ <i>merry</i> ≠ <i>Mary</i>
unattested	GOAT vowel lowering <i>no</i> as [noɔ]	GOAT vowel fronting <i>so</i> as [sɔʊ]
unattested	unattested	Canadian raising for MOUTH vowel <i>out</i> as [ʌʊʔ]
unattested	unattested	pre-nasal MOUTH vowel fronting <i>down</i> as [dæʊn]

The three varieties share several features, while differing in ways striking enough to be considered separate entities. Nonrhoticity, l-vocalization, th-stopping, and consonant cluster simplification are common in all three varieties. However, these four features are common in many other English varieties, and so do not permit any conjecture about a common origin. The common occurrence of metathesis in *ask* is more interesting, because it is a highly salient and generally stigmatized feature. That PRICE vowel monophthongization is not common in either Yat or NOAAE is also intriguing, because it is one of the most salient features of both Southern White English and AAE. This may be due to the influence of both colonial French and the historic connection to Northeastern American Englishes, none of which has a monophthongal PRICE variant. This influence may help explain why Yat English preserves a three-way *Mary/Marry/Merry* distinction, as do many Northeastern English varieties. Yat and NOAAE

share the COIL/CURL reversal, the feature that most distinguishes the speech of the New Orleans area, and which is not attested in contemporary general AAE.⁴⁰ Because the CHOICE vowel is realized as [ɜ], neither New Orleans variety participates in the lowering or monophthongization of that vowel, which is common in general AAE. Yat and NOAAE also differ from general AAE, and Southern White English, in not participating in the *pin-pen* merger. Yat English is most distinct from NOAAE and AAE in its suite of raised (THOUGHT and MOUTH) and fronted (GOAT and pre-nasal MOUTH) vowels. The raising of the THOUGHT vowel is aligned with what Erik Thomas calls a contemporary “development of European American varieties” in which the vowels of LOT and THOUGHT are merged.⁴¹ NOAAE and general AAE, by contrast, show no participation in any of these sounds. NOAAE, in fact, shows lowering of the GOAT vowel, where Yat shows fronting. Like AAE, and unlike Yat, NOAAE has lowering of the FACE vowel, with lengthening also common.

NOAAE is similar to general AAE in terms of phonetic and phonological features, with the robust exception of possessing the COIL/CURL reversal and the lowering of the GOAT vowel. The lowering of the GOAT vowel, together with the lowering and lengthening of the FACE vowel, are part of the prosodic system of NOAAE, which has been unstudied, but receives a great deal of folk attention. Many African American New Orleanians informants recounted non-New Orleanians asking if they were Caribbean, from “the Islands.” African American New Orleanians are often asked to speak on demand, because the phonology and prosody, including stress, timing, and intonation, are perceived as unique. One young informant echoed the words of many African American participants when he observed:

I’m-a tell you normally if I go out of town somewhere and I meet someone they always ask me to say one word—because you could hear that I’m from New Orleans—they always say, “Say ‘baby.’” And you know, [‘berːbə], it’s different from everywhere else.

General AAE also has intonational features that differ from White varieties, including wider pitch range, more level and rising contours in phrases, falling final contour in yes/no questions, voice quality, and trochaic first syllable stress in words where White varieties have iambic

⁴⁰ Thomas, “Phonological and Phonetic,” 453-454.

⁴¹ *Ibid.*, 464.

stress (in words including *adult*, *cement*, *insurance*, and *umbrella*.)⁴² But NOAAE remains distinct from supralocal AAE, evidenced by the fact that non-New Orleanian African Americans are generally the people asking New Orleanian African Americans to speak.

The link between NOAAE and Yat English is also clear, because they share the COIL/CURL reversal, *ask* metathesis and the absence of categorical PRICE-monophthongization. Further, while nonrhoticity in NOAAE is expected, since nonrhoticity is a hallmark of AAE varieties, the continued nonrhoticity in Yat demonstrates its distinction from other White Southern varieties, all of which are now rhotic.⁴³ The varieties also share a number of apparently unique phonetic variants in common, including [zink] for *sink*, and [ɛntʃ] for *rinse*. The differences between them are also clear, in several vocalic features that appear only in Yat English, as well as in their respective prosodic systems.

Into the Future

300 years ago, New Orleans began as a Francophone colony. American statehood, which brought in its wake Anglophone settlers, emancipated slaves, and European immigrants, gradually made the city Anglophone. But the city retained elements of its French heritage, most notably due to the presence of Creole New Orleanians. The city grew through the 19th and 20th centuries, reaching a peak of 600,000 inhabitants in the late 1950s. A majority of these people came to speak what became known as Yat, a variety that blended features from the Irish, Italian, African American, and German backgrounds of its creators. In the late 1960s, due to suburban development and school desegregation, many White New Orleanians fled to the suburbs, leaving the city majority African American for the first time in its history. The decades since have seen the segregation of New Orleans speech, so that Yat speakers and NOAAE speakers share fewer features than in the past. The speech of the city's Creoles, despite their political identification with African Americans, does not yet wholly belong to NOAAE. The Englishes of all New Orleanians remain to be studied systematically. Research on New Orleans Creole English will raise fruitful questions about the relationship of New Orleans to Caribbean

⁴² Connie Eble. Speaking the Big Easy (New Orleans, LA). In Walt Wolfram & Ben Ward, (eds), *American Voices: How Dialects Differ from Coast to Coast*, 47, (Malden, MA: Blackwell).

⁴³ ANAE, 2006, Chap. 7.

Creole varieties, while research on NOAAE will help in understanding regional distinctions in AAE. Research on Yat will help linguists understand why this variety is unlike any other White variety in the South. The future evolution of the city and its speech is unknown. If the city reinvigorates elements of its dense, ethnically diverse urban past, its future might be remarkable. As one older participant put it, discussing his childhood,

When I say a diversity of cultures I do not mean ethnic groups separated out into their neighborhoods. I'm talkin' about a diversity of culture, who probably is one of the only cities in which you actually had that gumbo, that mix. Everybody else kind of went to their little barrio or ghetto or whatever you want to call it. In New Orleans, everybody just mixed up together.

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CHAPTER SEVEN

AMNESTY INTERNATIONAL (AI) AND PHILANTHROPIC FUNDRAISING (PF) APPEALS: A COMPARATIVE MOVE ANALYSIS

GERALD DELAHUNTY

Introduction

This paper presents a comparison between the move analyses (Swales 1981) of philanthropic fundraising (PF) appeal letters presented in Biber, Connor & Upton (2007) (BCU) and of Amnesty International (AI) appeal letters on behalf of victims of human and humanitarian rights violations and related issues. Move analysis is an aspect of genre analysis (Swales 1990). Genres comprise patterns of information organization and linguistic expressions designed to achieve particular communicative purposes (Swales 1990: 58; Martin 2001; Biber and Conrad 2009; Fairclough 2012: 9-20). Move analysis identifies the communicative purposes of the genre and of the moves and steps that enact the purpose of the whole (Upton and Cohen 2013). Moves and steps are “segments of a text identified by a distinctive rhetoric and/or function within the text as a whole” (Fleischman 2001). They provide a solid basis for comparing genres and for the contextual study of linguistic elements and their functions.

This paper attempts to answer five interrelated questions. 1. What is/are the discourse function(s) of AI appeal letters? 2. What functional elements—moves and steps—constitute those letters and how do these contribute to the functions of the whole? 3. How do these compare with those of PF letters? 4. What genres are PF and AI letters related to? 5. What linguistic choices enact the functions of the AI letter moves and steps?

AI and PF appeal letters

AI appeals are letters written by AI staffers, embedded in an email providing information on the case, sent to, and (revised and) forwarded by, AI volunteers to government officials. The database/corpus for the current study of AI letters consists of 30 letters comprising 9674 words and averaging 322.5 words per letter. PF letters are direct mail fund-raising letters from non-profit organizations to individuals. The BCU PF corpus consisted of 242 letters comprising approximately 147,000 words and averaging approximately 600 words per letter (my calculations based on information in Table 3.2 and elsewhere in BCU).

An example AI letter

Message Recipients: Yuri Yakovlevich Chaika - Prosecutor General

Subject: Free Nadezhda Tolokonnikova and Maria Alekhina

Dear Prosecutor General,

I am writing to express my deep concern about Nadezhda Tolokonnikova and Maria Alekhina, who were sentenced to two years in a penal colony for their participation in a February 2012 protest action by the feminist punk-rock group Pussy Riot at the Christ the Savior Cathedral in Moscow. These two women, both mothers in their twenties, were detained solely for their peaceful expression of their beliefs. They are Prisoners of Conscience.

I call on you to ensure that Maria Alekhina and Nadezhda Tolokonnikova are immediately and unconditionally released. While they remain incarcerated, the two women must not be ill-treated by prison staff or inmates, and they must be allowed regular contact with their families and legal teams.

In closing, I welcome the news of Ekaterina Samutsevich's freedom, but remain concerned about the conditional status of the release. The three Pussy Riot members should not have been prosecuted in the first place. I call on you and all authorities to respect and uphold the right to freedom of expression in the Russian Federation, and to remedy the unjust treatment of these young women immediately.

I thank you for your attention.

Yours sincerely,

Why study AI appeal letters?

I chose to study AI appeals for many reasons: 1. Because no one has done it before and so their study adds to our knowledge of genres. 2. Because they deal with extremely exigent situations, e.g. impending executions, they show us how this exigence is represented in the context of other

factors, e.g. the extreme power differential between senders—ordinary people—and addressees—powerful government officials. 3. In the context of this extreme power differential, they allow us to study ways in which ideological commitments and conflicts (Verschuere 2012) and stance and engagement (Hyland 2005) are rhetorically and linguistically managed. 4. They provide an opportunity to examine the motivations underlying the characteristic linguistic choices of the genre by relating those choices to the moves and steps—previous analysts such as BCU were content to make lists and to quantify frequencies of expressions, leaving those relations implicit. 5. The analysis allows us to identify the ways in which the AI letter genre is related to other functionally similar genres, e.g. protest placards, as Pike (1992) related PF letters to business letters. 6. They allow us to study re-textualization and re-contextualization processes by examining their relations with contextually relevant genres and texts, e.g. the emails sent to AI volunteers that embed the appeal letters, online and other documents relevant to the subjects of the appeals, e.g. the AI webpage and various international declarations, bills, covenants, and treaties. This paper focuses on the move analysis and the linguistic choices that enact the moves and steps, though I will argue that the AI appeals are related to protest placards and are therefore to be viewed as instruments of political engagement and opposition, a position supported by the assumption that their effectiveness may be due more to the large numbers sent to their addressees rather than to the persuasiveness of the arguments they present.

How are AI and PF appeals similar?

Both are eleemosynary appeals, implying that the writers do not have the power to force their addressees to comply, so they have to be persuasive. Both are letters, though they differ in channel: PF appeals are “direct mail letters,” though they typically come with a range of “inserts” (BCU p. 44), and the AI appeals are email letters. Both attempt to persuade their addressees that a situation is problematic. Both attempt to persuade their addressees to (help) solve the problem. Both adduce good reasons for their requests. Both address people with the power to deny or accede to the requests. Both require skillful linguistic management of writer/addressee relations. Both compete with other demands on the addressees' time and resources, etc. Both are instruments in the sending organizations' fundraising efforts: PF directly, AI indirectly.

How do the two genres differ?

PF letters address a broad range of chronic social problems, though typically not violations of human rights. They consist of hard-copy mailings, sent by a single corporate sender to large numbers of “ordinary” people not causally implicated in the problem. Each addressee receives one letter, which is designed to persuade potential donors to contribute to the good cause by appeal to their sympathy and empathy (pathos) (Myers 2007); e.g. “Dear Mr. Delahunty, It is impossible to be unmoved by . . .” (IRC appeal). The letters are carefully written by experts in the crafting of such letters and are signed by the CEO or other high-ranking officer of the sending organization. They are printed on high quality paper and come with various inserts: photos and gifts, e.g. address labels and note pads. They are related to business letters (Pike 1992: 249) and presumably would be deemed successful if a certain fraction of addressees donates money or time.

AI appeals address violations of the human rights of (classes of) individuals. They are often addressed to multiple individuals, powerful officials who may be causally implicated in the violations. The addressees are sent many, often tens of thousands of appeals, though with no inserts, from as many senders. The emails are designed to persuade by demonstrating widespread concern about an acute problem and are based on the ideology of universal human rights and humanitarian law, i.e. on logos, and they are successful if the addressees act as directed in the letters. They are related to protest placards; cf. the placard [FREE PUSSY RIOT] with the subject line of the AI appeal quoted above, “Free Nadezhda Tolokonnikova and Maria Alekhina.” The letters are written by AI staffers, whose writing is not highly polished, reinforcing the claim that they are related to protest signs and designed to persuade by numbers.

What’s involved in a move analysis?

BCU (p. 13) characterize move analysis as a top down approach to the analysis of texts and genres, which they combine with computerized corpus analysis. It is summarized in the following table from Upton and Cohen (2013, Table 1), based on BCU Table 2.3.

Table 1

<i>Required step in the analysis</i>	<i>Realization in this approach</i>
1. Communicative / functional categories	Develop the analytical framework: determine set of possible functional types of discourse units, that is, the major communicative functions that discourse units can serve in the corpus
2. Segmentation	Segment each text into discourse units (applying the analytical framework from Step 1)
3. Classification	Identify the functional type of each discourse unit in each text of the corpus (applying the analytical framework from Step 1)
4. Linguistic analysis of each unit	Analyze the lexical/grammatical characteristics of each discourse unit in each text of the corpus
5. Linguistic description of discourse categories	Describe the typical linguistic characteristics of each functional category, based on analysis of all discourse units of a particular functional type in the corpus
6. Text structure	Analyze complete text as sequences of discourse units shifting among the different functional types
7. Discourse organizational tendencies	Describe the general patterns of discourse organization across all texts in the corpus

Biber et al’s analysis of PF letters—structural elements and moves/steps

BCU distinguish between structural elements and rhetorical moves and steps. The PF letter structural elements they identify are (from BCU Table 3.9 p. 54):

- A. Date line
- B. Address of sender
- C. Salutation
- D. Complimentary close (“Sincerely . . .”)
- E. Signature of sender

- F. Signature footer (printed name and/or title of signer)
- G. Footnote information (other information the addressee should know, including reminder about a return envelope, and any carbon copies)

The PF letter moves and steps

- M1 Get the reader's attention
 - Step 1 Pleasantries
 - Step 2 Quotation, story or shocking/unexpected statement
- M2 Introduce the cause and/or establish the credentials of the organization sending the letter
 - Step 1 Indicate general problem/need
 - Step 2 Highlight specific problem/need
 - Step 3 Highlight the successes of past organization efforts
 - Step 4 Outline the mission of the organization
- M3 Solicit a response
 - Step 1 Solicit financial support
 - Step 1A* State benefit of support to the need/problem
 - Step 1B* Ask directly for pledge/donation
 - Step 1C* Remind of past support to encourage future support
 - Step 2 Solicit other response
- M4 Offer incentives
 - Step 1 Offer of tangible incentive
 - Step 2 Offer of intangible incentive
- M5 Reference any inserts
- M6 Express gratitude
 - Step 1 Thanks for past financial or other support
 - Step 2 Thanks for current and future financial or other support
- M7 Conclude with pleasantries
(from BCU pp. 47-52)

AI appeals

With Nora Gordon, I developed a move analysis of the corpus of AI letters, which, with some revisions, is given below. We identified the following structural elements:

- A. Message recipients list (e.g. **Message Recipients:** President Obama)
- B. Subject line (e.g. **Subject:** Grant Albert Woodfox his freedom)

- C. *To*-line (e.g. **To:** President Obama) or Salutation (cf. BCU structural element C) (e.g. Dear President Obama,)
- D. Announcement of imminent closing (e.g. In closing,)
- E. Complimentary close (e.g. Yours sincerely,)

Following the prescriptions in Upton and Cohen's Table 1 we identified the following moves and steps in AI appeals:

- Move 1 Describe the exigent situation and the basis for its undesirability (Obligatory)
 - Step 1 Announce the reason for the communication (express concern)
 - Step 2 Describe the situation motivating the communication
 - Step 3 Characterize the situation in M1S2 as undesirable
 - Step 4 Identify the normative basis for M1S3
 - Step 5 Express the exigency of the situation characterized in M1S3
- Move 2 Direct addressee(s) to redress the situation characterized in M1S3 in accordance with norms identified in M1S4 (Obligatory)
 - Step 1 Describe desired change(s) to situation characterized in M1S3
 - Step 2 Direct addressee(s) to bring about situation described in M2S1
 - Step 3 Identify normative basis for M2S2 (same as or closely related to M1S4)
 - Step 4 Express exigency of bringing about the changes described in M2S1
- Move 3 Make concession(s) to addressee(s) (Optional)
 - Step 1 Make the concession(s)
 - Step 2 Note limitation(s) on concession(s)
 - Step 3 Rebut concessions, typically by reference to normative basis in M1S4/M2S3
 - Step 4 Solicit action(s) on basis of rebuttal
 - Step 5 Express the exigency of the actions characterized in M3S4
- Move 4 State related concerns and solicit related actions (Optional)
 - Step 1 Describe situation related to M1S2
 - Step 2 Characterize the situation in M4S1 as undesirable
 - Step 3 Solicit specific actions in response to M4S2
 - Step 4 Identify normative basis for M4S2 (same as/closely related to M1S4/M2S3)

Step 5 Express the exigency of the situation characterized in M4S2

Move 5 (Re-)state situation(s) requiring redress and solicit redressive action(s) (Optional)

Step 1 (Re-)state situation(s) of concern (typically related to M1S3)

Step 2 (Re-)characterize the situation in M5S1 as undesirable

Step 3 (Re-)state action(s) to redress situation(s) in M5S1

Step 4 (Re-)state normative basis for action(s) solicited in M5S2 (same as/closely related to M1S4/M2S3/M4S4)

Step 5 (Re-)state exigency of situations characterized in M5S1

Move 6 Engage addressee(s) (Optional)

Step 1 Express gratitude

Step 2 Express hope for response from addressee

Some comments on AI moves and steps

For several reasons, this analysis distributes the AI letter problem/solution elements into M1 and M2 rather than incorporating them as steps within a single move, as their complementarity might lead us to expect. 1. BCU do this in their analysis of PF letters. 2. Though problem discourse is typically complemented by solution discourse, this is not inevitable because one might characterize a situation as a problem, but be unwilling or unable to propose a solution to it; the opposite seems not to be possible—solutions cannot exist without their related problems. 3. Because the solution may be and often is articulated separately from the problem, in particular, in the subject line. 4. An element of my argument here is that AI appeals are related to protest signs and placards, which often articulate solutions and leave their associated problems to be inferred from context.

Even though M4 and M5 are similar to each other and to M1 and M2, they cannot be reduced to a single repeatable move or to repetitions of M1 and M2 because they differ in allowing topical development of M1 and M2, e.g. by expressing more general and/or more specific related concerns and appeals.

It is noteworthy that there is considerable similarity in the steps of different moves, e.g. Moves 1-5 each include an “Express exigency” step, which is perhaps to be expected, given the nature of the appeals.

Applying the analysis

In this section I apply the analysis to two genres. The first is represented by two protest placards I found online. The first was displayed in a protest against imprisoning the Pussy Riot women; the second in a protest after the shooting of a young black man in Ferguson, Missouri. The most relevant interpretation of these placards given their contexts is that they are directive speech acts demanding the women's release and an end to racist killings by US police, and thus functionally similar to M2S2:

Protest placards: M2S2 [FREE PUSSY RIOT]
[STOP RACIST POLICE TERROR IN
THE US]

The second genre is that of the AI appeals and represented by a letter to President Obama to close the detention center at Guantanamo Bay, Cuba.

STRL [Dear President Obama,]
M1S1[I support **M2S1**[closing the Guantanamo detention facility]]
and **M2S2** [urge you to get the job done, **M2S4** [today]]
M4S4 [The US government is obligated under international law to respect, protect and fulfill human rights.] **M4S3**[Each Guantanamo detainee must either be charged and fairly tried in federal court, or be released to countries that will respect their human rights]
M5S2 [Instead of justice for the September 11 attacks, Guantanamo has given the world torture, indefinite detention and unfair trials.]
M5S5 [It is well past time **M5S3**[to change course and close the detention facility.]]

A brief comparison and contrast of PF and AI moves and steps

Both genres identify a problem: PF M2S2 *Specific problem/need highlighted* and AI M1S3 *Characterize the situation as undesirable* (cf. M4 and M5). Both propose a solution to that problem: PF M3S1S1A *State benefit of support* and AI M2S1 *Describe desired changes to problematic situation*. Both attempt to persuade addressees to act to solve the problem: PF M3S1S1B *Ask directly for pledge/donation* and AI M2S2 *Direct addressee to bring about solution* (cf. M3, M4, and M5).

As we should expect, the moves and steps of PF and AI appeals differ in substantial ways. PF includes moves that AI does not: M4 *Offer*

incentives, M5 *Reference inserts*, M7 *Conclude with pleasantries*. AI allows for the making and rebuttal of concessions (M3) whereas PF does not, perhaps because PF letter writers assume that their characterization of situations as problems is so persuasive that they do not need to engage potential counter-arguments. Because AI letters base their appeals on logos, and specifically on universal laws, it is rhetorically effective to imagine and rebut what might be the major arguments addressees could mount against the appeal.

These differences are due to the differences in the kinds of problems and solutions addressed, the types of addressees, the power of the addressees *vis à vis* the writers, and the mode of delivery.

These differences also reflect the positions the two genres occupy in their genre continua—PF letters are related to business letters whereas AI letters are related to protest placards—thus reflecting fundamental differences in how their writers conceptualize their modes of persuasion—PF letters by single pathetic appeals to individuals and AI letters by demonstrating mass public disagreement with the actions of the addressees or the authorities they represent, as indicated by “Ali’s life won’t be spared without a blitz of international pressure from human rights activists like you,” in an embedding email regarding the imminent (at the time of writing) execution of Ali al-Nimr by Saudi Arabian authorities.

Some PF/AI linguistic comparisons

BCU examine stance expressions (Biber and Finegan 1989; Biber et al. 1999; Englebreton 2007) in PF letters, categorizing and listing them primarily by grammatical and very general semantic characteristics, e.g. Stance verb + *to*-clause: Verbs Expressing Probability (likelihood): *appear*, *happen*, *seem*, *tend* (of BCU’s 26, only 8 occur in AI letters). BCU define stance expressions as signifying “personal feelings, attitudes, value judgments, or assessments” and provide a list of works that use different terms for stance (BCU p. 62), the most revealing one being “evaluation” (Hunston 1994, 2000; Martin 2000; Thompson and Hunston 2000). Evaluation is accomplished in discourse (Hoey 1983; Du Bois 2007) against a set of norms (Hyland 2005; Johnstone 2009). Unfortunately, BCU provide no bases for the evaluations legitimating the PF stance expressions, just *post hoc* discussion of their linguistic findings.

In contrast, AI letters allow us to identify both the stance expressions and the norms they invoke; e.g. *punish* and its relatives *punishment* and *punishable* occur five times in the corpus, along with synonyms like *penalty*. In discourse, *punishment* invokes a frame (Goffman 1974; Tannen

1993) in which someone violates a norm, or most relevantly to AI letters, a law. It is what is meted out to individuals after they have been found guilty by a court of breaking some law.

However, frames may be framed and laws and legal procedures subject to higher laws, so we find in the AI letters evaluation expressions invoking universal laws to evaluate local legal proceedings. Legal actions may *violate* laws: *violate* and related forms occur 20 times in the corpus; e.g. punishment by flogging is characterized as a *flagrant violation of the prohibition on torture or other cruel, inhuman or degrading treatment under international law*, which both evaluates flogging and identifies the norm it violates.

Some linguistic characteristics of AI letter moves and steps

While BCU focus on stance expressions, I focus on the main linguistic elements that enact the moves and steps, though much of that language is evaluative. Because space is limited, where feasible, I amalgamate the linguistic analysis of similar moves and steps under the rubric “The language of X.”

The language of gratitude and engagement

I begin with the language of the least complex move, M6 *Engage addressee(s)*, which comprises two steps, S1 *Express gratitude* and S2 *Express hope for response from addressee*. This move occurs in only 30% (9/30) of AI letters (vs. 51% for the corresponding move in PF), a somewhat surprising finding, given the generally polite tone of the letters, and the fact that it occurs in the suggestions included in the AI letter-writing guide. (<http://www.amnestyusa.org/our-work/campaigns/individuals-at-risk/individuals-at-risk-campaign-resources/writing-an-appeal>).

We should expect that S1 would be enacted by expressive speech acts from the THANK group (Wierzbicka 1987: 214-5):

(I) thank you for your (time and) consideration/attention (to this (important) matter).

Thank you in advance for your attention.

Wierzbicka (1987: 215) characterizes “*thanking* as an addressee-oriented act” and formulates its meaning as:

I know that you have done something that is good for me

I say: I feel something good towards you because of that
 I say this because I want to cause you to know what I feel towards you
 I assume that you would want to hear me say this to you (p. 214)

The specific “something good” done by the addressees of AI letters is characterized as giving time, consideration, and/or attention to the subject of the letter, notably not for acceding to the writer's request. Wierzbicka (p. 214) adds the caveat that “the speaker's real intention may be different (he may simply want to be thought of as polite),” and this is consistent with the choice of *attention*, which is vague between mental effort and “The act of dealing with something or someone” (AHD 5th ed.). This vagueness, reflecting the writer/addressee power differential, politely does not presuppose that addressee(s) will enact the solicited redress and is consistent with Brown and Levinson's (1978: 149) negative politeness dictum *Don't presume/assume*. Certainly it imposes a significantly weaker presumption than BCU's M6S2 *Thanks for current & future financial or other support*.

Only 3 AI letters include M6S2 *Express hope for response from addressee* and two of these are variants of same letter (cf. BCU M3S2 *Solicit other response*):

I look forward to hearing from you regarding the advancement and protection of LGBTI rights.

We should expect that M6S2 would be enacted by speech acts that attempt to engage addressees by expressing anticipation of future action: *look forward to* is defined as “to think of (a future event) with pleasure, eager anticipation.” (AHD 5th ed.)

The language of concern

Eleven of the 30 AI letters open with an expression of affect—*extremely concerned, deeply concerned, grave concern, deep concern, shock, profoundly disturbed, disappointed*. They then describe the object of that affect, typically by characterizing a situation as a violation of human or humanitarian rights, having the potential to violate them, or in support of some measure that will reduce rights violations:

I am deeply concerned about the violence facing lesbian, gay, bisexual, transgender and intersex (LGBTI) people in South Africa.

I share Amnesty International's grave concern that the U.S. administration's policy on intentional use of lethal force appears to permit violations of the right to life.

The language of exigency

Express exigency occurs in Moves 1-5 and given the purposes of the AI letters, we should expect the language of exigency to denote extreme temporal exigency, dire consequence, the importance and/or urgency of the appeal, the urgency of the need to redress injustice, and the (legal) manner in which the requested action should be fulfilled:

Temporal: immediately; without delay; quickly; it is well past time; more than a year has passed; today, nearly 41 years after
Consequence/result: (a miscarriage of the death penalty) cannot be undone
Importance: urgent
Manner: (release) unconditionally

The language of direction

Moves 2, 3, 4, and 5 include steps requesting actions to redress problematic situations. We should expect these steps to be enacted by moderately forceful directive speech acts reflecting the writer/addressee power differential and writer's inability to force compliance while attempting to avoid being ignored because of impoliteness:

I/we urge you to (occurs 26 times)
I/we call on you to (occurs 7 times)
ask (occurs 15 times)
request (occurs 5 times)

Urge, ask, call on, request are all mitigated directive speech act verbs whose degrees of mitigation can be characterized in their felicity conditions, and which are occasionally further mitigated by *please*. According to Wierzbicka (1987: 50), "[t]he *asking* person wants the addressee to do something that would be to his (the speaker's) benefit. He assumes that the addressee **can** do it, but he doesn't assume that the addressee **will** do it."

Urging, according to Wierzbicka (1987: 61-2),

is an attempt to get the addressee to do something . . . [I]t doesn't imply that the speaker has power over the addressee . . . The attitude of an *urging* person is as pressing and forceful as that of someone who *orders* or *commands*. But since he has no power over the addressee, the only kind of pressure he can exercise is psychological. In this respect, *urge* is closer to *demand* than to either *order* or *command*. However, it is far below *demand* in forcefulness. The person who *demand*s feels that his utterance has an inherent force (whatever the nature of this force is). The person who *urges* would want to endow his utterance with a similar force, but he can't. All he can do is try to *infect* his addressee with his own conviction that action (of the kind indicated) is necessary. . . . *Urging* as a speech act is an attempt to implant in the addressee's mind the idea of another such irresistible 'must'.

Thus, the position of the *urging* person is that of powerlessness, not of power. And yet the powerless speaker is trying to impose his will on the addressee, even though he perceives or anticipates unwillingness or lack of response on the addressee's part. He is trying to achieve this goal by trying to convey to the addressee his own sense of urgency, his own conviction that the action is imperative, and also by implying that he won't take 'no' for an answer, that he will not give up easily (. . . in this respect *urging* is like *begging* or *nagging*); the *urging* person does not see himself as someone who tries to impose his will on the addressee. Rather, he sees himself as someone who tries to impose his own (superior) understanding of the situation. His attitude is not 'I say: I think you should do X' but a confident 'I say: you should do X' . . .

Finally, there is usually, in *urging*, a sense of urgency. The speaker wants the addressee to respond, and to respond **now** . . .

We might add that the speaker's "judgment" may be informed by "conviction" based on ethical, moral, legal, or ideological principles.

Call on directs an addressee to do something: "the speaker who *calls on* somebody to do something uses the weapon of public pressure to make it harder for the target person to **refuse to do** what is needed . . ." This characterization of *call on* is consistent with my argument that AI appeals are designed to persuade by argument and by numbers.

[*R*]equesting is less personal and direct [than *asking*] . . . *request* is markedly polite; this may be partly accounted for by its indirectness . . . but only partly. The elaborate politeness of *request* seems to derive also from the fact that the speaker pointedly refrains from assuming that the target person has to comply with the request . . . *Request* doesn't imply any superiority or inferiority either. But it does imply a specific sort of relationship: formal, distant and impersonal . . . If the target person 'doesn't have to do it', how can the speaker assume that he will do it? Presumably because the situation is standardized, with well-defined roles, well-defined routines, well-defined rules of behaviour. (Wierzbicka 1987: 52)

This is consistent with the polite tenor of AI appeals and with the writer/addressee power difference.

Condoravdi and Lauer (2012: 45) propose that imperatives, e.g. *Allow him his freedom*, “commit the speaker to a particular kind of preference and to be bounded by a condition that limits his active involvement in making the content true . . . Imperatives do not create obligations as a matter of course by linguistic convention, but give rise to obligations only indirectly when the context is right.”

The relevance theory approach to imperatives is akin to Condoravdi and Lauer's, who cite Wilson and Sperber's (1988) paper on mood and the analysis of non-declarative sentences. Sperber and Wilson (1995: 251) say that “[t]he hearer on recovering the propositional form *P* of an imperative utterance would integrate it into a description of the form *The speaker is telling the hearer to P*. *Telling the speaker to P* might be analysed as communicating that the thought that *P* interprets is entertained as a description of a desirable state of affairs.” Who it is desirable to is determined in context: the imperatives in the corpus represent states of affairs desirable to AI, the letter writers and senders, and, presumably, the subjects of the appeals.

However, bare imperatives are “bald-on-record” directives and appropriate in circumstances “of great urgency” (Brown and Levinson 1978: 100). The few bare imperatives in my corpus seem to be licensed in this way, though their face threat also seems to be reduced by context; e.g. *Allow him his freedom* follows an imperative introduced by *please* and occurs as the last sentence in a letter as the final expression of the appeal. The verb *allow* implicates that the addressee has the power to accede to the request or not.

The polite mitigation of the imperative, *Please remove Albert Woodfox from solitary confinement*, is also consistent with the polite tenor of the letters and their general acknowledgement of the addressees' power in the situations.

These steps were also enacted by the strongest modal, *must* and the strongly conative impersonal construction, *it is essential that*.

It is valuable to compare the directive expressions above with *demand*, which occurs in the embedding emails, which urge AI volunteers to “demand” redressive action by the appeal letters' addressees. “What is always implied by *demand* is the speaker's assumption that his utterance carries great force, a force which the addressee is bound to recognize. This force may be moral but it may also be physical . . . Thus, the addressee is expected not only to understand the content of the utterance but also to

assess its force.” Wierzbicka (1987: 40-1) Remarkably, none of the AI letters use *demand* as the directive to their addressees.

The language of norms of evaluation

Moves 1 through 5 include steps that refer to norms of evaluation and as the letters typically appeal for redress of violations of human and/or humanitarian rights, we should expect that the letters would include reference to the various (codifications of) human/humanitarian rights upon which those evaluations are based. The following were frequently invoked:

international law/standards; international humanitarian law; human rights; right to life; prohibition on torture and other cruel, inhuman or degrading punishment; United Nations Declaration of Human Rights

Somewhat surprisingly, these expressions are almost exclusively common rather than proper NPs. My initial expectation was that the letters would explicitly reference the various declarations, bills, and covenants in which human and humanitarian rights are legally enacted by such bodies as the United Nations; e.g. the International Bill of Rights, the enactment into international law of the UN Universal Declaration of Human Rights (UDHR) and other conventions. While the letters present arguments, they are not technical legal briefs, and so would not be expected to explicitly reference specific articles in specific legal instruments. That the legal instruments that constitute the letters' norms of evaluation are referred to informally and generically suggests that they play at least the dual roles of appeal and protest.

The language of norm violation

Of course, what these letters appeal and protest are violations of the human or other major rights of individuals or groups, so we should expect language that expresses violations of these rights, the norms violated, and the manner and degree of violation:

flagrant violation of the prohibition on torture and other cruel, inhuman or degrading treatment under international law; violate minimum international standards; the death penalty violates the right to life; trials that fall short of international standards

Violate and its related forms are the most frequently occurring expressions denoting contraventions of these norms; its relevant definitions in the OED (online version) are:

- 2.a. To break, infringe, or contravene (a law, rule, etc.). Also: to fail to maintain or respect (a right or privilege).
- 2.c. To act in a way inconsistent with or contrary to (a moral quality or accepted standard of behaviour); to fail to conform to, betray (an ideal, principle, etc.).
- 6.b. To treat (a person, a person's feelings, etc.) with contempt or disrespect;

Other expressions denote generic legal failures, *miscarriage (of justice)*, or more specific ones, *unjust/unfair/flawed (trials)*, *forced (confessions)*; or they ironize the characterization of legal proceedings by enclosing expressions in quotes, e.g. “*confession*”; or characterize them as egregious abuses of the legal system or even as extra-judicial abuses: *persecution* is defined as “punishment or harassment usu. of a severe nature on the basis of race, religion, or political opinion in one's country of origin” (Merriam-Webster's Dictionary of Law). Some individual subjects of the appeals are characterized as *Prisoners of Conscience*:

people who have been jailed because of their political, religious or other conscientiously-held beliefs, ethnic origin, sex, color, language, national or social origin, economic status, birth, sexual orientation or other status, provided that they have neither used nor advocated violence.
(<http://www.amnestyusa.org/our-work/issues/prisoners-and-people-at-risk/prisoners-of-conscience>)

Because they deal with rather different causes, PF letters do not include expressions akin to those above.

The language of concession and rebuttal

Unlike the PF letters, several of the AI letters include M3S1 *Make concession*, M3S2 *Note limitations on concession*, and M3S3 *Rebut concession*. The following is an example of a concession and its rebuttal:

I understand that your government has as an obligation to bring to (*sic*) those responsible for serious crimes to justice, and that Iraq must confront violence by armed group (*sic*). However, I am deeply concerned about

convictions that are based on forced confessions and trial proceedings that fall short of international standards.

Understand is a factive verb and thus presupposes the truth of its complement propositions, but as such is redundant here because the truth of the complement clauses without *I understand* would be implicated by virtue of being asserted, so *I understand* appears to indicate the writer's anticipation of the addressees' response to the writer's developing argument and projects a rebuttal to that concession, which is clearly indicated as such by *however*. (See Blakemore 2002: 117-122 on *however*)

We might also view *I understand* as an attempt to engage the addressees by ostensibly reading their minds and responding to propositions the writer attributes to them. (See Kärkkäinen 2003 on *I think*.)

Discussion

I view move analysis as a method for the analysis of texts and genres rather than a theory of textual or generic organization. It imposes few if any constraints on the analysis of content, form, or function. It is an iterative dialectic process oscillating between rhetorical and linguistic elements, and so imposes no principled end to the analysis. It is nonetheless a useful heuristic that provides a basis for discourse-specific linguistic analysis and for the discovery and identification of discourse-specific usages. The move analysis of AI appeals also provides a useful basis for the study of human rights appeals by other organizations, such as Human Rights Watch, as well as how the forms, functions, and meanings of the moves and steps in AI appeals re-contextualize and re-entextualize these aspects of related genres such as the emails from AI to volunteers in which the appeals are embedded, and of the information on each case presented in AI's webpages and in the documents they link to. And it provides a basis for studies of the ways in which ideological conflict, power relations, and stance and engagement are rhetorically and linguistically managed in the genre.

Summary

This paper set out to provide answers to five related questions. 1. What is/are the discourse function(s) of AI appeal letters? They appeal on behalf of individuals or classes of individuals; they argue on behalf of human and humanitarian rights; they protest the actions of governments or other powerful institutions; and they enhance the fundraising efforts of AI. 2.

What functional elements—moves and steps—constitute those letters and how do these contribute to the functions of the whole? I identified six moves and their constituent steps that identify a situation and characterize it as a violation of international human rights laws and covenants, attempt to persuade powerful addressees to redress these violations, while allowing for the presentation and appeal of related violations, and attempting to engage the addressees. 3. How do AI appeal moves and steps compare with those of PF letters? While both appeal to addressees to act to help solve problems, they differ in the kinds of problems they address, the kinds of addressees they appeal to, and in their modes of persuasion, and consequently in the moves and steps that enact them. 4. What genres are PF and AI letters related to? While PF letters are related to business letters, AI appeals are closely related to protest signs and placards. 5. What linguistic choices enact the functions of the constituent moves and steps? The paper identified and discussed the linguistic elements that enact functions common to several AI letter moves, and while none of these expressions are individually idiosyncratic to this genre, taken together they enact a genre with specific communicative purposes, specific classes of addressees, specific writers, in specific types of socio-political circumstances, while indexing its relations with other genres, most notably protest placards.

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CHAPTER EIGHT

ON BOUND INTENSIFIERS IN ICELANDIC

THORSTEINN G. INDRIDASON

Introduction

Languages have several ways of expressing intensified meaning, mainly through *free* and *bound intensifiers*. In (1), some examples of free intensifiers in Icelandic are presented: *geðveikt* (lit. ‘insane’), ‘extremely’ in (1)a. and *sjúklega* (lit. ‘pathologically’) ‘extremely’ in (1)b.:

- (1) a. Jón er alveg geðveikt fyndinn
lit. ‘John is just insane funny’
‘John is just extremely funny’
- (1) b. Þetta var sjúklega vandræðalegt augnablik
lit. ‘This was a pathologically embarrassing moment’
‘This was an extremely embarrassing moment’

Free intensifiers will not be further discussed here. The main focus of the paper is on bound intensifiers in prefixal position. In Icelandic, there exist many such intensifiers and they may occur with various kinds of bases, adjectives as in (2)a., nouns as in (2)b. and verbs as in (2)c.:¹

- (2) a. *eitur-ruglaður* lit. ‘poison-confused’, ‘totally confused’
bál-reiður lit. ‘fire-angry’, ‘furious’
blóð-latur lit. ‘blood-lazy’, ‘bone-idle’
- (2) b. *dúndur-fylliri* lit. ‘explosive-bender’, ‘crazy bender’
þrumu-stuð lit. ‘thunder-fun’, ‘great fun’

¹ Intensifiers are relevant to the discussion concerning borderline cases between compounding and derivation in recent years (see section 4 in this paper and Dalton-Puffer and Plag 2000, Bauer 2005 and Štekauer 2005).

- (2) c. *blóð-langa* lit. ‘blood-want’, ‘dying for something’
drullu-tapa lit. ‘mud-loose’, ‘totally lose something (game)’
svín-beygja (einhvern) lit. ‘pig-give in to (someone)’, ‘to totally crush someone’

Bound intensifiers with adjectives are the most common ones in Icelandic and other types are fairly rare, especially those with verbs. The aim of this account is to present the results of a study of 50 bound intensifiers in Icelandic, mainly with adjectives, and to determine their nature and origin. Their grammatical and semantic features were studied in addition to their productivity. To get a clear picture of their productivity, corpora like *Timarit.is*, *ISLEX.no* (digital dictionary) and *Mörkuð íslensk málheild* were used (see fn. 5). In addition, it was also investigated if bound intensifiers in Icelandic match with the definition of prefixoids.

There have been rather limited discussions on bound intensifiers in Icelandic (see Þorgeirsdóttir 1986 and Indriðason 2016) compared to other Nordic languages such as Norwegian (Skommer 1993)² and Swedish (Ascoop and Leuschner 2006).³ These intensifiers have been labelled by various names: *semi-prefixes* in Norwegian (Rønhovd 1993) and *prefixoids* in Swedish (Ascoop and Leuschner 2006). Rønhovd (1993: 135–136) defines two types of semi-prefixes:

- (3) a. Those which express quantity: *dobbel(t)-* ‘double’ and *mange-* ‘many’
 (3) b. Those which express degree: *drit-* lit. ‘shit’, ‘very’ and *rå-* lit. ‘raw’, ‘very’

The goal of this paper is to study the type in (3)b. In this type, one finds a clear difference between the roles of the elements when they behave as

² Skommer (1993) examines both free and bound intensifiers in Norwegian and reports on about 200 such elements. He categorizes the elements semantically and proposes several subgroups. Skommer describes the change from a lexeme to a bound intensifier in three steps but does not relate this change to grammaticalization. Skommer (1993: 151) concludes that: “[...] the origin of numerous intensifiers is inevitably connected with the loss of their denotational meaning. *Propp-* in *proppstille* cannot be treated by the same token as *propp-* in *proppfull*. A change in meaning involves a change in morphological status.”

³ Goethem (2008) and Arcodia (2012) discuss bound intensifiers in Dutch, and Ascoop and Leuschner (2006) and Meibauer (2013) do the same for German.

grammatical elements expressing degree as in (4)b. and as independent words in (4)a. respectively:

- (4) a. eitur-efni, bál-köstur, blóð-rannsókn, stál-vinnsla
‘poison stuff’, ‘bonfire’, ‘bloodwork’, ‘steel production’
- (4) b. eitur-ruglaður, bál-reiður, blóð-latur, stál-heiðarlegur
(lit. ‘poison-confused’, ‘fire-angry’, ‘blood-lazy’, ‘steel-honest’)
‘totally crazy’, ‘furious’, ‘bone-idle’, ‘completely honest’

Bound intensifiers in Icelandic are either monosyllabic (roots) like *bál* ‘fire’ or disyllabic (stems) like *eitur* ‘poison’, or have genitive forms as independent words, like *fant-a* (m. gen. pl.) ‘thugs’ and *drull-u* (f. gen. sg.) ‘mud’.⁴ The difference between the examples in (4)a. and b. can be explained by grammaticalization (see section 3).

The paper is organized as follows: In section 2 I will present 51 bound intensifiers in Icelandic and examine their grammatical and semantic features in addition to their productivity. In section 3 the intensifiers will be related to grammaticalization and prefixoids. In section 4, the position of bound intensifiers will be further discussed in relation to the borderline between derivation and compounding. In section 5, there are some closing remarks.

The Icelandic material: Types, grammar, semantics and productivity

Types of bound intensifiers. In tables 1 and 2, 51 bound intensifiers in Icelandic are presented with their original meaning.⁵ They are of the same type as in (4)b. As previously mentioned, intensifiers in Icelandic can

⁴ Inflected forms are, of course, a strong feature of the nominal and not the prefix. All the same, these bound intensifiers will be considered as grammatical in this paper.

⁵ The intensifiers have been gathered from several sources. Most of them are from *Orðabók um slettur, slangur og annað utangarðsmál* (Árnason et al 1982), some are from *ISLEX* (Icelandic-Scandinavian dictionary on the web, see Islex.no) and I have also gathered a few of them myself in various texts. As previously mentioned their frequency and productivity have been studied with the help of *ISLEX*, *Tímarit.is* and *Mörkuð íslensk málheild* (mim.arnastofnun.is). *Tímarit.is* is a corpus with written texts; newspapers, magazines and journals from the late 19th till the beginning of the 21st century and *Mörkuð íslensk málheild* is a corpus containing 25 million words in 900 texts from the period 2000–2006.

either be in the genitive form, mostly genitive singular as in table 1, or monosyllabic or disyllabic roots or stems as in table 2.⁶

Table 1. Examples of bound intensifiers in the genitive form.

<i>Bound intensifiers with inflectional ending</i> (genitive –a or –u)	
arfa ‘weed’	risa ‘giant’
auga ‘eye’	rosa ‘tumult, storm’
drullu ‘mud’	snældu ‘spindle’
fanta ‘thugs’	sultu ‘jam’
gufu ‘steam’	víðáttu ‘wide expanse’
hörku ‘hardness’	þrumu ‘thunder’
pínu ‘tiny’	þrusu ‘thunder’
pöddu ‘creep’	ösku ‘ash’

In table 1, most of the genitive forms are singular forms and many of them only exist in the singular form, like *drullu*, *hörku* and *ösku*. The plural genitive form *fanta* is an exception.

Table 2. Examples of bound intensifiers as roots or stems.

<i>Bound intensifiers without inflectional ending</i> (roots or stems)			
bál ‘fire’	dúndur ‘explosive’	grút ‘train oil’	sauð ‘sheep’
band ‘string’	egg ‘edge’	hand ‘hand’	silki ‘silk’
blá ‘blue’	eitur ‘poison’	hrút ‘ram’	skít ‘shit’
blek ‘ink’	fjall ‘mountain’	hræ ‘cadaver’	snar ‘swift’
blóð ‘blood’	fök ‘storm’	hund ‘dog’	staur ‘pole’
blý ‘lead’	gler ‘glass’	keng ‘hook’	stál ‘steel’
dauð ‘death’	grá ‘grey’	kol ‘coal’	stein ‘stone’
draug ‘ghost’	graut ‘porridge’	ríg ‘discord’	svín ‘pig’
drepp ‘gangrene’	grjót ‘rock’	rok ‘storm’	

According to *Tímarit.is*, the oldest of the examples is from late 19th century but table 3 presents the date of first recorded use. The difference is interesting in many ways. Intensifiers like *eitur-*, *arfa-*, *drullu-*, *keng-* and *gufu-* are all relatively new according to *Tímarit.is*, i.e. from the period

⁶ In Norwegian, bound intensifiers can either be monosyllabic as in (i)a. or disyllabic as in (i)b.:

- (i) a. dritt- ‘shit’, døds- ‘death’, gørr- ‘guts’, knall- ‘bang’, rå- ‘raw’, topp- ‘top’, stygg- ‘ugly’
- b. kanon- ‘cannon’, kjempe- ‘giant’

1985–1996, whereas others, like *hund-*, *stál-*, *staur-* and *hræ-* have existed in Icelandic for a long time. It looks as if the use of these intensifiers somehow reflects a difference between generations, i.e. younger generations seem to use them more often than older ones. This fact also raises the question of how these intensifiers came into use in the first place. One could speculate that their meanings were initially in a closer relation to the meaning of the base word, and eventually their use then expanded to other types of adjectives. We find examples like *sauð-ruglaður* ‘disoriented as a sheep’, from which usage begins to expand the use of *sauð-* to other types of adjectives e.g. *sauð-ölvaður* ‘very drunk’, used in different contexts.

Table 3. Dating of some structures with bound intensifiers

<i>Structures with bound intensifiers</i>	<i>Dating from Tímarit.is</i>
hund-heiðinn lit. dog- ‘atheistic’, ‘extremely atheistic’	1891, Fjallkonan
stál-heppinn lit. steal-lucky, ‘extremely lucky’	1905, Eimreiðin
staur-blankur lit. pole-broke, ‘dead broke’	1926, Vísir
hræ-óðýr lit. cadaver-cheap, ‘dirt cheap’	1933, Íðunn: nýr flokkur
draug-fúll lit. ghost-grumpy, ‘very grumpy’	1942, Lesbók Morgunblaðsins
ösku-illur lit. ash-mad, ‘raving mad’	1952, Vikan
eitur-hress lit. poison-high spirited, ‘extremely high spirited’	1974, Morgunblaðið
arfa-vitlaus lit. weed-crazy, ‘totally crazy’	1985, Vikan
drullu-fúll lit. mud-grumpy, ‘very grumpy’	1985, Vikan
keng-ruglaður lit. hook-confused, ‘utterly confused’	1992, DV
gufu-ruglaður lit. steam-confused, ‘utterly confused’	1996, Morgunblaðið

In German and Swedish, the intensifiers mostly originate from nouns (see Ascoop and Leuschener 2006: 245) and the same can be said about the intensifiers in Icelandic, with few exceptions. Some of them originate from adjectives like *blá-* ‘blue’, *grá* ‘grey’ and *snar-* ‘swift’. In Norwegian, intensifiers from nouns are common but one also finds intensifiers from adjectives, like *rå-* ‘raw’.

Many of the base words in Icelandic are adjectives, but we also find verbs like in *blóð-langa* ‘to want something badly’ and *svín-beygja* ‘to crush someone’ as well as nouns in, e.g., *aftöku-brim* ‘deadly breakers’ and *skíta-veður* ‘shitty weather’, see Þorgeirsdóttir (1986: 80, 82) and the examples in table 4.

Table 4. Types of base words with bound intensifiers in Icelandic.

<i>Nouns as bases</i>	<i>Adjectives as bases</i>	<i>Verbs as bases</i>
aftöku-brim ‘deadly breakers’	arfa-slakur ‘very calm’	hrút-leiðast ‘to be really bored’
rísa-planta ‘gigantic plant’	bál-skotinn ‘have a big crush on somebody’	drullu-tapa ‘totally loose something (game, bet)’
arfa-læti ‘extreme noise’	dauð-hreinsaður ‘totally sterilized’	svín-beygja ‘to crush someone’
dúndur-fylliri ‘bad bender’	hrút-leiður ‘extremely bored’	snar-halda (kjafti) ‘to really shut up’
skíta-veður ‘shitty weather’	víðáttu-vitlaus ‘extremely stupid’	blóð-langa ‘to want something badly’
þrumu-stuð ‘great mood’	þræl-spennandi ‘very exciting’	stein-gleyma ‘to totally forget’

In Norwegian, bound intensifiers can also be found with nouns and verbs in addition to adjectives; with nouns, e.g., in *dritt-sommer* ‘shitty summer’ and *kanon-debatt* ‘great debate’, and with verbs as in *gru-glede seg* ‘to simultaneously feel both anxious and look forward to something’. Examples of intensifiers with adjectives are *drit-bra* (lit. ‘shit good’) ‘extremely good’, *døds-billig* (lit. ‘death cheap’), ‘really cheap’, *kanon-fornøyd* (lit. ‘cannon satisfied’), ‘incredibly satisfied’, *stygg-fin* (lit. ‘ugly good looking’), ‘very good looking’ and *skam-gøy* (lit. ‘shame fun’), ‘incredible fun’.

The grammar of intensifiers. The aim of this section is to show that bound intensifiers are borderline cases between derivation and compounding. They behave in some instances like words with some lexical content and in other contexts like prefixes with a grammatical role.

Gradation. In Icelandic, gradation as a category can be expressed in two ways: morphologically with suffixes like *-ari* (comparative) and *-astur*

(superlative) and variants of these.⁷ Gradation can also be expressed syntactically with the adverbs *meira* ‘more’ (comparative) and *mest* ‘most’ (superlative). Bound intensifiers have an inherent feature of gradation and therefore it should be difficult to grade already graded adjective bases with intensifiers, because of the collision of semantic features. The question also arises, if there is any difference between morphological and syntactical gradation in using bound intensifiers. Various examples of this collision are shown below, first with morphological gradation and then syntactic gradation with *meira* and *mest*:

- (5) a. Jón er vitlaus, Magnús er vitlausari en Stefán er þeirra vitlausastur
‘John is crazy, Magnus is crazier but Stefan is craziest of them all’
- (5) b. *Jón er kolvitlaus, Magnús er kolvitlausari en Stefán er þeirra kolvitlausastur
‘John is extremely crazy, Magnus is extremely crazier but Stefan is extremely craziest of them all’

In (5)a. there is an example of morphological gradation of ‘vitlaus’ in comparative and superlative but without the intensifier. In (5)b. there is a gradation of the same adjective with an intensifier. If the example expresses a comparison with another person or persons then the use of a bound intensifier is ungrammatical. However, it seems possible to grade if there is no comparison between persons as in (6), only a description of the same person over a period of time:

- (6) ?Jón varð bara kolvitlausari og kolvitlausari eftir því sem árin liðu
‘John became just extremely crazier and crazier over the years’

In the same way it seems alright to grade the adjective if one is dealing with a general assertion which does not involve comparison between persons, shown in (7) with the adjective *hress* ‘in high spirits’ (comp. *hressari*, superl. *hressastur*):

⁷ Following are the existing variants (gender distinction partly in comparative (n.) but mainly in the superlative):

- (ii) a. comp. *-ari* (n. *-ara*), superl. *-astur* (f. *-ust*, n. *-ast*)
- b. comp. *-ri* (n. *-ra*), superl. *-astur* (f. *-ust*, n. *-ast*)
- c. comp. *-ri* (n. *-ra*), superl. *-stur* (f. *-st*, n. *-st*)

- (7) ?Jón var eituhressari en allir sem ég hef þekkt
 ‘John was totally higher spirited than any other I have known’

Here, the description does not involve a time span as in (6). But how does this turn out with *meira* and *mest*? Does gradation function better with intensifiers when expressed syntactically? In (8)a. there is gradation with the adjective *hissa* ‘surprised’ which can only be syntactically graded and in (8)b. the same adjective is prefixed with the intensifier *þræl-*:

- (8) a. Jón var hissa, Magnús var meira hissa en Stefán var þó mest hissa af þeim öllum
 ‘John was surprised, Magnus was more surprised but Stefan was most surprised of them all’
 (8) b. *Jón var þrælhissa, Magnús var meira þrælhissa en Stefán þó mest þrælhissa af þeim öllum
 ‘John was extremely surprised, Magnus was more extremely surprised but Stefan was most extremely surprised of them all’

Here, it is not more acceptable to use *meira* and *mest* than morphological suffixes. In (9) there is also an example where no comparison with other person or persons is involved:

- (9) ?Jón varð bara meira og meira þrælhissa á þessu eftir því sem árin liðu
 ‘John became just more and more extremely surprised as the years went by’

Compared to (6), the syntactic gradation is equally acceptable. In (10) there is a similar example to (7):

- (10) ?Jón var meira þrælhissa á þessu en allir sem ég hef þekkt
 ‘John was more extremely surprised by this than everybody I’ve known’

In this case, it does not seem more acceptable to use *meira* and *mest* instead of using morphological gradation with suffixes.

If we compare these examples with the Norwegian examples we get the same results. In Norwegian, it’s not possible morphologically to grade adjectives with bound intensifiers as in (11)b.:

- (11) a. Maria var fin, Silje var finere men Kari var finest av dem alle
 ‘Maria was nice, Silje was nicer but Kari was nicest of them all’
 (11) b. *Maria var dødsfin, Silje likevel dødsfinere men Kari var dødsfinest av dem alle
 ‘Maria was extremely nice, Silje was in fact extremely nicer but Kari was extremely nicest of them all’

Gradation with *mer* and *mest* does not work very well either in Norwegian:

- (12) *Boken var kjempeinteressant, filmen var mer kjempeinteressant
 men forestillingen var likevel mest kjempeinteressant
 ‘The book was extremely interesting, the film was more extremely interesting but the film was nevertheless most extremely interesting’

In Norwegian, as in Icelandic, it seems possible to grade adjectives with a bound intensifier if the context does not involve comparison with another person or persons, and it is either a question of a process over a certain period of time as in (13)a. or a more punctual comparison as in (13)b.:

- (13) a. ?Tor ble bare kjempegladere og kjempegladere da han ble eldre
 ‘Tor became just extremely happier and happier as he got older’
 (13) b. ?Jon ble bare gørrkjedeligere og gørrkjedeligere i talen sin
 ‘John became just more and more extremely boring in his speech’

Here, one can then conclude that it’s difficult in most cases to grade adjectives when they occur with bound intensifiers. The intensifier itself has a gradation role and therefore one can say that two similar semantic features collide in such combinations. In some contexts, it is easier to grade an adjective with an intensifier if it does not involve an exact comparison to something else, independent of the use of morphological or syntactic gradation. The examples in this paper indicate strongly that bound intensifiers inherently inhabit the grammatical feature of gradation.

Reductions. In Icelandic, it is possible to answer questions by only referring to the first part of a compound as in (14):

- (14) Var Guðmundur algjörlega hvítskjeggaður? Já, algjörlega hvít.
 ‘Was Guðmundur totally whitebearded? Yes, totally white.’

This is also possible in the case of bound intensifiers and this shows similarities between bound intensifiers and independent words:⁸

- (15) a. Varð Guðjón alveg *öskureiður*? Já, alveg *ösku*.
 ‘Did Guðjón become just raving mad? Yeah, just raving.’
 (15) b. Er Kjartan algjörlega *kengruglaður*? Já, algjörlega *keng*.
 ‘Is Kjartan absolutely utterly crazy? Yeah, absolutely utterly.’

This is not possible in the case of traditional prefixes, like in (16):

- (16) a. Var hann ekki dæmdur algjörlega *vanhæfur*? *Jú, algjörlega *van*.
 ‘Wasn’t he evaluated as totally disqualified? Yeah, totally dis.’
 (16) b. Varð hann ekki algerlega *óábyrgur*? *Jú, algerlega *ó*.
 ‘Didn’t he become totally irresponsible? Yeah, totally ir.’

The examples in (14), (15) and (16) indicate that bound intensifiers have stronger word-like features than affixal features. This is not surprising considering the position of the intensifiers although at later stages in their history they should become more and more grammatical and less word-like (see section 4).

The semantics of intensifiers. When the examples of bound intensifiers in Icelandic are examined with their respective bases, it is possible to divide the bases into various subgroups which describe temper and other personal qualities, negative and positive as in table 5:

⁸ In Norwegian, intensifiers also show this similarity with independent words. Intensifiers, derived from nouns, can sometimes be independent and behave as adjectives in sentences like:

- (i) a. Ølsalget i sommer ble helt kanon på grunn av været
 ‘The beer sale this summer was totally super because of the weather’
 b. Vegard var helt kjempe i denne filmen
 ‘Vegard was extremely good in this film’

Table 5. Bound intensifiers with adjectives that describe temper and qualities.

<i>Personalities⁹</i>			
<i>Negative temper</i>	<i>Positive temper</i>	<i>Negative qualities</i>	<i>Positive qualities</i>
arfa-brjálaður 'totally crazy'	drullu-næs 'very nice'	blóð-latur 'bone-idle'	drullu-flottur 'very good looking'
arfa-vitlaus 'totally crazy'	eitur-hress 'in very high spirits'	gufu-ruglaður 'utterly confused'	grjót-harður 'extremely tough'
band-vitlaus 'totally crazy'	fanta-hress 'in very high spirits'	hrút-leiðinlegur 'extremely boring'	hörku-duglegur 'intensely efficient'
band-óður 'totally mad'	sultu-slakur 'very calm'	keng-ruglaður 'utterly confused'	stál-sleginn 'perfectly fit'
bál-reiður 'furious'	þræl-skemmtilegur 'extremely funny'	kol-geggjaður 'totally deranged'	stál-heiðarlegur 'extremely honest'

Then there is a small group of adjectives that only describes the state of being under the influence of alcohol (or drugs) as in table 6:¹⁰

⁹ In table 5, I only show several examples of each category but here are some more: Negative temper: *draug-fúll* lit. ghost-grumpy, 'very grumpy', *drullu-fúll* lit. mud-grumpy, 'very grumpy', *fok-illur* lit. storm-mad, 'raving mad', *fok-reiður* lit. storm-angry, 'extremely angry', *graut-fúll* lit. porridge-grumpy, 'very grumpy', *grút-spældur* lit. train oil-disappointed, 'very disappointed', *gufu-brjálaður* lit. steam-crazy, 'extremely crazy', *hund-fúll* lit. dog-grumpy, 'very grumpy', and *kol-vitlaus* lit. coal-crazy, 'extremely crazy'. More examples of negative qualities are: *kol-ómögulegur* lit. coal-impossible, 'totally hopeless', *kol-ruglaður* lit. coal-confused, 'totally confused', *ríg-montinn* lit. discord-arrogant, 'extremely arrogant', *sauð-heimskur* lit. sheep-stupid, 'extremely stupid', *sauð-þrár* lit. sheep stubborn, 'extremely stubborn', *staur-blindur* lit. pole blind, 'totally blind', and *snældu-bilaður* lit. spindle-crazy, 'totally crazy'. And more examples of positive qualities are: *þrusu-finn* lit. thunder-good, 'very good', *þræl-músikalskur* lit. slave-musical, 'extremely musical', *þræl-magnaður* lit. slave-powerful, 'extremely powerful', *þræl-sterkur* lit. slave-strong, 'extremely strong', *þræl-vanur* lit. slave-experienced, 'extremely experienced', and *þræl-menntaður* lit. slave-educated, 'very educated'.

¹⁰ Some of the adjectives are not easy to categorize: *hand-ónýtur* 'totally unusable', *hörku-spennandi* 'extremely exiting', *blyþungur* 'very heavy', *rok-dýr* 'extremely expensive', *hræ-ódyr* 'extremely cheap' and *grút-syffjaður* 'very sleepy'.

Table 6. Bound intensifiers with adjectives that describe the state of being under the influence of alcohol (or drugs).

<i>Under the influence of alcohol or drugs</i>	
pöddu-fullur 'extremely drunk'	skít-fullur 'heavily drunk'
ríg-skakkur 'heavily doped'	svín-drukkinn 'heavily drunk'
sauð-drukkinn 'heavily drunk'	svín-fullur 'heavily drunk'
sauð-ölvaður 'heavily intoxicated'	ösku-fullur 'extremely drunk'

In table 7, there is a tentative semantic grouping of the intensifiers into categories: nature, body, material, food, animal, phenomenon and quality. As the table indicates, 16 of the 51 intensifiers are placed in the category *Nature*.

Table 7. Tentative semantic categorization of bound intensifiers.

<i>Tentative semantic categorization</i>						
<i>Nature</i>	<i>Body</i>	<i>Material</i>	<i>Food</i>	<i>Animal</i>	<i>Phenomenon</i>	<i>Quality</i>
bál, fjall 'fire, mountain'	auga 'eye'	band 'string'	graut 'porridge'	hrút 'ram'	blá 'blue'	fanta 'thug'
blý, fok 'lead, storm'	blóð 'blood'	blek 'ink'	sultu 'jam'	hund 'dog'	dauð 'death'	snar 'swift'
drullu, kol 'mud, coal'	hand 'hand'	glér 'glass'		pöddu 'insect'	draug 'ghost'	hörku 'hardness'
eitur, grjót 'poison, rock'		staur 'pole'		sauð 'sheep'	dúndur 'explosive'	pínu 'tiny'
arfa, þrusu 'weed, thunder'		grút 'train-oil'		svín 'pig'	grá 'grey'	ríg 'discord'
gufu, ösku 'steam, ash'		silki 'silk'		hræ 'cave'	drepp 'gangrene'	egg 'edge'
þrumu, rok 'thunder, storm'		keng 'hook'		risa 'giant'	rosa, 'tumult, storm'	stál 'steel'

skít, stein 'shit, stone'		snældu 'spind- le'				víðáttu 'wide ex- panse'
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Position with negative or positive adjectives or both. In table 8, one finds 11 intensifiers that seem to be independent of the meaning of the base, i.e. they can occur with bases of both negative and positive meaning, like *drepp-leiðinlegur* 'extremely boring' and *drepp-fyndinn* 'extremely funny'. If this is a measure of how grammaticalized these intensifiers are, then the grammaticalization process is well on its way in those intensifiers.

Table 8. Bound intensifiers with negative and positive adjectives or both.

<i>Categorization by negative and positive adjectives</i>			
<i>With negative adjectives</i>		<i>With positive adjectives</i>	<i>With both positive and negative adjectives</i>
auga 'eye'	hund 'dog'	egg 'edge'	arfa 'weed'
band 'string'	keng 'hook'	fanta 'thug' (pl.)	bál 'fire'
blek 'ink'	kol 'coal'	fjall 'mountain'	eitur 'poison'
blóð 'blood'	pöddu 'insect'	grjót 'rock'	drepp 'gangrene'
blý 'lead'	ríg 'discord'	hörku 'hardness'	drullu 'mud'
draug 'ghost'	rok 'storm'	silki 'silk'	gler 'glass'
fök 'storm'	sauð 'sheep'	stál 'steel'	hand 'hand'
graut 'porridge'	skít 'shit'	sultu 'jam'	snældu 'spindle'
grút 'train oil'	staur 'pole'	þrusu 'thunder'	stein 'stone'
gufu 'steam'	ösku 'ash'	þrumu 'thunder'	svín 'pig'
hrút 'ram'			þræl 'slave'

Semantic relationship between bound intensifiers and corresponding nouns. Regarding the semantics of intensifiers, it is important to examine if any of them have meanings similar to those of their corresponding nouns

when they occur with adjectival bases, or if the intensifiers have developed meanings far from the meanings of the nouns. This question is important in connection with grammaticalization as discussed in section 3. In table 9, I've categorized the intensifiers, according to their semantic relationship with their corresponding noun, based on a semantic analysis of a considerable amount of data. I've used three categories: strong semantic relationship, mixed semantic relationship and weak or no semantic relationship.

Table 9. Semantic relationship with corresponding nouns in structures with intensifiers.

<i>Strong semantic relationship</i>	<i>Mixed semantic relationship</i>	<i>Weak or no semantic relationship</i>
blý (-grár, -þungur) 'lead (-gray, -heavy)'	keng (-boginn, -ruglaður) 'hook (-bent, -confused)'	auga, bál 'eye, fire'
fjall (-stór, -hár, -myndarlegur) 'mountain (-big, -high, -vast)'	kol (-dimmur, -blár, -vitlaus) 'coal (-dark, -blue, -crazy)'	band, eitru 'string, poison'
grjót (-harður, -stífur) 'rock (-hard, -stiff)'	ríg (-bundinn, -fastur, montinn) 'discord (-tied, -stuck, -arrogant)'	blek, drep 'ink, gangrene'
sauð (-meinlaus, -svartur, -þrár, -heimskur) 'sheep (-harmless, -black, -stubborn, -stupid)'	egg (-slétt, -hvöss, -traustur) 'edge (-even, -sharp, -solid)'	blóð, skít 'blood, shit'
	gler (-harður, -háll, -þunnur, -fínn) 'glass (-hard, -slippery, -thin, -fine)'	draug, staur, drullu 'ghost, pole, mud'
	stál (-harður, -heppinn) 'steel (-tough, -lucky)'	fok, ösku 'storm, ash'
	svín (-alinn, -beygður, -dýr) 'pig (-fed, -crushed, -expensive)'	graut, fanta, hand 'porridge, thug, hand'
	hund (-tryggur, -gamall, -leiðinlegur) 'dog (-loyal, -old, -boring)'	grút, hörku, snældu 'tank oil, hardness, spindle'

	silki (-mjúkur, -slakur, -rauður) 'silk (-soft, -calm, -red)'	gufu, stein 'steam, stone'
		hrút, sultu 'ram, jam'
		þrumu, þrusu 'thunder'

With the notion 'Strong semantic relationship', I mean that in an example like *blý-þungur* it is possible to rephrase it as 'heavy as lead', although in a phrase like *prófið var blýþungt* 'the exam was extremely difficult' this interpretation is not appropriate in that context. In the second column, 'Mixed semantic relationship', intensifiers like *stál-* 'steel' have two kinds of interpretation. In *stál-harður* it is possible to interpret it as 'hard as steel' with a strong semantic relation to the lexical item. On the other hand, in *stál-heppinn* (lit. 'steel lucky'), 'extremely lucky', this interpretation is not appropriate; one can not rephrase the construction as '*lucky as a steel'. In the last column, 'Weak or no semantic relationship', one finds intensifiers which seem to have weak or no semantic relation at all to the corresponding noun. An example of this is a combination like *graut-fúll* (lit. 'porridge-grumpy'), 'extremely grumpy'. Here, one can not interpret the construction as '*grumpy as porridge'; there is only one available interpretation. In table 9, the majority of the intensifiers that were analysed, 25, have seemingly weak or no semantic relationship with the corresponding nouns in their combinations with adjectival bases, and additionally 9 of them have mixed relations. Only in four cases it is possible to find semantic relations to the corresponding noun when they occur with adjectival bases. Hence, at least 34 of the intensifiers have mixed, weak or seemingly no semantic relation to corresponding nouns. This points to a change in the use of the intensifiers, if not a transition from an independent word to the category of grammatical elements then surely a semantic change of a considerable degree.

Productivity. As the productivity of affixes (prefixes and suffixes) is basically measured by the number of different bases these affixes can attach to (type frequency), the most productive intensifiers in Icelandic according to table 10 are *dauð-* and *drullu-* with respectively 13 and 10 different adjectival bases and *snar-*, *kol-* and *hund-* with 8 different adjectival bases. The intensifiers *blá-* and *eitur-* occur with 7 different adjectival bases and *hörku-*, *sauð-* and *stein-* occur with 6 different adjectival bases. Intensifiers with the fewest bases are *auga-*, *blek-*, *blóð-*, *gufu-*, *hrút-*, *pöddu-*, *rok-*, *sultu-* and *þrumu-* with only one base each. Intensifiers in general are not productive compared to some of the most

productive affixes in Icelandic like *-legur*, *-ari* and *-un* (see Indriðason 2008 on some of those). A likely explanation lies in the selectional restrictions of the intensifiers. An intensifier like *ösku-* can only attach to adjectives with negative meaning. Constructions with positive adjectives like **ösku-ánægður* (lit. ‘ash-satisfied’), ‘extremely satisfied’ or **ösku-farsæll* (lit. ‘ash-successful’), ‘extremely successful’ are not possible in Icelandic. On the other hand, intensifiers like *stál-* mainly attach to positive adjectives, like *stál-heppinn* (lit. ‘steel-lucky’), ‘extremely lucky’ but not to negative ones, like **stál-latur* (lit. ‘steel-lazy’), ‘extremely lazy’. Some of the intensifiers can attach to both positive and negative adjectives, like *arfa-* in *arfa-hress* (lit. ‘weed-high spirited’) ‘extremely high spirited’ and *arfa-vitlaus* (lit. ‘weed-crazy’), ‘extremely crazy’. As is shown in footnotes 11-21, some of the intensifiers also occur with verbs and nouns but those constructions are not common.

Table 10. Number of different adjectival bases with each intensifier found in Mörkuð íslensk málheild and Islex.no.

arfa (5) ‘weed’	dúndur (3) ‘explosive’	hand (3) ‘hand’	svín (4) ¹¹ ‘pig’
auga (1) ‘eye’	egg (2) ‘edge’	hrút (1) ‘ram’	víðattu (4) ‘wide expanse’
bál (3) ‘fire’	eitur (7) ‘poison’	hræ (2) ‘cadaver’	skít (3) ‘shit’
band (3) ‘string’	fanta (3) ‘thug’	hund (8) ¹² ‘dog’	snar (8) ‘swift’
blá (7) ‘blue’	fjall (4) ‘mountain’	hörku (6) ¹³ ‘hardness’	snældu (3) ‘spindle’
blek (1) ‘ink’	fok (4) ‘storm’	keng (2) ‘hook’	stál (4) ‘steel’
blóð (1) ¹⁴ ‘blood’	gler (4) ‘glass’	kol (8) ¹⁵ ‘coal’	staur (2) ‘pole’

¹¹ *Svín* forms 4 verbs in the material: *-beygja* ‘to crush’, *-virka* ‘to function’, *-liggja* ‘to lie’ and *-ala* ‘to feed’

¹² *Hund* forms 3 verbs: *-skammast* ‘to scold’, *-elta* ‘to follow’, *-leiðast* ‘to be bored’

¹³ *Hörku* forms 5 nouns: *-rödd* ‘voice’, *-stuð* ‘fun’, *-áflog* ‘fighting’, *-slagsmál* ‘fighting’, *-rifrildi* ‘quarrel’

¹⁴ *Blóð* forms 3 verbs: *-langa* ‘to want’, *-smella* ‘to crack’ and *-mjólka* ‘to milk’

¹⁵ *Kol* forms one verb: *-falla* ‘to fall’

blý (3) ¹⁶ 'lead'	grá (3) 'grey'	pöddu (1) 'insect'	stein (6) ¹⁷ 'stone'
draug (4) 'ghost'	graut (3) 'porridge'	pínu (2) 'tiny'	sultu (1) 'jam'
dauð (13) 'death'	grjót (2) 'rock'	rok (1) ¹⁸ 'storm'	þrumu (1) 'thunder'
drep (2) ¹⁹ 'gangrene'	grút (6) ²⁰ 'train oil'	sauð (6) 'sheep'	þrusu (2) 'thunder'
drullu (10) ²¹ 'mud'	gufu (1) 'steam'	silki (3) 'silk'	ösku (4) 'ash'

The results in table 10 do not fit very well with the following claim for affixoids from Ascoop and Leuschner (2006: 245–246): “Affixoids are serial and highly productive.” The most productive intensifier relates to 13 different bases, which is a small number compared to some of the more productive derivational affixes in Icelandic (see Indriðason 2008) and the numbers in table 10 would not change much if verbs and nouns were added as bases.

On affixoids and grammaticalization

In section 2, we saw that many of the intensifiers have moved from their corresponding lexical items, both grammatically and semantically. In this section, bound intensifiers will be discussed in relation to affixoids. We will then discuss coordination reduction (see Kenesei 2007) in connection with wordhood and finally grammaticalization.

Five features of affixoids. Ascoop and Leuschner (2006: 245–246) discuss several features of affixoids (prefixoids and suffixoids) that differentiate them from independent words. Firstly, affixoids and corresponding independent words exist side by side in the language; this seems like a primary condition for an affixoid. From Icelandic, the different use of *eitur-* in *eitur-efni* (noun), ‘poison stuff’ and *eitur-ruglaður* (adj.), ‘totally crazy’ is an example of this. In the former case, the

¹⁶ *Blý* forms one verb: -standa ‘to stand’

¹⁷ *Stein* forms 6 verbs: -hætta ‘to quit’, -þagna ‘to be silent’, -sofna ‘to sleep’, -gleyma ‘to forget’, -halda ‘to hold’, -liggja ‘to lie’

¹⁸ *Rok* forms two nouns: -sala ‘sale’, -tekjur ‘income’

¹⁹ *Drep* forms one verb: -leiðast ‘to be bored’

²⁰ *Grút* forms 2 verbs: -skamma ‘to scold’, -leiðast ‘to be bored’

²¹ *Drullu* forms to verbs: -tapa ‘loose’, -leiðast ‘to be bored’

word is used in its lexical meaning but in the second case as an intensifier with the adjective, and there is no semantic relation between the intensifier and the adjectival base or between the intensifier and the noun other than the form. Secondly, the affixoid can have a wider and more abstract meaning than the independent word and take the role of a metaphor. This can be seen in the case of the intensifier *gufu*- ‘steam’ in *gufu-ruglaður*, where the metaphor lies in the relation between steam or haze and being confused. Thirdly, it is the base word and not the intensifier that determines the basic meaning. In Icelandic, *þrumu-góður* (lit. ‘thunder good,’) ‘extremely good’ does not mean that *þruma* ‘thunder’ is good, but that someone is extremely good in doing something. Fourthly, affixoids, and especially suffixoids, are in complementary distribution with affixes, i.e. there do not exist affixes which have the same role as affixoids. Finally, affixoids can occur with various types of bases (serial) and can therefore be very productive. As we noticed in table 10, many of the intensifiers in Icelandic do not fit that description of productivity. As a whole, intensifiers in Icelandic are not very productive when compared to some of the most productive affixes.

Coordination reduction. Kenesei (2007) proposes a way to differentiate between words and various bound forms like semi words, affixoids and affixes. He defines two kinds of levels, word level and bound forms. At the word level there exist autonomous words like *house* or *car*, and dependent words, i.e. words that are dependent on occurring with other words. Examples of dependent words are prepositions, verb particles, clitics and suffixed articles. Kenesei divides the level for bound forms into several stages: semi-words, affixoids and affixes. Semi-words are placed between words and affixoids and they are not grammaticalized. Using several tests, Kenesei tries to identify which of the bound forms have the strongest characteristics of independent words and which have not. One of the characteristics of compounds is that they can rather easily take part in *coordination reduction* where two compounds are coordinated. There exist various types of coordination reduction but two types are most common: *back coordination reduction*, which reduces the second part of the first compound as in (17)a. and *front coordination reduction*, which reduces the first part of the second compound as in (17)b.:

- (17) a. Jón var fótbolta- og handboltapjálfaári á Íslandi
‘John was football- and handball coach in Iceland’
- (17) b. Bókaseljendur og -kaupendur voru óánægðir með nýja skattinn
‘Booksellers and -buyers were dissatisfied with the new tax’

When front coordination reduction is tried out on bound intensifiers it works fairly well, as is shown in (18).²²

- (18) a. Gunnar var þrusuvarur og -sterkur varnarmaður
lit. Gunnar was a thunderexperienced and -strong defender
'Gunnar was a very experienced and strong defender'
- (18) b. Guðrún var stálheiðarlegur og -minnugur starfsmaður
lit. Guðrún was a steelhonest and -sharp worker
'Guðrún was a very honest worker with an excellent memory'
- (18) c. Gylfi var arfaslakur og -dapur í landsleiknum
lit. Gylfi was weedpoor and -weak in the international match
'Gylfi was very poor and inadequate in the international match'

The examples in (18) show that bound intensifiers can undergo front coordination reduction which indicates that they have strong characteristics of words. In (19) there are examples of coordination reduction of traditional prefixes in Icelandic:

- (19) a. *Börnin í þessum skóla voru bæði tornæm og -læs
'The children in this school were both slow to learn and read'
- (19) b. *Kennararnir mislásu og -túlkuðu nýju skólareglurnar
'The teachers misread and -interpreted the new rules of the school'
*Þetta mál opinberaði bæði vankunnáttu og -hæfni stjórnmálamanna
'This case revealed both the ignorance and incompetence of politicians'

In this case, all the examples are ungrammatical, which indicates that traditional prefixes can't undergo front coordination reduction and their resemblance to words is therefore weaker than in the case of intensifiers.

Grammaticalization. As has been discussed before, it is one of the main characteristics of affixoids that they are grammaticalized variants of independent words, in such a way that the grammaticalized variant and the independent word exist side by side in the language (see Arcodia 2012: 384). Grammaticalization is a process where an independent word develops into variants with grammatical roles. Hopper and Traugott (1993: 2) describe it as a "subset of linguistic changes through which a lexical item becomes more grammatical". The grammaticalized words get two kinds of roles: as an independent word and as an affix. In reality, one finds

²² The scope of the bound intensifiers like *þrusu-* also includes *-sterkur* in (18)a.

two kinds of grammaticalization, one where the independent word has changed to a grammatical variant and then disappeared from the language, and another where the independent word and the grammatical variant live side by side but have different roles. The first description matches the development of derivational suffixes in Icelandic which were independent in the Proto-Nordic period (see Iversen 1973: 162–164 and Halldórsson 1976), i.e. examples such as *-leg*, *-sam*, *-lát*, *-ind* and *-skap*. The latter description matches pairs in modern Icelandic like *hæstaréttar-dómur* (word) ‘supreme court sentence’ – *vesal-dómur* (derivational suffix) ‘misery’ and *viðtengingar-háttur* (word) ‘conjunctive’ – *aula-háttur* (derivational suffix) ‘foolishness’ where the independent words *dómur* and *háttur* and the derivational suffixes *-dómur* and *-háttur* have existed side by side (see Indriðason 2006: 98–99). The bound elements *-dómur* and *-háttur* then match the description of suffixoids. Examples of this development in intensifiers in Icelandic can be seen in (4) where the lexical items *eitur*, *bál*, *blóð* and *stál* all have corresponding bound intensifiers which have taken on a gradation role with adjectives.

Where do bound intensifiers fit in?

In this paper, bound intensifiers have been discussed grammatically and semantically, and especially their relationship with independent words. The main question here is whether it is possible to define these intensifiers as prefixoids, i.e. items that have been grammaticalized from independent words (see Ascoop and Leuschner 2006). If we compare bound intensifiers in Icelandic with the description of prefixoids then one can say that the intensifiers in many ways match that description, as can be seen in (20):

- (20) a. Bound intensifiers and corresponding words co-exist in the language.
- (20) b. Bound intensifiers have a grammatical role (gradation).
- (20) c. Bound intensifiers occur with adjectives in most cases while the corresponding independent words often occur with nouns.
- (20) d. Bound intensifiers can in most cases be replaced by the adverb *mjög* ‘very, extremely’.

The only feature that does not figure in this comparison with prefixoids is productivity. Bound intensifiers in Icelandic can not be said to be very productive. Their productivity has been measured through corpora of *written texts* but it is clear that the use of some of these intensifiers is more common in spoken Icelandic. Therefore, the productivity test probably

does not do justice to the real productivity of these elements in Icelandic. However, there are also other features that can block productivity, e.g. the semantic relationship between the bound intensifier and the base. That factor alone deserves more attention than it has been possible to provide in this chapter.

Final remarks

In this paper, 51 bound intensifiers in Icelandic have been presented and a semantic and grammatical analysis has been proposed. In addition, the productivity of intensifiers has been discussed. In the semantic analysis, their meaning, their possible semantic categorization and their relation to corresponding lexical items have been studied. It has also been pointed out that bound intensifiers with nouns as bases, like *skíta-veður* ‘shitty weather’ and *aftöku-brim* ‘deadly breakers’, may possibly have other and closer relationships to the base than intensifiers that have adjectives as bases. This factor deserves further attention as does how intensifiers occur and become a part of the norm of a particular language. Grammatically, intensifiers’ function as a gradation element was discussed and intensifiers were compared to the traditional gradation system in Icelandic, expressed with both morphological suffixes and syntactically with *meira* ‘more’ and *mest* ‘most’. There, it seems that it’s ungrammatical when bound intensifiers occur with gradation (expressed morphologically or syntactically) due to collision of identical semantic features. It seems clear that many of the intensifiers have moved away from their corresponding lexical items. This indicates a process of grammaticalization and, in that case, that those intensifiers have developed into prefixoids.

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CHAPTER NINE

COMPOUNDS WITH INTERNAL SPACES IN GERMAN

VILMA SYMANCZYK JOPPE

Introduction

In many Germanic languages, such as Danish, Dutch, German, Norwegian or Swedish, the basic rules for writing together and separately (henceforth WTS) are quite simple. According to standard assumptions, WTS is a mere reflex of word status: If the expression in question is morphologically and syntactically classified as a single word, it must be written as one word; if it consists of more than one word, spaces must be inserted at the word boundaries. With few exceptions, hyphenated forms are considered variants of solid forms. Consequently, doubts about the WTS of a linguistic expression should only arise if relevant criteria for word status do not converge.

Compounds, which make up a considerable part of the lexicon in the languages mentioned above, do not belong to these debatable cases. While constructions of unclear word status, e.g. German particle verbs, are discussed extensively in both normative and linguistic literature, the WTS in compounds is often not even mentioned. However, linguists have noticed a recent increase of compounds with internal spaces – a trend which has emerged in violation of presumably unambiguous orthographic rules, in all of the languages mentioned above.

My paper deals with WTS in German. The first part shall give a brief sketch of WTS in German compounds, in the prescriptive literature (official rules and spelling guides) as well as in the linguistic literature on WTS, which is often based on the former. I will introduce the phenomenon of separated compounds and then present the most important results of an own corpus study on 14,622 compounds from texts with low norm orientation. I demonstrate that compound-internal spaces do not occur at

random, but quite systematically, up to the point that, in the presence of certain factors, they might even represent the unmarked form. I will compare my findings to the suggestions made in the literature to account for them – for German as well as for other Germanic languages – and conclude with some own suggestions.

WTS in German

German orthography is regulated by the *Rat für Deutsche Rechtschreibung* ('Council for German orthography', *Amtliche Regeln* 2006). Its conventions are obligatory for educational and other institutions. Spelling guides and dictionaries are also frequently used, the most popular example the *Rechtschreibduden* (Duden 2009).

According to these normative texts, the question whether to write a linguistic expression solid or open is based on the decision whether the expression in question is considered a word or a phrase. Word status automatically results in solid writing. The word boundaries, on the other hand—if not already marked by a full stop, comma, colon, semicolon, exclamation mark or question mark—must be occupied by spaces.

Jacobs (2005), who describes German WTS in the framework of optimality theory, shows that two constraints are responsible for WTS. The lower-ranked constraint demands the insertion of spaces between an expression's constituents, the higher-ranked constraint prevents space insertion in morphological formations (such as compounds). In other words: if a linguistic expression is considered a morphological formation, solid writing is obligatory.

Certain constructions of German—e.g. particle verbs, resultative constructions, and compounds with an adverb or adjective as the morphological head (for additional examples, cf. Fuhrhop 2007)—belong in a grey area between word and phrase. For such constructions, problems concerning WTS are predictable, and they have been a matter of some debate during the orthography reform of 1996 and its modifications (cf. Eisenberg 1997). Noun-noun compounds, however, do not belong to the class of debatable constructions, but to the core of morphological formations. Consequently, the orthographic rules for these compounds are unambiguous: they must be written without internal spaces. Hyphens may be inserted to clarify the morphological structure of a compound,

especially to prevent ambiguities.¹ For compounds with loanwords or proper names, hyphenation is explicitly mentioned as an option (Duden 2009: 37, 45, 85-88). But only for compounds which contain numbers, phrases or abbreviations, the insertion of hyphens is obligatory (Duden 2009: 39-40).

The few examples for orthographically correct nominal compounds with internal spaces are borrowed from languages like English with different WTS systems. In these loanwords, the original open spelling can be maintained, e.g. *business lunch* (Duden 2009: 44). Apart from these compounds from foreign languages and compounds for which hyphenation is obligatory, compounds seem to be orthographically unproblematic to the extent that they are virtually not discussed in German spelling books (cf. Nerijs 2007: 184). The same holds for linguistic publications, which are usually dedicated to phenomena of unclear word status.²

Compounds with internal spaces

While the question of WTS in compounds seems quiet unproblematic for linguists and spelling book authors alike, many writers of German apparently do not share this certainty. Open compounds occur everywhere: on advertising posters (*Bühnen Flatrate* 'stage flatrate'), information signs (*Uni Fitness Pfad*, 'university fitness-trail') and even in students' presentation handouts (*Standard Variante*, 'standard variant').

As German linguistic literature relies heavily on orthographic literature, the phenomenon of compounds with internal spaces (henceforth CIS) is seldom mentioned, let alone discussed. A rare exception is Dürscheid (2000), who deals with CIS as well as with compounds with internal capitalization (henceforth CiCa). She claims that especially CiCa have become productive in the advertising genres, e.g. in product and brand names, to attract the attention of possible buyers (Dürscheid 2000: 242; 2005: 237-238). In the context of CiCa, Dürscheid (2000: 243-245) also gives examples for CIS and suggests several (very general) explanations for this phenomenon: (a) the increasing influence of English—with open compounds as the unmarked spelling strategy—on the German language, (b) confusion about WTS, caused by the German

¹ Duden (2009: 38) gives the example *Druck-Erzeugnis* 'print product' vs. *Drucker-Zeugnis* 'printer's certificate'.

² Examples include Günther (1997), Schaefer (1997), and Gallmann & Sitta (1996).

orthography reform of 1996 and its modifications, (c) language change triggered by CiCa, or (d) a general increase of the productivity of nominal compounds. Dürscheid (2005) suggests that within advertising, CiCa and CIS might be used as a deliberate strategy for attracting the attention of readers.

Jacobs (2005) deals with the system of WTS in German in general, but only with reference to orthographically correct forms. Nevertheless, he mentions the phenomenon as a trend in contemporary written German and also provides several examples. He emphasizes that, contrary to one of Dürscheid's (2000) suggestions, CIS could not possibly be caused by the orthography reform, as they occurred as early as the nineteen-eighties (Jacobs 2005: 6). Instead, he supports another of Dürscheid's suggestions, namely that CIS might be attributed to the influence of English. He suggests three additional factors which might influence space insertion: proper names as constituents, missing linking elements, and more than two autosemantic constituents.

In several Scandinavian languages, the phenomenon of CIS is explored much better than in German.³ Several authors (Hallencreutz 2001: 4 for Swedish, Walmsness 2002: 26 for Norwegian, Heidemann Andersen 2009: 28 for Danish) argue that CIS are not a recent development, but in fact decades or even centuries old. Many authors emphasize that the influence of English or English subparts is overestimated, e.g. because of the age of the trend (Heidemann Andersen 2009: 28), or because even children who do not yet learn English produce CIS (Walmsness 2002: 29).

CIS seem to co-occur with other spelling errors (Elbro 2006: 15), and there are considerable differences with respect to the amount of CIS which individual writers produce, as Vollan (2007: 24) shows in a study on texts written by students. Nevertheless, CIS do even occur in texts written by proficient adult writers (Vatvedt Fjeld 2004: 14). Elbro (2006: 18) and Vollan (2007: 27-28) demonstrate that electronic spelling guides are not helpful, but even favor CIS. A comparison between handwritten and computer-written texts shows that, while the general amount of spelling errors is lower in computer-written than in handwritten texts, it is just the other way around for CIS (Jervelund 2007: 47).

Many factors for CIS, however, lie in the compound itself and in the genre it occurs in. The amount of CIS is especially high for nominal

³ I am grateful to Sten Vikner for pointing me towards this literature. I also thank the participants of the 26th Scandinavian Conference of Linguistics at the University of Aalborg for their kind interest and many helpful remarks.

compounds (e.g. Hallencreutz 2001: 6-7; Vollan 2007: 25). Hallencreutz (2001: 7) and Heidemann Andersen (2009: 30, following Malmgren & Vatvedt Fjeld 2006) mention the length of a compound as a possible factor for CIS; Vollan (2009: 287) shows that complexity plays a role. This might be due to a function of spaces as indicators of structure: Hallencreutz (2001: 9) emphasizes that the CIS of schoolchildren shows a high awareness of morphological structure, as CIS are exclusively inserted at morphological boundaries.

Heidemann Andersen (2009: 32) shows that CIS are restricted to compounds with a low degree of lexicalization; Heidemann Andersen & Diderichsen (2011) add that low frequency plays a role. Elbro (2006:13) suspects that a high frequency of the subparts of a compound in relation to the frequency of the compound itself favors CIS; Heidemann Andersen & Diderichsen (2011) confirm this.

All factors that allow or demand hyphenation according to orthographic rules—numbers, abbreviations, proper names, loan words, and phrases—do also favor CIS.⁴ Mobärg (1997) argues for an influence of genre: CIS frequently occur in texts in which optical factors play a role, e.g. advertising texts and book titles. Hallencreutz (2001: 8) confirms this and argues for the competence of schoolchildren to choose spelling variants with and without CIS, dependent on the genre (e.g. *<vild hästen> “wild horse” on the title of a self-written book, <vildhästen> in the main text).

Data and first results

My study on CIS in German, which is an extension of Symanczyk Joppe (2011), is based on a compound corpus (CoCo) of 14,622 compounds (tokens) from internet as well as from advertising texts. Both genres were chosen because of their low norm orientation: As the orthographic regulations concerning WTS in compounds are so strict, professional writers (e.g. newspaper journalists) are not likely to violate them; CIS were not expected in a degree that would allow to systematize their occurrence. Internet and advertising texts are better breeding-grounds for non-orthographic variants. Only compounds of the form *noun* + *noun* and *phrase* + *noun* were considered for CoCo.

⁴ Cf. e.g. Vollan (2007: 23); for numbers and abbreviations: Heidemann Andersen (2011: 50) and Heidemann Andersen & Diderichsen (2011: 43), following Hoaas (2008:59); for proper names and loan words: Heidemann Andersen (2011: 50) and Hallencreutz (2001: 4); for phrases: Elbro (2006: 16).

The advertising texts on which CoCo is based contain 19 leaflets and brochures as well as 230 advertisements in free newspapers, all dating from the third week of October in 2010. The internet texts are thirteen threads on different topics which were picked at random from the internet forum of the German email service *GMX* and were produced between 2008 and 2011. The chats were chosen from an existing corpus, the *Dortmunder Chat-Korpus*,⁵ and cover four different chat genres.⁶

Depending on the choice of writing at the morpheme boundary produced in the last step of derivation (henceforth MB^L), the compounds in CoCo were divided into four groups: compounds with solid writing, with a hyphen, a space or an internal capital. The largest group are the solid compounds with 10,314 (70.5%) tokens, followed by the compounds with internal hyphens with 2,659 (18.2%). As both solid writing and hyphenation obey orthographical rules, these results were quite predictable. The non-orthographic writings are clearly dominated by CIS with 1,626 tokens (11.1%). Only 23 tokens (0.2%) are CiCa.⁷

Mobärg (1997), Dürscheid (2000) and Hallencreutz (2001) suggest that certain genres, e.g. the advertising genres or, in more general terms, texts in which design plays an important role, favor CiCa and CIS. Table 1 illustrates writing at the MB^L for the different genres in the corpus:

Table 1.

WTS AT THE MB^L FOR THE DIFFERENT GENRES

	Chats (n=2,041)	Threads (n=5,574)	Advertisements (n=1,519)	Brochures (n=5,488)	Total (n=14,622)
	(%)	(%)	(%)	(%)	(%)
Solid	85.4	82.5	68.7	53.4	70.5
Hyphen	10.1	10.1	17.8	29.5	18.2
CIS	4.1	7.2	13.4	17.1	11.1
CiCa	.5	.2	.1	.03	.2
Total	100	100	100	100	100

Indeed, the percentage of CIS is considerably higher for the advertising genres (13.3% and 17.1%) than for the internet genres (4.1% and 7.2%).

⁵ <http://www.chatkorpus.tu-dortmund.de/>.

⁶ These subgenres are VIP chats, counseling chats, online courses, and 'conversational chats', i. e. chats not devoted to a specific purpose or topic.

⁷ In this light, Dürscheid's suggestion that the occurrence of CIS is subsequent to the establishment of CiCa seems not impossible, but rather implausible.

The function of CIS

In the following sections, I will investigate the location of compound-internal spaces and hyphens in German and show that CIS, like hyphens, function as indicators of structure.

Hallencreutz' (2001: 9) observation that CIS in texts written by schoolchildren are exclusively inserted at morphological boundaries suggests that an important function of CIS might be the indication of the structure of the compound they appear in. The orthographic rules advise writers to use hyphens in that function, especially to prevent ambiguities (Duden 2009: 37-38). This would also explain the tendency of CIS to appear especially in long, complex compounds and compounds with a low frequency and low degree of lexicalization.

My data on German CIS confirm Hallencreutz' suggestion: indeed, CIS are limited to morpheme boundaries. In addition, I made the observation that the step of derivation in which the respective morpheme boundary was produced⁸ played a role and that spaces and hyphens had a different weight. Based on this, I formulate the following rule R1:

R1 (Hierarchical usage of spaces and hyphens as indicators of morphological structure)

Assuming a three-part hierarchy H of structure indicators occupying the morpheme boundaries of compounds, in which a space is considered high, a hyphen is considered medium and the absence of both is considered low, the following rule holds for complex compounds: If any element from H occupies a morpheme boundary MBⁿ (n indicating the number of steps of word formation up to this point), "later" MBs^{n+x} must be occupied by elements ranking on the same level or higher in H.

The amount of compounds in CoCo which are in line with R1 is vast. 14,553 (99.5%) of the 14,622 compounds in CoCo follow R1. Only 4 (0.03%) compounds with internal spaces are written solid at the MB^L and 35 (0.2%) with a hyphen. This means that 97.7% of the open compounds follow R1: they may occur in violation of orthographical norms, but clearly not unsystematically.

With respect to hyphens at the deeper boundaries, the picture is quite similar: Only 30 (0.2%) compounds in the corpus are written solid at the MB^L but with a hyphen at one of the deeper boundaries. For the

⁸ Exclusively with respect to word formation, not inflection.

compounds with a space at the MB^L, however, anything—space, hyphen or nothing—is possible at the deeper boundaries. A hyphen at the MB^L is compatible with either hyphens or solid writing at the other boundaries.

To sum up, we have strong reasons to think that CIS like hyphens function as indicators of morphological structure. As they have a higher weight, they can be interpreted as an extension of the inventory of structure indicators.

Factors for CIS

I have investigated the influence of fifteen factors on CIS. In the following, I will concentrate on the factors which proved to have the strongest impact on the insertion of CIS: those which, in accordance with the orthographic rules, lead to hyphenation, or for which hyphenation is explicitly allowed.

If one or more of the constituents of a compound are phrases, numbers or abbreviations, the orthographic rules dictate hyphenation, leading to forms like *Mund-zu-Mund-Beatmung* ('mouth-to-mouth resuscitation'), *100-m-Lauf* ('100-metre dash') and *Kfz-Versicherung* ('car insurance'). The data on Scandinavian CIS suggest that these factors also favor the insertion of CIS. The distribution of writing strategies at the MB^L for compounds with these properties is presented in Table 2:

Table 2.

WTS FOR COMPOUNDS WITH PHRASES, NUMBERS AND ABBREVIATIONS

	Phrases (n=633) (%)	Numbers (n=659) (%)	Abbreviations (n=1,643) (%)	Total (n=14,622) (%)
Solid	4.7	2.0 (all contra R1)	4.1	70.5
Hyphen	63.5	61.5	68.3	18.2
CIS	31.6	36.4	27.3	11.1
CiCa	.2	.2	.3	.2
Total	100	100	100	100

Unsurprisingly, the insertion of a hyphen is the preferred strategy in these cases. Less predictable is the fact that the number of CIS has also increased from 11.1% to between 27.3% and 36.4%, compared to the total corpus. While the orthographical demand for a boundary element is fulfilled, it is fulfilled either by the orthographically correct strategy (hyphenation) or a non-orthographical strategy (space insertion).

For loanwords from other languages and for names, the orthographic rules do not prescribe hyphenation, but normative literature explicitly mentions it as a variant (e.g. Duden 2009: 37, 45, 85-88). Table 3 shows the results for WTS in compounds with loanwords from English, brand names and other proper names:

Table 3.

WTS FOR COMPOUNDS WITH ENGLISH WORDS OR WITH NAMES

	English (n=1,216) (%)	Proper names (n=256) (%)	Brand names (n=902) (%)	Total (n=14,622) (%)
Solid	32.2	21.5	1.7	70.5
Hyphen	33.8	41	15.6	18.2
CIS	33.4	37.5	82.4	11.1
CiCa	.6	-	.3	.2
Total	100	100	100	100

If a compound contains a loanword from English, the probability for solid writing, hyphenation and space insertion is almost equal, ranging from 32.2% to 33.8%. Compounds with *fitness* as first constituent, as one of many examples, are found with all kinds of boundary elements (e.g. *Fitnessbänder* ‘fitness tapes’, *Fitness-Drehstuhl* ‘fitness swivel chair’, and *Fitness Angebot* ‘fitness possibilities’).

The tendency to write proper names with spaces and hyphens is still stronger. Spelling variants frequently occur, e.g. *Ballackfan*, *Ballack-Fan*, and *Ballack Fans* ‘fan of the soccer player Michael Ballack’ are all found in CoCo.

The factor with the strongest influence on space insertion is the presence of a brand name, e.g. in *Knorr Fix Produkte* ‘Knorr Fix products’ or *Milka Schokolade* ‘Milka chocolate’. Solid writing is practically ruled out and space insertion seems to be the unmarked strategy. This, however, is not the case for all genres, as Table 4 illustrates:

Table 4.

WTS FOR COMPOUNDS WITH BRAND NAMES IN DIFFERENT GENRES

	Internet (n=113) (%)	Advertisements (n=140) (%)	Brochures (n=649) (%)	Brand names total (n=902) (%)
Solid	11.5	-	.3	1.7
Hyphen	49.6	26.4	7.4	15.6
CIS	37.2	73.6	92.1	82.4
CiCa	1.8	-	.2	.3
Total	100	100	100	100

In general, there is a strong tendency to separate brand name constituents from the rest of the compound. With respect to the choice of the structure indicator, however, internet and advertising texts use different strategies: while the former tend to hyphenation (49.6%), the latter prefer space insertion (73.6%).

A group within the compounds with brand names which deserves extra attention are the compounds with logos. Logos⁹ inside a compound (which are all brand names) inevitably trigger space insertion: For 117 compounds with a logo, 116 (99.2%) are written with a space at the MB^L, a single one (0.9%) is written with an internal capital. Probably, this is for aesthetic reasons: a graphemic word with different fonts or types would look strange. Logos might also be the subgroup which started the trend of CIS, before it spread to brand names in general, at least in the advertising genres.

Conclusion

The descriptive literature on space insertion and hyphenation in German rarely discusses open compounds. Neither does the prescriptive literature. However, just as in several Scandinavian languages, compounds with internal spaces occur to a degree that demands explanation.

On the basis of a corpus of compounds from internet and advertising texts, I could detect several factors which trigger space and hyphen insertion in German compounds, often in violation of clear and unambiguous orthographic rules. They point in the same direction as the

⁹ By *logo* I mean not only logotypes in the narrow sense, which include a special font, but also constituents in bold type.

findings with respect to separated compounds in Danish, Norwegian, and Swedish, and they can be subsumed under two basic functions: Firstly, the spaces are indicators of structure, which exclusively occur at morpheme boundaries and are placed in accordance with a hierarchy of structure indicators. Secondly, they are used to separate parts of the compound which somehow behave inhomogeneous, e.g. with respect to sound-letter correspondences (English loanwords vs. native words), type of grapheme (logograms like numbers and abbreviations vs. alphabetic letters), the category of the stem (proper names vs. common nouns) or visual criteria (as in the case of logos). Genres may exhibit different strategies, as for brand names, which are usually separated from the rest of a compound by a space in advertising texts, but by a hyphen in internet texts.

The most important theoretical implication might be that there is a system in non-orthographic spellings: while the occurrence of CIS is not in accordance with the rules of orthography, it is not random or chaotic at all. For general linguistic issues, like language change or the interaction of conflicting rules, these deviant cases might even prove to be more interesting than the problems of standard orthography. However, they become only visible if we turn our view from the picture drawn in the prescriptive literature to the language which is written remote from the norm.

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CHAPTER TEN

NULL OBJECTS IN DIRECTIVE SENTENCE TYPES

ROBERT KÜLPMANN AND VILMA SYMANCZYK JOPPE

Introduction

Our paper deals with the possibility to omit direct arguments with a definite interpretation in certain directive sentence types.¹ We investigate whether such argument omissions (AO) can be reduced to the factor directivity, or whether AO differs from sentence type to sentence type. Our argumentation is based on data from acceptability rating studies.

For subjects, the influence of certain directive sentence types on the obligatoriness of arguments is a well-known fact. Even in a non pro-drop language like German, there are sentence types in which the subject can or even must be omitted. This holds e.g. for directive infinitives as in (1a) which are often considered to have a *PRO* element in subject position. Reis (1995) argues that even in directive infinitives in which the addressee is realized overtly as a nominal phrase, as in (1b), the respective NPs are no syntactic subjects.

¹ We follow the standard view of sentence type as a conventional pairing of a sentence form with a certain type of illocution (cf. Altmann 1993). Sentence types in German differ in the position of the finite verb, the verb mood and the presence of a *wh*-element. Typical examples for sentence types of German would be V2 assertive declarative sentences, V1 interrogative sentences or V1 imperative sentences.

- (1) a. *bitte* PRO *einen Korb nehmen!*
 please a:ACC basket[ACC] take:INF
 “Please take a basket.”
- b. *Jeder Teilnehmer PRO bitte einen Korb nehmen!*
 every participant please a:ACC basket[ACC] take:INF
 “Every participant shall please take a basket.”

Directive imperatives do as well impose restrictions on subjects, as illustrated in (2a). Rosengren (1993) and Platzack & Rosengren (1994) argue that subjects cannot be realized overtly in imperatives. According to Wratil (2014), the addressee can be realized as a subject in certain cases—for example under contrast, like in (2b)—but are not obligatory anymore.

- (2) a. *Nimm bitte einen Korb!*
 take.IMP.SG please a:ACC basket[ACC]
 “Please take a basket.”
- b. *Nimm du_i bitte einen Korb i≠j*
 take.IMP.SG you[SG] please a:ACC basket[ACC]
- und du_j einen Koffer!*
 and you[SG] a:ACC suitcase[ACC]
 “You take a basket, please, and you a suitcase.”

In the following section, we will show that valency reductions as in (1) or (2) are not limited to subjects: in several directive sentence types, direct arguments, which are obligatory in corresponding assertive declarative sentences, can also be omitted. We raise the question if directivity is the reason for that behavior.

The acceptability rating studies on which our further argumentation is based will be introduced in section 3. In section 4, we will demonstrate that, while AO indeed seems to be more acceptable in our directive sentence types than in the non-directive ones, directivity clearly cannot be the only factor. In section 5, we relate these findings to the results of an earlier study on the influence of sentence type on AO (Külpmann & Symanczyk Joppe 2015) and back them up with new data on argument realization. We will show that AO in only one of the sentence types, the directive infinitive, can be explained as an effect of sentence type, while AO in the other sentence types seems to be dependent on multiple factors, among them valency. We will sum up our results in chapter 6.

Argument omission

The observation that different sentence types may impose different restrictions on the realization of direct arguments is not new. Fries (1983) shows that direct objects which are obligatory in declaratives may become optional in other sentence types. Similar observations have been made in the context of valency. Herbst (2014), for instance, criticizes that subcategorization frames are often only determined with reference to declarative sentences (cf. also Herbst & Roe 1996), while they are not necessarily identical for all sentence types. Jacobs (2016) lists the omissibility of arguments as a potential feature of sentence type constructions.

In assertive declarative sentences (henceforth DECL), for instance, the direct argument of *nehmen* ‘take’ cannot be omitted, as illustrated by (3a). In a corresponding directive imperative (IMP, 3b) or directive infinitive sentence (INF, 3c), however, it becomes optional.

(3) a. DECL

*Sie nimmt *(den Korb).*
 she takes.3SG the.ACC basket[ACC]
 ‘She takes the basket.’

b. IMP

Nimm mal (den Korb)!
 take.IMP.SG PRT the.ACC basket[ACC]
 ‘Take (the basket)!’

c. INF

Sofort (den Korb) nehmen!
 immediately the.ACC basket[ACC] take:INF
 ‘Take the basket immediately!’

A similar effect can be detected in different types of yes/no questions. There is a type of yes/no questions (4a) which functions as a request to do something. This type of question differs from an ordinary yes/no question (4b, Y/N-Q), which would be interpreted as a request to give some information.² We will call the former a ‘directive question’³ (DIR-Q).

² An appropriate negative answer to the first type of question would be ‘I don’t want to’; an appropriate negative answer to the second type would be ‘I don’t know that.’ Cf. Brandt, Reis, Rosengren & Zimmermann (1992: 52).

Yes/no questions are potentially ambiguous between the directive and the non-directive reading, but they can be disambiguated, by context and also by linguistic material. If for instance, as in (4a), a discourse particle like *please* or German *mal* is added, the interpretation becomes directive. If, on the other hand, the question has perfect instead of present tense as in (4b), a directive reading becomes implausible—it can be interpreted as directive, but usually only in contexts in which the addressee's obligation to perform the relevant action has already been established in discourse.

(4) a. DIR-Q

Nimmst du bitte mal (den Korb)?
 take.2SG you[SG] please PRT the.ACC basket[ACC]
 “Will you take the basket, please?”

b. Y/N-Q

*Hast du *(den Korb) genommen?*
 have.2SG you[SG] the.ACC basket[ACC] PTCP:take:PTCP
 “Have you taken the basket?”

In the DIR-Q in (4a), the direct object can be omitted, but it seems to be obligatory in (4b).

We now try to isolate a grammatical feature which is shared by the sentence types which tolerate argument omission (AO) but not by those in which the object seems to be obligatory. This feature cannot be finiteness: the DIR-Q is finite, the IMP is semi-finite,⁴ the INF non-finite. It cannot be the position of the verb: in the DIR-Q and in the IMP, the finite verb is in initial position, but this is also the case in the Y/N-Q. Table 1 shows that the only apparent feature to which the possibility for AO could be reduced is directivity.⁵

³ Our terminology differs from Searle (1983: 110), who emphasizes that also the type of questions we call Y/N-Qs are special cases of directives.

⁴ Following Donhauser (1987), who argues that German imperatives do only have features for number, but not for person and tense.

⁵ Cf. section 3 for additional factors which might favor AO and which were excluded in our study.

Table 1: Grammatical features of the five sentence types.

	INF	IMP	DIR-Q	Y/N-Q	DECL
AO [for <i>nehmen</i>]	+	+	+	-	-
finite	-	+/-	+	+	+
verb position	V-FIN	V1	V1	V1	V2
directivity	+	+	+	-	-

There are two alternative explanations for these findings. One is that directivity is responsible for AO. Blume (1993) suggests that this might be a factor. A study we did on AO in imperative-declarative conjunctions (IODs/IADs, cf. Külpmann & Symanczyk Joppe 2016) points in the same direction: in those IODs/IADs in which the speech-act status REQUEST was maintained (IAD TYPE I, 5a)—detectable by the compatibility with a discourse particle, for instance—AO was much better than in those IADs in which the first conjunct behaved like the protasis of a conditional (IAD TYPE II, 5b).

(5) a. IAD TYPE I

Schließ (den Tresor) auf, und
unlock.IMP.SG the.ACC safe[ACC] VPRT, and

ich hole das Geld.
I fetch:1SG the[ACC]money[ACC]
"Unlock (the safe), and I fetch the money."

b. IAD TYPE II

Schließ ??(den Tresor) auf, und ich
unlock.IMP.SG the.ACC safe[ACC] VPRT, and I

rufe die Polizei.
call:1SG the[ACC]police[ACC]
"Unlock (the safe), and I'll call the police."

An alternative hypothesis is that AO cannot be reduced to a single factor at all but is induced by multiple combined factors, or alternatively—as Jacobs (2016) postulates for the INF—is a direct feature of sentence type constructions.

Data

The data on which our argumentation is based were collected in a project on AO called *Argumentweglassung zwischen Valenz und Konstruktion* (“argument omission between valency and construction”) which was funded by the German Research Foundation (DFG). In order to show that valency as well as sentence type constructions have an influence on the obligatoriness of argument realization, we conducted a set of acceptability rating studies on sentences of German, both with omitted and realized direct arguments. Between 2013 and 2015, we collected acceptability ratings of 1,372 participants, all of them undergraduate students of linguistics at the University of Wuppertal. The participants evaluated context-embedded sentences from a corpus of 828 test items. An example for an original test item in context is given in (6); the test item is underlined, which was also the case in our study.

- (6) *Elise und Gerd brechen nachts auf einem einsamen Gehöft ein, dessen Besitzer verreist sind. Auf der Suche nach Wertgegenständen macht Gerd im Wohnzimmer das Licht an. „Bist du bescheuert?“, zischt Elise. „Mach aus! Jeden Lichtschein sieht man hier meilenweit!“*

“During the night, Elise and Gerd break into an isolated farmstead whose inhabitants are on vacation. Gerd, searching for valuables, switches on the light in the living room. ‘Are you crazy?’, Elise hisses. ‘Switch off! Any gleam of light will be visible for miles!’”

Our participants were asked to give their judgments on the respective test item in the specific given context, the only available options being “yes” (acceptable) and “no” (unacceptable). The tests were all carried out under the supervision of at least one of the authors. Most of the participants evaluated about 60-80 items, including distractor items.

In the literature, other factors than valency and sentence type have been discussed as having an influence on AO. For example, Blume (1993) and Goldberg (2001) suggest that generic interpretations and contrast have a positive influence on AO. Massam & Roberge (1989), Culy (1996), and Ruppenhofer & Michaelis (2010) show that certain genres like recipes favor AO. Sadzinski (1989), Cote (1996) and Goldberg (2001) emphasize that the hearer of an utterance must be able to reconstruct the omitted argument, and according to Fillmore (1986), Ruppenhofer & Michaelis

(2010) and Gillon (2012), AO is different for arguments with a definite or with an indefinite interpretation. Due to the focus of our study, we either excluded those additional factors in our test items (e.g. generic and indefinite interpretations and contrast) or kept them constant (e.g. genre). The contexts in which the test items were presented provided sufficient information for the participants to identify the omitted arguments easily.

We tested 43 different verb lexemes in 16 different sentence types. Four of the verbs were tested with two different readings. For this paper, we concentrate on the five sentence types which we have introduced in (3) and (4). The other sentence types in our study include subclauses, wh-questions and several asymmetrical constructions also known as “pseudo-imperatives” or IoDs/IaDs (cf. e.g. Clark 1993, Culicover & Jackendoff 1997 and Kaufmann 2012); AO in the latter is discussed separately in Külpmann & Symanczyk Joppe (2016).⁶

Argument omission and directivity

In the following, we will explore the question whether the possibility to omit an otherwise obligatory argument is induced by directivity. We formulate a central hypothesis H1:

H1: Directivity has an influence on AO.

18 verbs were tested in the five sentence types which we chose for this study.⁷ The descriptive statistics are presented in Table 2 and visualized in Figure 1.

Table 2: Descriptive statistics of the acceptability study results.

	INF	IMP	DIR-Q	Y/N-Q	DECL
mean	86.3%	63.7%	49.6%	35.8%	39.4%
median	88.9	81.4	40.8	14.6	24.3
range	48.9	88.8	96.2	95.1	92
standard deviation	10.8	34.1	34.8	35.7	33.7

⁶ Cf. also section 2.

⁷ These 18 verbs are a sample of our larger study (cf. section 3).

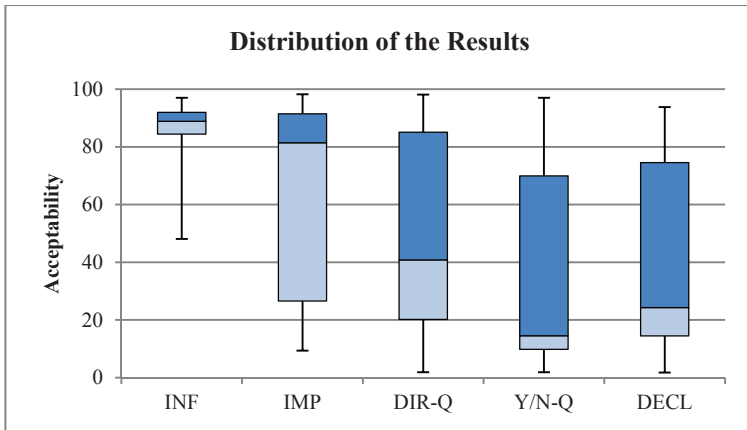


Fig. 1. Distribution of the acceptability study results (in percent)

Table 2 and Figure 1 show that the directive sentence types INF, IMP, and DIR-Q indeed receive higher acceptability values (see especially the median values). Nevertheless, there are clear differences between the directive sentence types. This suggests that differences in AO cannot be reduced to directivity. We illustrate the average results from table 2 with the test sentences for the verb *einschalten* “to switch on” in the five sentence types (7). Percentages indicate the average acceptability for *einschalten* in the respective sentence type; strikethrough text was left out in the original sentences.

(7) a. INF, 88.5%

Jetzt ~~den~~ Computer wieder einschalten!
 now the.ACC computer[ACC] back switch.on:INF
 “Now switch ~~the computer~~ back on!”

b. IMP, 78.7%

Schnell, schalt ~~das~~ Navigationsgerät
 quickly switch.on:IMP the[ACC]navigation:system[ACC]
ein!
 VPRT
 “Quickly, switch on ~~the navigation system!~~”

- c. DIR-Q, 42.4%
Schaltest du mal ~~das~~——
 switch.on:2SGyou[SG] PRT the[ACC]
Navigation~~sg~~erät ein?
 navigation:system[ACC] VPRT
 “Will you switch the navigation system back on?”
- d. Y/N-Q, 88.5%
Hast du schon ~~das~~——Radio
 have.2SG you[SG] already the[ACC] radio[ACC]

eingeschaltet?
 switch.on.PTCP
 “Have you already switched on ~~the radio~~?”
- e. DECL, 28%
Ich schalte ~~den~~——Geschirrspüler ein.
 I switch.on:1SG the.ACC dishwasher[ACC] VPRT
 “I switch on ~~the dishwasher~~.”

Each directive sentence in (7) receives better results than the declarative, but there are also clear differences in acceptability between the directive sentence types. With the exception of (7d), which receives exceptionally high values for a Y/N-Q, the results resemble the mean results given in table 2.⁸

In order to back up the rough impressions from table 2 statistically, we split up our central hypothesis H1 in two hypotheses H1.1 and H1.2:

H1.1 There is a correlation between directive sentence types with respect to AO.

H1.1 expresses the assumption that the results of directive sentences should be connected to some degree if directivity was an influencing factor on AO.

⁸ While this was more or less the case for most of our verbs, there were also exceptions: *abnehmen* “take from” and *nehmen von* “remove from” received high results in the INF and relatively low results in the other sentence types; for *ausschalten* “switch off” and *zuschließen* “lock”, on the other hand, AO was nearly constant across the different sentence types. This suggests that valency also plays a role.

H1.2 There is significant variation between directive and non-directive sentence types with respect to AO.

H1.2 assumes that if directivity was an influencing factor on AO directive sentence types should differ from non-directive sentence types.

To test H1.1 statistically, we correlate the results for each sentence type with the results of the other sentence types. If H1.1 is correct, the results of all directive sentence types should correlate with each other. We use Spearman's rank correlation, because the results are not normally distributed. We present an overview of the correlations in Table 3.

Table 3: Rank correlations for each sentence-type pairing.
($p < .05$ are marked with "**", $p < .01$ with "***" and $p < .001$ with "****")

	r_s	df	p	significant correlation?
INF – IMP	-.04	16	> .05	no
INF – DIR-Q	-.04	16	> .05	no
INF – Y/N-Q	-.16	16	> .05	no
INF – DECL	.14	16	> .05	no
IMP – DIR-Q	.85	16	***	yes
IMP – Y/N-Q	.52	16	*	yes
IMP – DECL	.58	16	*	yes
DIR-Q – Y/N-Q	.55	16	*	yes
DIR-Q – DECL	.82	16	***	yes
Y/N-Q – DECL	.67	16	**	yes

If H1.1 were true, there should be significant correlations between all pairs of directive sentence types (which are highlighted grey in table 3), namely INF – IMP, INF – DIR-Q, and IMP – DIR-Q. This is clearly not the case: the only directive sentence-type pairing which correlates significantly is IMP – DIR-Q. Instead, another regularity seems to hold: All sentence-type pairings involving the INF produce non-significant correlations, while there are significant correlations for all pairings not involving the INF. Accordingly, H1.1 can be rejected.

For H1.2, we have to show that AO in directive sentence types is significantly different from AO in other sentence types. The non-parametric Kruskal-Wallis test that we used as a test for variance between the sentence types shows a significant difference in the acceptability of

AO.⁹ Subsequent post-hoc tests¹⁰ prove that not all sentence types differ from each other significantly. Table 4 shows which sentence-type pairings exhibit significant differences;¹¹ the sentence-type pairings which should exhibit significant differences if H1.2 were true are highlighted in grey.

Table 4: Significantly and non-significantly different sentence-type pairings.
($p < .01$ are marked with "**", $p < .001$ with "**")

significantly different pairings	non-significantly different pairings
**INF – Y/N-Q	INF – IMP
*INF – DECL	INF – DIR-Q
	IMP – DIR-Q
	IMP – Y/N-Q
	IMP – DECL
	DIR-Q – Y/N-Q
	DIR-Q – DECL
	Y/N-Q – DECL

In accordance with H1.2, two pairings of a directive and a non-directive sentence type differ from each other significantly. But against H1.2, there are four pairings of a directive and a non-directive sentence type which do not. It follows, then, that H1.2 can also be rejected.

**AO and sentence type:
can null objects be the unmarked form?**

The results from section 4 do not necessarily mean that directivity does not play any role for AO. While directivity clearly cannot be the crucial factor, the acceptability values from table 4-1 suggest, nevertheless, that it has a certain limited influence on AO. One possibility might be that AO is subject to multiple combined factors for instance those in table 1: verb position, finiteness and directivity.¹² Another one would be that AO is an

⁹ $H(4) = 41.69; p < .001$

¹⁰ Mann-Whitney-U with Bonferroni-Holm adjustment

¹¹ After Bonferroni-Holm adjustment

¹² The possibility that one of those factors alone is the crucial factor for AO can also be denied on the basis of the data in table 4: If finiteness were the only factor, the only non-significant pairings should be those with DIR-Q, Y/N-Q, and DECL. If verb position were the only factor, the only non-significant pairings should be those with DIR-Q, Y/N-Q and IMP.

idiosyncratic formal feature of certain sentence type constructions, an analysis which Jacobs (2016) suggests for the INF.

In an earlier study (Külpmann & Symanczyk Joppe 2015), we have examined the influence of sentence type on AO. We conducted tests on the behavior of 43 verbs in the four sentence types INF, IMP, IOD (an imperative-declarative construction with *or*) and DECL and performed two statistic operations: we correlated (a) the mean acceptability values of all verbs across all four sentence types with the results of all verbs in the respective sentence type, e.g. the mean results with the results of the directive infinitive, and (b) the results of each sentence type with the results of the other sentence types. If for one of the sentence types, there was neither a significant correlation for (a) nor for (b), this meant that AO in the respective sentence type is not determined by the verb. We called this independence from the valency of the verb a “primary sentence type effect” and showed that the INF (but not the other sentence types in the study) is subject to such an effect. We argued that it should best be analyzed in terms of sentence type constructions, because the INF displays several more idiosyncrasies than just a specific behavior with respect to AO: for instance that, in spite of the non-finite verb form, we are dealing with independent main clauses with illocutionary potential (Fries 1983, Deppermann 2006, Jacobs 2016), and that overt subjects are not possible (Reis 1995, cf. also section 1). In the following, we would like to give an additional argument in favor of a sentence type construction.

The data we used in Külpmann & Symanczyk Joppe (2015) were based on sentences in which the direct argument was omitted. This means that the high acceptability results for the INF are ambiguous: null instantiations of direct arguments might only be a variant of INF-sentences with overtly realized arguments, but they could as well be the unmarked form or maybe even the only grammatically well-formed solution, analogous to the non-realization of subjects in this sentence type. The latter would be a strong argument in favor of a sentence type construction.¹³

For a comparison of AO versus argument realization (AR), we tested minimal pairs of sentences with realized and omitted arguments for the four sentence types which we already chose for Külpmann & Symanczyk Joppe (2015): INF, IMP, IOD, and DECL. The results, based on 46 minimal pairs for each sentence type, are given in Fig. 2:

¹³ Another reason for carrying out this additional study was to exclude/minimize experimental error, namely the possibility that some of our test sentences were judged unacceptable for other reasons than AO.

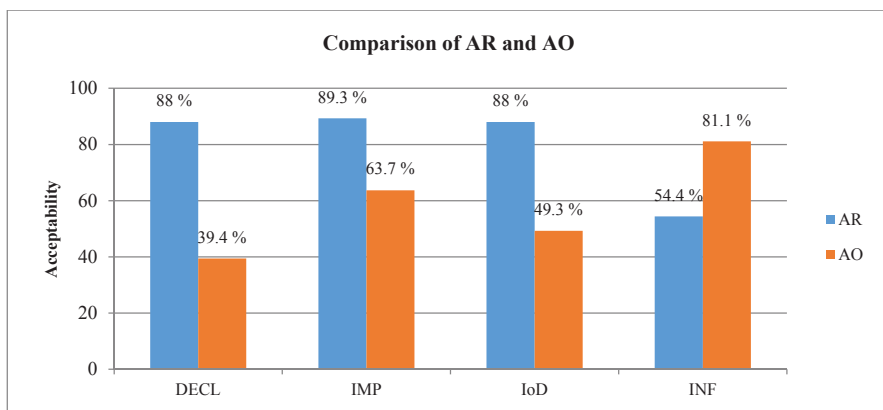


Fig. 2. Minimal pairs for AO and AR.
(percentages indicate mean acceptability for the sentence type)

The mean of the sentences with AR is nearly the same for DECL, IMP and IoD. The possibility to omit arguments, as we know from the previous section, is higher for the directive sentence types than for the DECL, and especially high for the imperative, but overall, the sentences with AR are better than those with AO.¹⁴ In the overall results, however, for DECL, IMP as well as IoD, the overt realization of the direct argument seems to be unmarked.

For the INF, exactly the opposite is the case: Sentences with AO receive an average of 26.7% better results than sentences with AR. The AO results of INF are comparable to the AR results of the other sentence types. In this vein, the results of INF are comparable to those of the IoD: the AO data equal the AR data and the AR data equal the AO data. While overt realization of the direct object is not ruled out in the INF, as it is for subjects, it is nevertheless marked. We take this as additional evidence for a sentence type construction for the INF. Having established AO in the INF as a direct effect of sentence type, independent from the other sentence type, we reran the test for variance whose results are shown in table 3

¹⁴ Not all of the verbs follow this general pattern. For some of the verbs, the results are different in the imperative: *nehmen* “take” and *geben* “give” get better results for the sentences with AO than for those with argument realization, which might be analyzed as an idiosyncratic effect due to the high frequency of those verbs in the IMP (e.g. as colligations in the sense of Hoey 2005 or mini-constructions as postulated by Boas 2008).

without the INF. This time, the only sentence-type pairing being significantly different was IMP – Y/N-Q ($p < .05$). Again, H1.2 could be rejected.

Conclusion

With the help of data from acceptability rating studies, we investigated the hypothesis that AO in the directive sentence types INF, IMP and DIR-Q is caused by directivity, but could not detect statistical evidence for a correlation between directivity and AO. For AO in the INF, we could show that AO is directly determined by this sentence type and even represents the unmarked form.

AO in the IMP and the DIR-Q remains to be explained. In Külpmann & Symanczyk Joppe (2015), we could exclude a primary sentence type effect for the IMP, which means that valency plays a role. On the other hand, valency as an explanation doesn't suffice: otherwise, IMP sentences with AO shouldn't be better than corresponding DECL sentences. At this point, we can only say that we couldn't reduce AO in the other directive sentence types to a single factor.

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CHAPTER ELEVEN

METAPHOR AND METAPHORICAL WORLDS: A COGNITIVE-ONTOLOGICAL APPROACH¹

ZHANNA MASLOVA AND DENIS MINAKHIN

Introduction

In ‘theory and history of literature’ metaphor is considered a figure of speech. In cognitive linguistics metaphor is one of the most transparent illustrations of the relationship between language and human cognition. The cognitive approach to the study of figures of speech, especially metaphors, makes it possible to obtain new scientific results. In cognitive linguistics metaphor is treated as a global mechanism of creative conceptualization of the world.

Metaphor (also conceptual metaphor) is a form of conceptual projection involving mappings or correspondences holding between distinct conceptual domains. Conceptual metaphors often consist of a series of conventional mappings which relate aspects of two distinct conceptual domains. The purpose of such a set of mappings is to provide structure from one conceptual domain, the source domain, by projecting the structure onto the target domain. This allows inferences which hold in the source to be applied to the target. For this reason, conceptual metaphors are claimed to be a basic and indispensable instrument of thought.
(Evans 2007)

In general, metaphor is characterized by the schematic form A is B, i.e. it asserts a resemblance or correlation between two things. There are some theories that shed light on the mental foundations of metaphor. First of all,

¹ The research has been conducted with the financial support from the Council for Grants under the President of the Russian Federation (МД-181.2014.6)

they are represented by the classic works by J. Lakoff, M. Johnson (1999); M. Turner (1996, 2002); J. Fauconnier, M. Turner (2002) and others, and metaphor is described as follows by Lakoff & Johnson 1980: 5):

The essence of metaphor is understanding and experiencing one kind of thing in terms of another.

Common for these is that metaphor is analyzed as a given object with a particular mechanism of formation. Metaphor is studied in terms of tenor and vehicle (Osborn & Ehninger 1962: 228), source domain and target domain (Kövecses 2010), but two concepts may not have similarity with each other objectively. A metaphorical mechanism can be applicable to different concepts.

Metaphor can be considered an instrument of formation of sense (including the artistic and poetic sense) at the linguistic (textual) level. At the mental-linguistic level metaphor is not only the mechanism but also the result of the work of this mechanism. Moreover, the basis for metaphorical transfer is *similarity*. Other figures of speech, for example comparison, are often hybrid forms formed on the ground of metaphorical transferral. Obviously, metaphor plays a key role in the fixation, structuring, restructuring and representation of experience, especially artistic and aesthetic experience.

In our opinion, the tools of cognitive science can help to investigate the question of *metaphorogenesis* and other cognitive mechanisms, to answer the specific question of whether the metaphor has gone through some evolutionary stages at the mental or linguistic levels, and to explore its preconditions of formation. Papers related to the metaphor genesis problem (see Grady 2007: 207) clearly demonstrate that this question has not been answered.

A Cognitive-ontological approach to metaphor

The *Cognitive-ontological approach...* (Maslova 2013) studies metaphor formation as a cognitive mechanism. The cognitive study of the genesis of metaphor is by Maslova implemented with the involvement of the historical material in the form of literary works, mythological and folkloric texts, literature, as well as theoretical papers presenting the results of analysis of these texts. The main theoretical bases for the current research are the papers of the Russian scientists O.M. Frejdenberg (Frejdenberg 1979) and A.N. Veselovskij (Veselovskij 1989), where ancient and folkloric texts were investigated in the field of historical poetics. The

special value of this material is that it provides an analysis of the texts that was carried out without considering the previous literary tradition and patterns, which is in contrast to the medieval or modern national literatures.

Considering early man and his consciousness we refer to the prehistoric period, viz. the Mesolithic period, the Neolithic age, early civilizations and ancient civilizations. We claim that the development of the complexity of the mental structures has taken place based in the conditions of prehistoric or archaic consciousness, which is significantly different from modern consciousness.

Early man had a very conditional system of understandings of objective reality ... His shaped concrete representations were far from the ability to generalize objects, but he could distinguish objects schematically, without particulars ... he identified process and thing, thing and its properties. (Freudenberg 1979: 16)

So, the main points of the cognitive-ontological investigation of metaphor are the following:

1. The core of complex mental structures was established and was formed based in the conditions of prehistoric consciousness, We consider human consciousness as one of the three ontological systems.
2. Cognitive linguistics studies language at the junction of the three ontological systems (the human consciousness system, the world system, the language system). We claim that prehistoric consciousness development was closely related to these systems, and initially they were not separated.
3. Metaphor, along with the many other cognitive mechanisms, was the result of the process of a separation of the ontological systems, and the subsequent establishment of a relationship between them.

Ontological systems

The study of mental structures through language is impossible to carry out without the emphasis on the fact that we deal with the synthesis of objects with different kinds of nature, belonging to different ontologies or ontological systems. In philosophy *ontology* is a doctrine of being or a systematic account of existence. Hence, an ontological system is a certain fragment (area, domain) of the real or abstract world, an ordered collection of objects/concepts that are presented in a similar manner and have the

uniformity of their interpretation (Maslova 2013; Maslova & Minakhin 2015). The term *ontology* has a specific nature in the cognitive context:

... an ontology is a description (like a formal specification of a program) of the concepts and relationships that can exist for an agent or a community of agents. This definition is consistent with the usage of ontology as set-of-concept-definitions, but more general. And it is certainly a different sense of the word than its use in philosophy.
(Gruber 1995)

It is necessary to differentiate between three ontological systems: the ontology of the world, the ontology of human beings, the ontology of language. There is an ontological synthesis in any statement, text, literature or poetry.

Cognitive linguistics studies language at the junction of these three ontological systems. Every system has its own objects and the ways of organizing them. We claim that the development of prehistoric consciousness was closely related to these systems. An analysis of historical data (such as works in historical poetics) leads us to the conclusion that these ontological systems were not initially separated.

Investigating the genesis of metaphors in terms of ontological systems, it is necessary to emphasize that a human being was not immediately brought into focus of his own perception. Human consciousness organized an imaginary world with the help of real-life forms, and a mythological image became the main mental unit of human knowledge.

Mythological image, mythological metaphor

The correlation between myth and thinking has already been mentioned in previous research:

... ritual experiences are gradually transformed into procedural schemas, while mythological narratives are transformed into semantic schemas
(Kimmel 2005 : 298).

Today, an understanding of myth and mythological image has been rationalized (Maslova 2015), and it is a kind of a story and it has a narrative structure:

Greek myth can be classified as a 'traditional tale with secondary, partial reference to something of collective importance' to quote the apt formulation of Walter Burkert... Whether one takes the television soap

programmes of the early evening or the prime-time film showings... , all alike, in differing degrees and in a variety of ways, have something in common both with each other and with ancient mythological images: they use the stories that they tell to entertain, yet they also exercise an effect that goes beyond the moment, by taking abstractions like wishes, ideas and fears and giving them visible and concrete form.
(Junker 2012: 19-20)

It should be mentioned that the primary role of 'mythological image' was not a narrative. Following the Russian researcher O.M. Frejdenberg (Frejdenberg 1979), we claim that mythological image was the projection of human conceptualization of the real world in the prelogical epoch. Mythological image is concrete, it captures a special holistic perception of the world due to the indivisibility of the ontological systems. Mythological image is a union of arbitrary objects of varying degrees of abstraction, where the main form of connection is identification. For instance, Homer used the expressions 'iron sky', 'iron heart' because the sky, the man and the heart of the man seemed to be of the iron in the myth. Mythological image begins in ancient times as the lowest form of thinking, and ends in the form of poetic image as the highest one. In the mythological image the cognizer is not separated from the cognizable, the phenomenon is not separated from its features. It is an important fact because 'transfer' of features becomes possible only at the stage when there is a destruction of the complexity of perceptions: the characteristics are being separated from the phenomena, and the cognizer from the cognizable. It is also the process of separation of the ontological system of human consciousness and the ontological system of language from the ontological system of the world. According to modern classifications this kind of image can be defined as Gestalt.

Mythological image was represented in the form of mythological metaphor, which was fundamentally different from the traditional concept of metaphor, as mythological metaphor had no function of 'transferring' (Frejdenberg 1979: 48). Mythological metaphor is a narrowed and concretized mythological image in different varieties.

Mythological metaphor is not the same as modern metaphor. Fundamentally, mythological metaphor is a fragment of mythological image, which is represented in the language. This relationship is specified in the representation of a mythological image; in this case, mythological metaphor has no function of free comparison of different objects that can be observed in the use of contemporary metaphor.

The transfer function was largely standardized and concretized, and people could not freely transfer quality from one object to another. It was a

significant factor in the development of metaphor understanding. The transferring mechanism began to emerge precisely in ancient literature and, in most cases, it relied on the concrete basis.

When mythological image as the main form of perception of reality was destroyed, mythological metaphor was transformed. It acquired the function of free comparison of two objects with respect to some common base. Thus, the mythological image as a cognitive category was replaced by the another cognitive mechanism metaphor.

The evolutionary process shows that metaphor development began with the transfer of specific meanings into abstract ones and it was completed as a transformation of metaphor into a figure of speech.

‘Metaphorical’ meaning related not only to the learning of abstractedness through sentient experience but to forming the concept of ‘*transferral*’. The separation between the three ontological systems was inevitably accompanied by the establishment of the relations between them. These relationships were organized based on the principle of interaction between *reality* and *illusion* (*seeming*).

Initially, for early consciousness the sky and the underworld were united. It was also believed that every creature, every object had its counterpart, and all phenomena were perceived in the form of two identical opposites forming a whole. With the collapse of duality caused by the formation of concepts, this duality phenomenon falls into a genuine one and a copy, having only the external features of the phenomenon, but not its essence. It was the beginning of the idea about *authenticity* and *semblance* (*illusion*) formation. The relationship between the authenticity and illusion also became the basis of the relationship between the ontological systems of the world, human consciousness and language.

The division of the world and human consciousness was the process of utmost importance. ‘Seeming’ initially was the object of external human consciousness and then it has become a category of imagination. ‘Visibility’ became, not a physical but a mental, phenomenon. The ontological system of human consciousness and the ontological system of the world were in the same relationship as authenticity and semblance, reality and illusion respectively. This is an extremely important fact for the development of the ontology of human consciousness.

Developing the ontological systems in this context lets us arrive at the conclusion that the formation of creative consciousness is connected to the idea of *mimesis* (Freudenberg 1979: 185). Nowadays, *mimesis* is understood as the representation or imitation of life and the real world in art and literature. The first meaning of this term was ‘imitation of reality in reality’, and then it became the imitation of reality in imagination, illusory

reflection of real phenomena. Art (arts and crafts) began with the construction of the 'image' of the world, consciously illusory in itself. In imagination this image fits in with all the visible forms of reality. In mature art the image focuses on the hidden effects; they are unseen. The image tends to become the representation of the hidden features of the phenomenon and interpretation. Image concreteness becomes an allegory and acquires abstract features; indifference in qualities and details transforms into a selection of some basic qualities, space perception develops into the moment of movement from cause to effect (*stipulation* replaces *tautology*). These are the conditions for metaphor forming that is not yet a stylistic figure but anyhow a cognitive mechanism of thinking.

Therefore, in modern metaphor the third component appeared: the basis for the transfer, which was absent in the early (mythological) metaphor. Analysis of some poetic texts shows that mythological metaphor is not used as a cognitive mechanism at present, but there are ancient metaphorical models in modern poetry that date back to the ancient mythological metaphors that were fixed in language. These models are used as the basis for the *metaphoric paradigm* of some poetic images and *author's* metaphors in poetry.

For example, in ancient times there was a metaphor of gold as a dragon bed. The traces of mythological metaphors related to dragons and their constant attribute, gold, exist in modern poetry.

- (1) Dragon young, dragon bold. / By my kind I am told, / to protect those weak and old. / Call me a mighty dragon gold (Angelegnus).
- (2) Something in the dark came alive tonight / A dragon of some sort, made its way into the light / Green and shiny / Long and windy / Eyes of gold / Truth untold (Douglas Welty).

Due to this process we deal with, not only single metaphors but, metaphorical 'networks' or 'worlds', since it is one of the representations of the relations between the ontological systems.

Metaphorical worlds

It is worth mentioning that according to G. Lakoff and M. Johnson metaphorical language appears to relate to a metaphor system or a system of thought (Lakoff & Jonson 1980). Their conceptual idea is that the motivation for metaphor resides at the level of conceptual domains, and people do not only speak in metaphorical terms but also think in these terms. According to H. Weinrich (1976), a *metaphorical world* is by definition metaindividual, i.e., it constitutes the heritage of a community as

part of that community's 'langue', to the exclusion of its members' 'parole'. It means that each metaphor is integrated into 'a metaphorical field' (Weinrich 1976: 44) if it is accepted by a community, and the image it conveys must be shared by the community's members. To create and understand a metaphor the addresser and the addressee should share the metaphorical field, i.e. the same socio-cultural values, not only synchronically but also diachronically. From another point of view, metaphor helps to switch levels of existence (or world levels). Whenever someone uses a metaphor he creates a metaphorical world beyond our actual world, and the relationship of that world to our world is a metaphorical one (Stockwell 2002).

The notions of 'metaphorical field' and 'metaphorical worlds' are rooted in ideas developed in different methodologies. On the one hand, G. Lakoff and M. Turner defined the notion of 'generic-level metaphor' that

... relates to a relatively schematic or abstract level of metaphoric representation which provides structure that can be inherited by specific-level metaphor. For instance, the individual metaphors which make up the Event Structure Metaphor are generic-level metaphors and are inherited by more specific metaphors via a process known as inheritance. (Evans 2007: 90)

On the other hand, there is a dictionary of poetic images, compiled by N. Pavlovich on the material of Russian poetry, based on a computer analysis of a large array of texts, which makes obvious the systematic character of poetic metaphors. Metaphorical paradigms presented in Russian-language poetry are identified there. These metaphorical paradigms can be considered the same as generic-level metaphors. Thus, metaphorical worlds organize metaphorical structures as the network of metaphorical paradigms at the abstract level and these paradigms can be represented differently in language and poetry.

So, metaphor is not only a cognitive tool for creating metaphorical worlds, but it is a mechanism of interaction between the three ontologies. Switching into another metaphorical world enables us to operate the objects from another ontology. A metaphorical world is the field of human consciousness in the form of one of the ontological systems where many individual minds are incorporated.

Conclusion

The cognitive-ontological approach considers metaphor as a way of thinking, as a mental linguistic phenomenon, and it explains the genesis

and functioning of metaphor as a mental phenomenon and as a cognitive mechanism. This approach focuses on the three ontological systems (human consciousness, world and language) and the relations between them, because every statement is a synthesis of these ontological elements. Initially these ontological systems were not separated in early human's mind and were included in on the ontology of the world.

Modern metaphor as one of the basic cognitive mechanisms developed from mythological metaphor and mythological image. Mythological metaphor was different from modern metaphor and it was the first stage in the development of this phenomenon. The forming of metaphor is closely related to mimesis, which made possible the imitation of reality in imagination. So, in the cognitive-ontological perspective metaphor was one of the results of the process of a partial division between the three ontological systems and the ways of interaction between them. In the process of a partial division between the three ontological systems some 'nuclear' ideas have appeared. Initial 'nuclear' ideas were the basis for the emergence of some cognitive mechanisms of sense forming and some general limitations and directions of opening up the world and consciousness in general. These ideas are: transferral, authenticity, and semblance.

As a result of the process of metaphor formation at the mental and linguistic levels metaphorical worlds are being formed. They are the part of inter-ontological transpersonal interaction. So, metaphorical worlds are parts of organized interactions between the three ontological systems at the transpersonal level.

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CHAPTER TWELVE

EXPLORING REGRESSIVE PLACE ASSIMILATION IN BRITISH ENGLISH: A CASE STUDY OF WORD-FINAL /t, d/¹

MITSUHIRO NAKAMURA

Introduction

Regressive place assimilation across word boundaries is a common connected speech process, whereby a word-final alveolar stop, /t/ or /d/, optionally assimilates to the place of the following word-initial consonant.

(1) Instability of final alveolars (Gimson 2014: 285):

- a) /t/ → /p/ before /p, b, m/, e.g. *that pen, that boy, that man* /ðæp pen, ðæp bɔɪ, ðæp mæn/
- b) /t/ → /k/ before /k, g/, e.g. *that cup, that girl* /ðæk kʌp, ðæk ɡɜ:l/
- c) /d/ → /b/ before /p, b, m/, e.g. *good pen, good boy, good man* /ɡʊb pen, ɡʊb bɔɪ, ɡʊb mæn/
- d) /d/ → /g/ before /k, g/, e.g. *good concert, good girl* /ɡʊɡ kɒnsət, ɡʊɡ ɡɜ:l/

In the traditional ‘phoneme-dominated (Abercrombie 1965)’ approach, place assimilations in (1) are described as a categorical process by which a segment is completely replaced by another one. This implies the complete deletion of the alveolar target and the lengthening of the bilabial, or the velar, trigger.

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In contrast, many articulatory studies have shown that the phenomenon is a gradient phonetic process (e.g. Ellis & Hardcastle 2002, Nolan 1992, Kühnert & Hoole 2004, Wright & Kerswill 1989). And Browman & Goldstein (1990, 1992) in particular have proposed a strong hypothesis that all instances of connected speech alternations are due to the two following gradient modifications to gestural structure: increase in overlap and decrease in magnitude. The former modification effectively leads to what Browman & Goldstein (1990) call ‘gestural hiding,’ a famous example of which is the /t/ in *perfect memory*: an alveolar closure is present but is masked by the bilabial closure of /m/. The mechanism of gestural overlap and reduction is appealing but has not been substantiated fully by empirical data. Furthermore, only a few attempts have been made to examine variation across individual speakers (e.g. Ellis & Hardcastle 2002, Kühnert & Hoole 2004).

The current study first attempts to identify the spatial characteristics of the target alveolar in the assimilation site and discusses the speaker-specific nature of variation. Then, the temporal characteristics of the overlapping bilabial/velar and gestural hiding are examined to consider the relationship between gestural overlap and reduction. Our results suggest that the incorporation of speakers’ use of particular phonetic forms augments the gestural model.

Methodology

Data collection. The multichannel articulatory database MOCHA-TIMIT, described by Wrench (1999), was used for collecting the speech materials. This database comprises articulatory and acoustic data of 460 phonetically-balanced sentences read by native speakers of English. Data acquisition was made with Carstens Electromagnetic Articulograph (EMA), Reading Electropalatograph (EPG), Laryngograph (Lx) and acoustic recordings. In this study the EMA data (the tongue tip/blade, the tongue dorsum, the lower lip) and the EPG contact patterns were analysed for the selected utterances spoken by three speakers of Southern British English, SE (female), SA (male), and AP (male).

The dataset consisted of a word-final singleton stop, /t/ or /d/, followed by a word-initial bilabial (/p/, /b/, or /m/) or a velar (/k/ or /g/): e.g. *that pick-pocket, could barely, add milk, hot coffee, red cashmere, bought gunpowder*. 99 tokens in total (33 words×3 speakers) were used for analysis.

Analyses of spatial characteristics. The analysis of the MOCHA data employs MATLAB analysis tools. Samples of the articulatory-acoustic

representation are given in Figure 1 (a,b). It contains the waveform, the tongue tip horizontal movement (TTx), the tongue tip vertical movement (TTy), the tongue dorsum horizontal movement (TDx), the tongue dorsum vertical movement (TDy), tangential velocity (mm/s), and the EPG contact pattern.

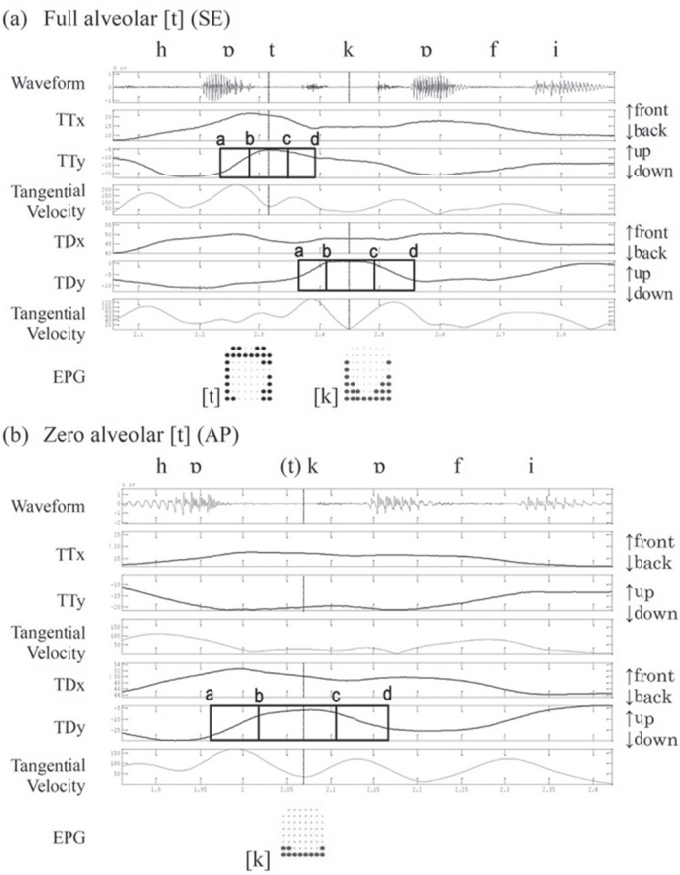


Figure 1. Articulatory-acoustic representation of the phrase 'hot coffee' in the sentence 'My ideal morning begins with hot coffee'.

Variations in the production of the word-final /t, d/ were examined by the EPG tongue-palate contact patterns in the alveolar zone. For coding the

EPG patterns, the criteria described by Nolan (1992: 267) were used with some modifications.

(2) Four criteria for coding the EPG contact patterns:

- a) *Full alveolar* tokens show a complete closure at the alveolar region.
- b) *Groove alveolar* tokens show an incomplete closure with a constricted groove configuration at the alveolar region.
- c) *Residual alveolar* tokens lack median closure at the alveolar region but involve contact along the sides of the palate.
- d) *Zero alveolar* tokens show no contact at the alveolar, postalveolar, and palatal region.

The EPG frames analysed were identified at the point of the tangential velocity minimum of the tongue tip movement. This point defines the target position for an alveolar stop and is represented by the dashed line in Figure 1. Based on the criteria given in (2), the EPG pattern for [t] in Figure 1(a) is coded as ‘full alveolar’ and that in Figure 1(b) is coded as ‘zero alveolar.’

For the measurement of the tongue tip displacements, the EMA tongue tip trajectory data was used. The TT_x and TT_y position was measured at the tangential velocity minimum. When the alveolar stop tokens lack EPG contact or show no clear indication of the velocity minimum, as seen in Figure 1(b), the tongue tip position was measured at the velocity minimum point of the following (i.e. overlapping) word-initial labial or dorsal gesture.

Analyses of temporal characteristics. The temporal characteristics of linguistically distinctive movements are identified by the four articulatory landmarks below.

(3) Four articulatory landmarks (Gafos 2002: 276, 292):

- a) *Onset* is the point in time when the articulator begins to move towards its specified target.
- b) *Target* is the point in time when the articulator achieves its target.
- c) *Release* is the point in time when the articulator releases the constriction and starts its movement away from the target.
- d) *Release offset* is the point when active control of movement away from the target ceases.

The landmarks in (3) were specified by referring to the tangential velocity signal of the relevant articulator. In Figure 1, the four landmarks for /t/ in the phrase ‘hot coffee’ are shown above the TT_y trajectory, and those for

/k/ are shown above the TDy trajectory. The time points (a) *onset* and (b) *target* were specified at 20% of the velocity peak associated with movement towards a target constriction, while the time points (c) *release* and (d) *release offset* were specified at 20% of the velocity peak associated with movement away from a target constriction². Based on the articulatory landmarks in (3), the following temporal variables were calculated.

(4) *Total articulatory duration* was measured as the temporal interval between the time point (a) and (d).

(5) *Articulatory plateau duration* was measured as the temporal interval between time point (b) and (c).

For the analysis of the articulatory duration of the word-initial bilabial, or velar, consonant, the total duration in (4) was measured for the zero alveolar tokens. It was asked whether the complete deletion of the tip gesture was accompanied by the temporal extension of the labial, or dorsal, gesture.

For the analysis of gestural hiding, the articulatory plateau duration in (5) was measured for the target /t, d/ and the triggering bilabials and velars. In our case of gestural hiding, while the constriction by the tongue tip is formed in some way (i.e. the full/groove alveolar), that gesture may be hidden by the temporally overlapping constriction by the lips or the dorsum.

Results and discussion

EPG contact patterns and EMA tongue tip displacements. Figure 2 summarises the distribution of the four EPG contact patterns for three speakers. The speakers differ considerably in their realisation of the tongue-palate contact patterns. The commonest pattern found for speaker SA and AP is a complete reduction of the tip gesture or zero alveolar. In contrast, speaker SE indicates a full contact pattern more frequently than the other speakers. The results are in accordance with the idiosyncratic variations reported by Ellis & Hardcastle (2002) and suggest that individual speakers use preferred forms of phonetic manifestation of assimilated alveolar stops.

² The threshold criterion, 20% of peak velocity, suggested by Hool (1996), was used in this study.

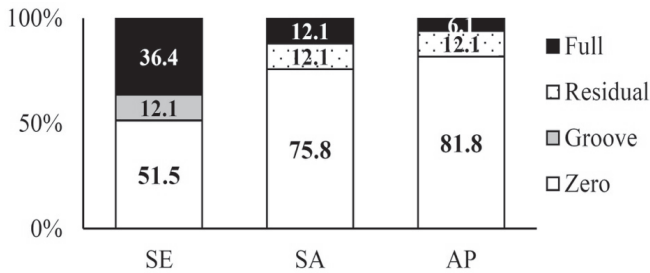


Figure 2. Distribution of EPG contact patterns for three speakers.

Next, we examine whether or not the place of the overlapping segment influences the realisation of the tongue tip height. Figure 3 shows all the measurements of the tongue tip positions for three speakers. Mean values are summarised in terms of the place of the following/overlapping segment and are given in Table 1.

The effects of the following segment were examined by t-test (2tailed). SE showed a significantly lower position of the tongue tip before the bilabial (e.g. *might begin*) than before the velar (e.g. *red cashmere*): [$t=2.40$, $df=31$, $p=0.022$]. This can be explained by the fact that the labial gesture minimally affects the movement of the tongue tip gesture. In contrast, SA and AP showed a non-significant effect of the place of the following consonant: for SA, [$t=-0.19$, $df=31$, $p=0.84$] and for AP [$t=-1.19$, $df=31$, $p=0.24$]. This suggests that the tongue tip height is controlled regardless of phonetic contexts.

The contrasting results obtained can be interpreted as indicative of individual differences in the mental representation of the lexicon. The absence of the contextual effect is related to the use of the zero alveolar form: SA and AP, as seen in Figure 2, are frequent zero-alveolar users. Each preferred form, which is selected voluntarily, requires a speaker to perform tasks specific to that form.

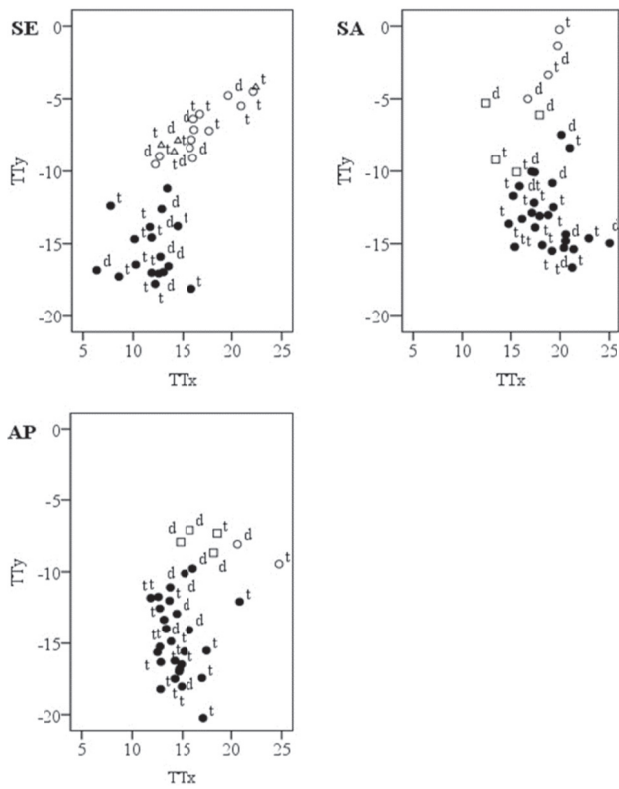


Figure 3. Tongue tip displacement for the word-final /t, d/ (mm).
○=full TT, Δ=groove TT, □=residual TT, ●=zero TT

Table 1. Mean TTy displacement in terms of the overlapping consonant (mm).

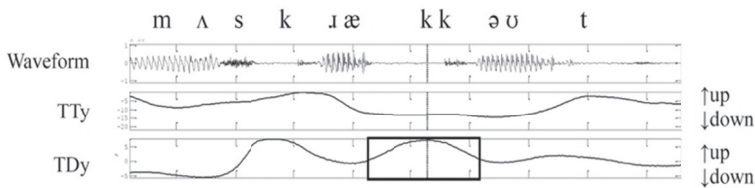
Bilabials /p, b, m/				Velars /k, g/		
speaker	mean (SD)	max	min	mean (SD)	max	min
SE	-12.62 (4.54)	-4.19	-18.10	-8.69 (3.71)	-4.49	-14.57
SA	-11.00 (4.19)	-1.34	-16.64	-11.32 (4.87)	-0.23	-15.21
AP	-13.00 (3.63)	-7.11	-18.21	-14.60 (3.28)	-10.11	-20.23

Total articulatory duration of the overlapping labial/dorsal gesture. This section considers whether the complete deletion of the tongue tip gesture is accompanied by the temporal extension of the overlapping labial or dorsal gesture. To investigate this question, we focused on a sequence of identical consonants and distinguished the ones generated by place assimilation, called ‘assimilated sequence,’ (e.g. *that pickpocket>tha[p] pickpocket, could barely>coul[b] barely, that canteen>tha[k] canteen*) from the ones generated by word order, called ‘lexical sequence,’ (e.g. *slip poison, Barb burned, toxic chemicals*). Figure 4 shows examples of the duration measurements for the assimilated and lexical /kk/ sequence. The total articulatory durations of the tongue dorsum gesture (TDy) are highlighted by the boxes.

Table 2 presents mean total articulatory durations of the assimilated and lexical sequences for individual speakers as well as pooled across the three speakers. Due to the lack of an assimilated /gg/ sequence, the measurements were limited to the /pp, bb, kk/ sequences. As it is difficult to collect a sufficient number of tokens across all the categories of the sequence and across the three speakers, the statistical evaluation was limited to the data pooled across the speakers. The results, therefore, should be interpreted as preliminary.

(a) Assimilated /kk/ sequence (SA)

The willowy woman wore a muskrat coat.



(b) Lexical /kk/ sequence (SE)

Hispanic costumes are quite colourful.

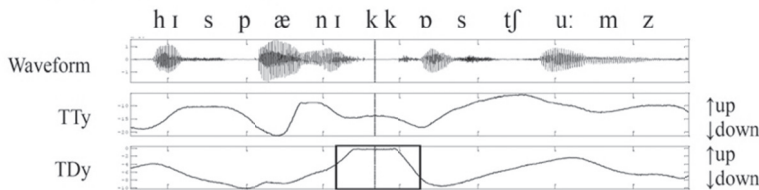


Figure 4. Measurement of total articulatory duration of assimilated and lexical sequences.

Table 2. Mean total articulatory duration of assimilated and lexical sequences for three speakers separately as well as pooled across speakers (msec.).

		pp		bb		kk	
		Assimi.	Lex.	Assimi.	Lex.	Assimi.	Lex.
SE	Mean	221.50	183.00	137.83	245.00	194.00	211.60
	SD	24.75	2.83	36.71	45.25	NA	12.90
	n	2	2	6	2	1	5
SA	Mean	161.50	198.50	150.46	205.50	177.50	205.00
	SD	28.99	20.51	37.77	17.68	12.50	34.53
	n	2	2	8	2	4	5
AP	Mean	138.00	132.50	131.55	169.50	209.60	190.20
	SD	NA	21.92	16.08	12.02	25.83	12.87
	n	1	2	7	2	5	5
3 speakers pooled							
Mean		180.80	171.33	140.55	206.67	195.20	202.27
SD		42.85	33.68	31.36	40.52	24.56	22.83
n		5	6	21	6	10	15
Note: Assimi.=assimilated sequence; Lex.=lexical sequence; n=the number of the tokens							

Given the assumption that the complete deletion of the tongue tip gesture is compensated thoroughly by the overlapping gesture, the total duration of the labial or dorsal gesture would be lengthened, so that there would be no substantial difference between the duration of the assimilated sequences and that of the lexical sequences. The t-test results revealed that a significant difference was found for /bb/ [$t=-4.27$, $df=25$, $p<0.001$] but not for /pp/ [$t=0.41$, $df=9$, $p=0.69$] and /kk/ [$t=-0.73$, $df=23$, $p=0.46$].

The result for the /pp/ and /kk/ sequence matches the prediction but that for the /bb/ sequence does not. One explanation for this can be sought in the membership of word class, namely function and content words. 17 out of 21 tokens in the assimilated /bb/ sequences are the function words (e.g. *should be*, *rewarded by*) while all the tokens in the lexical /bb/ sequences are the content words (e.g. *Bob bandaged*, *Barb burned*). Since the function words are usually weak (non-stressed) and relatively short in duration, the assimilated /bb/ sequence becomes significantly shorter than that of the lexical one. Therefore, a tentative conclusion is that the complete deletion of the tongue tip gesture, or the realisation of the zero alveolar, is accompanied by the temporal lengthening of the overlapping gesture.

Gestural hiding. The question we ask now is whether or not gestural hiding always occurs when the following word begins with a bilabial or a velar consonant. Figure 5 below indicates the interactions between the tongue tip and the tongue dorsum, or the lower lip. The articulatory plateau duration of the TTy, the TDy, and the LLy trajectory is highlighted by the boxes. In (a), the tongue tip gesture and the dorsum gesture are separated from each other: there is a weak explosion after the articulatory release of /t/. In contrast, in (b) and (c), the tongue tip gesture overlaps the lower lip gesture and the degree of overlap is different in each case: the closure and/or release phase of /t, d/ is affected.

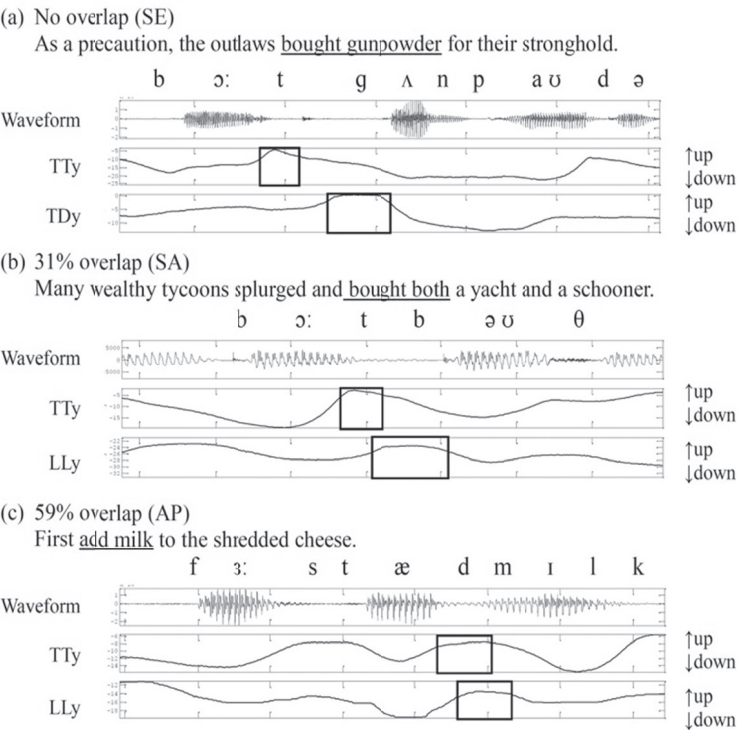


Figure 5. Measurement of the articulatory plateau duration for the TTy, the TDy, and the LLy trajectory.

Table 3 below indicates the occurrences of the gestural hiding cases. As demonstrated in Figure 2 before, the number of the full alveolar tokens is very small for SA and AP. And even for SE, who shows the highest

percentage value of the full and groove tokens, gestural hiding cases are very rare. Although the total number of tokens is limited, it is apparent that gestural hiding does not always occur even if the target alveolar stop is in a relevant phonological environment.

Table 3. Occurrences of gestural hiding

Speaker	Total	No overlap	Gestural hiding (labial/dorsal)
SE	16	13	3 (labial=2; dorsal=1)
SA	4	1	3 (=labial)
AP	2	0	2 (=labial)
Note: Total=the total number of the EPG full and groove tokens			

Conclusion

The current study has so far explored the articulatory nature of regressive place assimilation across word boundaries in British English and has presented the results of various analyses. This exploratory study has produced three major findings. The first finding is that the complete deletion of the tongue tip gesture for /t, d/ is dominant and a partial reduction is not common. The differences found seem to indicate that speakers use individual preferred forms of assimilated alveolar stops. The second finding is that the complete deletion of the tongue tip gesture is accompanied by a temporal extension of the overlapping labial, or dorsal, gesture. The third finding is that gestural hiding cases are very rare. This point is related to individual preferences in the production of the alveolar stop in the assimilation site.

These findings suggest that gestural overlap and reduction play a vital role in the production of place assimilation but that the simple assumption of the two modifications is too general to determine variable realisations by the speakers. In this respect, individual speakers’ representations of the phonological/articulatory forms could be taken into account. Given the assumption that speakers have a choice of the assimilated forms, the individual’s preference, or speaker’s conception about the use of a particular phonetic form, should be incorporated in modelling speech production.

The current study has used the data collected from the articulatory-acoustic database. Controlled experiments are also necessary to substantiate the articulatory patterns we have observed. The effects of word frequency and syntactic structure also need further research. It is hoped, however, that the parametric phonetic analysis presented in this study provides another interesting description of regressive place assimilation.

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CHAPTER THIRTEEN

PHARYNGEALIZATION AND THE THREE
DORSAL STOP SERIES
OF PROTO-INDO-EUROPEAN

CHARLES PRESCOTT

Introduction

*“MAKE THE QUESTIONS GOOD, THOUGH; THE ANSWERS MAY WELL BE BALONEY.”*¹

To cover the various reflexes in the daughter languages, Proto-Indo-European is commonly assumed to have had three series of dorsal stops for which the notation of (Kümmel 2007, 319), *K: *Q: *K^w, will be used, *K being the series that underwent fronting and frication in the *satem* group of languages.

The phonotactic statistics of (Kümmel 2007, 314) suggest that *Q and *K^w may not have occurred in the same contexts at some stage prior to reconstructed Proto-Indo-European, i.e. they were in complementary distribution, and could be regarded as allophones of a single phoneme series. In most of the daughter language families these variants were redistributed to give reflexes exhibiting two rather than three series of dorsal stops.

(Prescott 2012) proposed pharyngealization both of Proto-Germanic *r, *w, *χ, *χ^w to account for lowering/retraction of preceding vowels in early Germanic dialects, and also of *r, *u, *k, *i in Baltic, Slavic and Indo-Iranian to account for retracted articulations of following reflexes of PIE *s (the RUKI Rule), suggesting that at least PIE *r, *u, *q were also pharyngealized in the precursors to those groups.

¹ Quercer & Janath, in Iain M. Banks *The Algebraist*. (London: Orbis, 2005), 360

Kümmel's phonotactic statistics are here narrowed to exclude *K, which can occur in any context, and widened to include contexts separated from the dorsal by *e.

PIE *a, *u, *s, at least, seem to condition the occurrence of *Q rather than *K^w, so it is proposed that they were already pharyngealized in the parent language and that this phonological feature, RTR, was implicated in the allophony, *Q being also pharyngealized and partly continued in the pharyngealized *χ of Germanic and *k of the RUKI group. A corollary is that the RUKI rule must now be inverted to read:

PIE *s was depharyngealized unless preceded by one of the pharyngealized *r, *u, *Q and, in an innovation, *i.

A change from pharyngealized Q^ς to K^w is typologically sounder than the reverse, so it is proposed that PIE had originally two dorsal series, *K and *Q^ς, and that this was continued in the core RUKI group, which is thus conservative in this respect. Elsewhere Q^ς > Q^{ςw} > K^w except in pharyngealized contexts, giving the three series *K : *Q : *K^w. The labial reinforcement Q^ς > Q^{ςw} is supported by (Watson 1999), an account of Yemeni Arabic; and there may be relics of intermediate q^{ςw} in Germanic and Latin. The further stage, lenition Q^{ςw} > K^w, finds support in developments in Moroccan Arabic.

PIE appears not as a theoretical point source, but as a real language with variation in space and time.

The three dorsal series

The Proto-Indo-European dorsal stop series are described as:

- 'palatals', K = k, g, g^h in Kümmel's notation, which gave fricatives and sibilants in the *satem* languages, which preserved the K/Q distinction;
- 'velars', Q = q, G, G^h, which gave velars or uvulars generally;
- 'labio-velars', K^w = k^w, g^w, g^w^h, which gave labio-velars in the *centum* languages, which merged K and Q, but velars in that subset of the *satem* languages with a pure RUKI rule, i.e. Baltic, Slavic and Indo-Iranian, which have retracted reflexes of PIE *s following *r, *u, *k, *i.

In the following extract from the table of (Clackson 2007, 50), Latin exemplifies the *centum* languages, Lithuanian the RUKI *satem* languages.

Table 1.

dorsal	PIE	Latin	Lithuanian
k		k	š
	*kerd- ‘heart’	cor	širdis
q		k	k
	*grehw2- ‘flesh, blood’	cruor	kraĩjas
k ^w		k ^w	k
	k ^w o- ‘who, what’	quod	kàs

(Beekes 1995, 112) suggests that [Q] are allophones of both /K/ and /K^w/. The distribution evidence in table 2 suggests that the ‘palatal’ series, [K], can occur in any almost any context and so does not alternate with [Q].

Kümmel’s Phonotactic Statistics

(Kümmel 2007, 314) provides counts from *Lexikon der Indogermanischen Verben*, (Rix 2001), of the occurrence of the three dorsal series in verbal roots in various contexts. His figures where the attribution of the dorsal is unequivocal, omitting generalized contexts like /#_eR, are given in Table 2, with updated counts for the context _u from Kümmel (pc).

Table 2.

	*K	*Q	*K ^w
/#_eĭ	10	1	7
/#_eu	7	9	0
/#_eh ₁	2	2	0
/#_e	58	57	28

	*K	*Q	*K ^w
/#_a	2	2	0
u	4	22	0
_u	10	7	0
i_	21	16	9
_i	3	0	3
s_	8	13	0
_s	4	5	0
_r	5	18	3
_l,N	8	12	0
h ₁	6	2	1
h ₂ _	4	8	1
_h ₂	0	3	2
h ₃ _	0	2	0
_h ₃	1	0	0

As mentioned above, *K can occur in almost any context, but this is not the case for *K^w. There are some striking zeroes in this column: in the contexts /#_eu, /#_a, adjacent to *u and *s, before *l, *m, *n. There are also no occurrences of *Q before *i. This suggests the possibility that *Q and *K^w were in complementary distribution and thus allophones of a

single phoneme series at some time. As there are contexts where all three series occur, this time may well have been earlier than Proto-Indo-European.

The most significant promiscuous context is /#_e. But there are hints that drilling down to see whether the following consonant may influence the choice of dorsal may shed some light on this. /#_eʷ, for instance, conditions *Q.

Pharyngealization in Germanic and the RUKI dialects

A new relationship was proposed in (Prescott 2012) between Germanic, which shows lowering and retraction of vowels before *r, *w, *χ, *χʷ, and the RUKI dialects of Indo-European: Baltic, Slavic and Indo-Iranian, which have a retracted reflex of *s following *r, *u, *k, *i. There are two aspects to the relationship: the Germanic segments correspond directly to three of the four RUKI segments, and the effects on vowels in Germanic and on *s in the RUKI dialects may be attributed to a common phonological feature, Retracted Tongue-root, [RTR]. To illustrate this, examples are given from Old High German for Germanic and Sanskrit for the RUKI group:

Old High German monophthongization of *ai

/ai/ > /ɛ:/ before /r/, /w/ and Germanic /x/.

First the /a/ is raised to /ɛ/ by i-umlaut before /i/, and then the /i/ is lowered to /ɛ/ before /r/, /w/ and Germanic /x/.

Examples from (Voyles 1992 9.1.3a) **The Changes in [ai]:**

/r/	*saira	>	sēr	‘pain’
/w/	*saiwaz	>	sēu	‘sea’
/x/	*aixtiz	>	ēht	‘wealth’;

but there is no lowering before OHG *h* from Germanic /k/:

/k/	*aik	>	eih	‘oak’
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Sanskrit /ʃ/

Sanskrit preserved the retracted allophone of /s/ as the retroflex /ʃ/.

Examples from (Burrow 1965, 79):

/r/	<i>varṣman-</i>	‘summit’
/u/	<i>mūṣ-</i>	‘mouse’
/k/	<i>kṣudrā-</i>	‘small’
/i/	<i>vīṣa</i>	‘poison’

Critique of (Prescott 2012)

The RUKI rule in Baltic, Slavic and Indo-Iranian, where an *s following *r, *u, *k, *i appears as retracted to š, x, ʃ, but generally [s] elsewhere, was compared to “emphasis” spread in Arabic. Emphatic consonants in Arabic are characterised by RTR, Retracted Tongue-root or Pharyngeal Constriction, described by Jan Katlev (pc) as “with an ʕayin co-articulation” and by (Tur-Sinai 1937, 12) as “with swallowing” in the translation of (Laufer & Baer 1988, 185). This RTR feature can spread to following consonants, converting them into emphatics and also having a lowering/retracting effect on vowels. So it was suggested that at the time the RUKI distinction was made the emphatic segments were r^ʕ, u^ʕ, k^ʕ, i^ʕ and the following /s/ became [s^ʕ].

The model of emphasis spread in Arabic led to Prescott’s assumption that there was no need to extend the RUKI segments from /k/ to include all velars. The Lithuanian example in (Andersen 1968, 188) of /š/ after /g/ in *áugštas* ‘high’ could then have been seen as action at a distance by the preceding RUKI segment /u/, possibly mediated by an allophonically pharyngealized /g/, and the same explanation could have accounted for Old Persian example *aogəžā* “du sagtest” in (Mayrhofer 1989, 9). There was no explanation of why only *s was affected in the RUKI rule, just a hint that, improbably, only for the pharyngealized allophone of /s/ did phonemes evolve that it could merge with and be preserved.

Consideration of the dorsal series question in Proto-Indo-European will vindicate Andersen and Mayrhofer’s extensions of the RUKI rule to include /g/ as well as /k/, thus weakening slightly the connection of the RUKI dialects with Germanic where of the ‘velars’ only χ^ʕ, χ^{wʕ} < q^ʕ, q^{wʕ} give evidence of pharyngealization. It will also lead to an inversion of the RUKI rule, making the Arabic model of emphasis spread inappropriate.

Pharyngealization in Proto-Indo-European

Because Kümmel's counts show an unrestricted distribution for K, counts have been made, again from LIV, comparing only unequivocal Q and K^w in the contexts: xe_, x_, _x, _ex. Contexts where x = mobile s have been ignored and rows which have only one or zero examples in all contexts are not shown.

Table 3.

x	xeQ	xeK ^w	xQ	xK ^w	Qx	K ^w x	Qex	K ^w ex
a			2	0	1	0		
h ₂	1	0	5	2	1	0	3	4
i̇	1	2	8	6	0	3	0	3
l	1	0	5	2	5	0	2	4
m			1	0			2	2
n	0	1	11	6	1	0	2	2
r	4	2	5	3	10	2	5	5
s	2	1	7	0	5	0	1	0
t	2	1						
u̇	2	3	17	0	3	0	4	0

These figures show a preference without exception of *a, *s, *u̇ for Q rather than K^w in the contexts x_, _x, _ex, *e.g.*

*qamp-	‘krümmen, biegen’
*sqend-	‘(los)springen, davonspringen’
*qeyp-	‘(innerlich) beben’

*r, *l, *h₂ show a tendency to prefer Q in the contexts *xe_*, *x_*, *_x*, *e.g.*

*b ^h erc ^h -	‘beachten, bewahren’
*qlēp-	‘(heimlich) stehlen, verbergen’
*pleh ₂ g-	‘schlagen’

**ḷ* shows a preference for K^w in the contexts *_x*, *_ex*, *e.g.*

*k ^w iēh ₁ -	‘ausruhen’
*k ^w ei-	‘wahrnehmen, bemerken’

This suggests the possibility of a complementary distribution of *Q and *K^w at some time prior to Proto-Indo-European i.e. as allophones [Q] and [K^w] of a single phoneme series. Since it is proposed that r, u, Q, i and s were pharyngealized in the RUKI dialects and r, w, χ in early Germanic as well, it is suggested that RTR was also the active feature in this distribution of the dorsal series.

Variation in space and time

A change from pharyngealized Q^ḡ to K^w is typologically sounder than the reverse. Suppose we start with two ‘dorsal’ series, velar K and pharyngealized Q^ḡ, and other pharyngealized segments including at least *a, *s, *u.

This two-way distinction may be continued in Baltic, Slavic and Indo-Iranian and we can see these dialects as preserving the pharyngealized quality of Q^ḡ at least until the operation of the RUKI rule. They also preserve original pharyngealized s^ḡ only following r^ḡ, u^ḡ, Q^ḡ and a newly pharyngealized i^ḡ, thus inverting the RUKI rule.

For the other dialects, allow Q^ḡ to acquire labial reinforcement to Q^{ḡw}. (Watson 1999, 289) adduces

data from Ṣanṣānī, a dialect of Yemeni Arabic, in which emphasis has two articulatory correlates, pharyngealization and labialization

to show the labialization of the emphatics by their effect on short high vowels *e.g.* (Watson 1999, 296) ṡāliyyih ‘expensive f.s.’ *cf.* ṡayyubuh ‘good f.s.’

This labial reinforcement in PIE occurred only in non-pharyngealized contexts. There may be relics of the pharyngealized q^{sw} stage in Germanic *e.g.* Gothic $lai\chi^wum$ ‘we lent’, quoted by (Wright 1954, §69) as an example of Germanic i broken to e , and in the Latin spelling <qu> which seems to imply a retracted stop different from <c> at the time the spelling was adopted.

The lenition $Q^{sw} > K^w$ may find support in developments in Moroccan Arabic. (Heselwood and Hassan 2011, 16), in their editorial introduction to a volume on Arabic phonetics, draw a phonological conclusion from phonetic data in a paper by Zeroual *et al.* that ‘emphasis’ in Moroccan Arabic is realised as pharyngealization on coronals but as labialization on dorsals. *e.g.* [tʰab] ‘to cook’ contrasts with [tab] ‘to repent’ but [χ^w dama] ‘knives’ with [χ dajm] ‘works’.

It seems likely that PIE $*h_2$ was originally pharyngealized because of its power to convert $*e$ into $*a$ but that it was losing RTR under the general lenition of laryngeals, (perhaps /h/ becoming /h/?). Maybe $*r$, on the other hand, was on the way to becoming pharyngealized, as seen later in Latin, Germanic and the RUKI group.

PIE appears not as a theoretical point source, but as a real language with variation in space and time. Further, Bellem’s (pc) remark that “Arabic emphatic consonants are adapted by their labialised counterparts in Bantu and Uzbek languages” opens the intriguing possibility that the PIE dialects that developed labio-velars might have been spoken by adopters of PIE.

Support for retracted Proto-Indo-European $*s$: Retracted reflexes

Some modern IE languages with a retracted, but not necessarily pharyngealized, reflex of $*s$ are Spanish, Dutch, Albanian, and German in some contexts.

Paraphrasing (König 1978, 151), in early High German, Germanic s had an ʃ -like sound, shown by German loanwords: Polish żółd (‘Sold’) and place-names: Žatec (‘Saaz’), Griže (‘Greis’). Conservative Walser and some Bavarian dialects preserve an ʃ -like sound even before vowels, while this quality is lost in an increasing number of contexts, the more northerly the dialect. (Braune/Eggers 1987, §168) supports this view that OHG <s> represents an ʃ -like sound, citing the Slavic Freisinger Denkmäler with <s> for Slavic š , ž , <z> for s , z . If the monophthongization of Germanic $*ai$ to $\bar{e}$ before r , w , h alone in OHG is due to the pharyngealization of these consonants as (Prescott 2012) suggests, this ʃ -like sound cannot have

been still pharyngealized at the time of the monophthongization because it did not participate in the conditions for that change.

In a more comprehensive survey (Vijūnas 2010) concludes that PIE *s was a post-alveolar “shibilant” with a retracted articulation compared to alveolar [s]. His reasons include the retracted articulation of /s/ in some modern IE languages where it is the only sibilant and does not have to contrast with *e.g.* /ʃ/, and a painstaking review of the fricatives that may be reconstructed for Anatolian languages and their Semitic neighbours. This retracted PIE *s seems entirely compatible with the pharyngeal co-articulation proposed here.

Support for retracted Proto-Indo-European *s: Rhotacism

Further support for IE /s/ may possibly be seen in Germanic and Latin $r < s$.

In Sanskrit it is only the retroflex reflex ṣ ($< \text{s}^*$) word-finally (after i, u) which becomes r before voiced segments, where plain s does not (Burrow 1965, 100)); and in Armenian (Olsen 1989, 5-15) demonstrates a similar rule of -ir $<$ -is, -ēs and -ur $<$ -us, -ōs in any word-final context. This suggests Armenian participation in the RUKI rule, at least in respect of i and u. The corresponding lowered realization of i and u may have facilitated the merger of ē with i and ō with u.

If only pharyngealized s is subject to rhotacism in Sanskrit and Armenian, the more general $r < z$ ($< s$ by Verner’s Law) in North and West Germanic and $r < z < s$ intervocally in Latin may suggest that z $<$ s remained pharyngealized in these languages until the operation of the rhotacism rules, whereas s itself cannot have still been pharyngealized at the time of lowering and retraction of vowels before *r, *w, *χ, *χ^w alone in early Germanic. This s could still have been retracted.

(Parker 1988, 230) sees vowel lowering in Latin equally before *r and $r < *s$, both exemplified in *peparisam $>$ *pepiriram $>$ pepereram ‘I had brought forth’, which may suggest pharyngealization of r from either source.

Summary of the argument

Vowel lowering/retraction in early Germanic dialects could be attributed to a pharyngealized quality in Proto-Germanic r, w, χ, χ^w.

The role of the largely corresponding r, u, Q, i in the distinction of retracted versions of a following s in the RUKI dialects may also be ascribed to an RTR quality of these segments.

The ‘velar’ series of proto-IE which was neither labialized nor subject to *satem* fronting, Q, seems to be in complementary distribution with K^w, in proximity to *a, *s, *u, and to some extent *r, *l, *h₂. Now *r, *u, *s correspond to two of the *ruki* segments and the distinctive retracted s of these dialects, so the hypothesis is that the feature RTR characterized pharyngealized phonemes, Q^ɛ, a^ɛ, s^ɛ, u^ɛ, r^ɛ, h₂. In many areas Q^ɛ, when not in a pharyngealized context, was labialized to Q^{ɛw}, which in most cases then lost pharyngealization to give K^w.

If the pharyngealized *s was preserved into the RUKI dialects, the RUKI rule should be inverted i.e.:-

*s lost RTR unless following pharyngealized r, u, Q, i.

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CHAPTER FOURTEEN

FROM OPERATIONAL RESEARCH TO LINGUISTICS AND LOGIC

MARTIN H. PRIOR

Introduction

In this paper I wish to track my progression from Operational Research to language and logic, the core of which was computing. My first degree was in econometrics, or economics and statistics: a social science degree in the 'sixties which became progressively more numerate, and which led me to Operational Research, a problem-solving discipline which in practice draws researchers from many disciplines. I shall start this paper with my experiences in OR, in the steel industry in South Wales.

Turning first to Operational Research, which according to Wikipedia at least, is a 'discipline that deals with the application of advanced analytical methods to help make better decisions'. The phrase we keep hearing is 'optimal decisions'. This will relate to an objective which might be military or might be civil. In civil applications we must choose between maximal production and most profitable or least costly production. It will choose relevant disciplines, whether mathematical, engineering or statistical. In the steel industry we considered optimal mixes of iron ore, admixtures of scrap in the steel-making process, and in this large steel plant, internal transport. These three examples involve increasing uncertainty and therefore lend themselves to an increasing extent for statistical analysis.

Indeed linguistics is rather similar to OR in welcoming a multi-disciplinary input, from modern languages, philosophy and increasingly mathematics and statistics.

In my department there in South Wales I was known for both my linguistic and my programming skills, and wondered whether this was the same aptitude. This prompted my intermittent reading of my father's

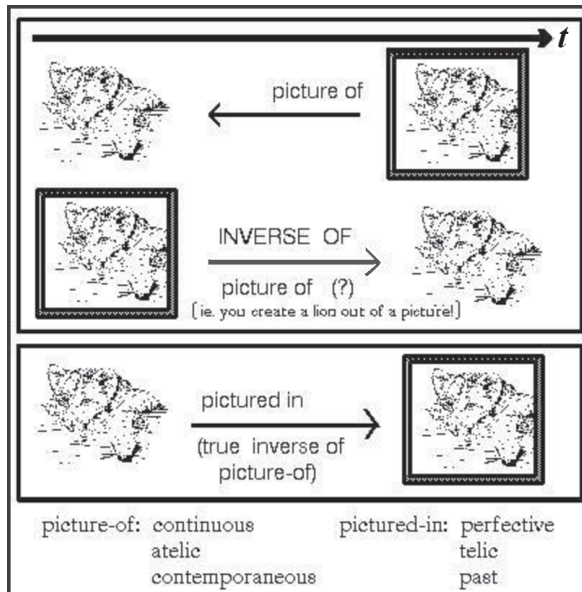
Formal Logic (Prior, A.N. (1953)), I started playing around with some ideas the main ones being

- (a) concept intersection, the relationship between an intersectional adjective and its noun,
- (b) operator inversion, as with 'square' and 'square root' (square⁻¹).

Now when I 'devised' concept intersection I called it 'semantic apposition', because it captured the relationship to be found not only between an intersectional adjective and its noun, but also between noun expressions in apposition, but even though it was used extensively in Description Logic (see Baader et al (2002)), I never heard of DL for some thirty years, between 1975 and 2008, when it was mentioned in passing by Patrick Blackburn, a scholar of my father (see in particular Blackburn (1994)).

To my mind concept intersection is a central semantic feature and my first major section will be devoted to it.

The second main section will be devoted to operator inversion, and the best way to introduce this is to recall a conversation I had with my father in my late teens. He asked me whether 'picture of' could be considered an operator, and suggested its inverse could create a lion from a picture:



But I replied that I would have to invert time as well: in fact we must distinguish between inverse operators and reverse operations, where in fact time need not be reversed. The true inverse is ‘pictured in’, and here we have a relationship across time. This is a difficult concept, and in my third section I shall discuss an approach to relations across time, not least actions, where the involvement of the agent and the recipient of the action occur at different time spans.

This idea of inversion stayed with me for some while (and indeed still does), but as well as the idea of two-place predicates across time, another important idea came to me: what is the inverse of negation. This seemed to me to be the first question one should ask, but for mathematicians it seems to be a blind spot, perhaps because they relate inversion closely with reverse two-place predicates. But in fact,

$$\text{NON}^{-1}p$$

means ‘that which some p are not’, i.e. ‘not the only p’. I am introducing this now, since it will pervade much of I am talking about in this paper.

My third section will indeed look at relationships across time, and indeed how inversion can change aspect.

Over the years, my various papers have fitted into a pattern in which we move gradually from syntax to semantic. This system I have called “Abstractive Semantics”. It is tabulated below, with references to papers I have given on the various topics:

(1)

Level	Nature of level	Change
A	Semantic relationships within phrases Prior, M.H.(1985)(thesis), plus Prior, M.H.(2003, 2010)	
AB		Natural Language Categorical Grammar Prior, M.H.(2009) and Appendix I
B	Description logic Prior, M.H.(2014)	
BC		Definition of elements
C	Natural language Predicate Calculus Prior, M.H.(2003) and Appendix II	
CD		Evaluation of PBC
D	Logical form in PC and the logic of tense, aspect and events Prior, M.H.(1999, 2002, 2004, 2006)	

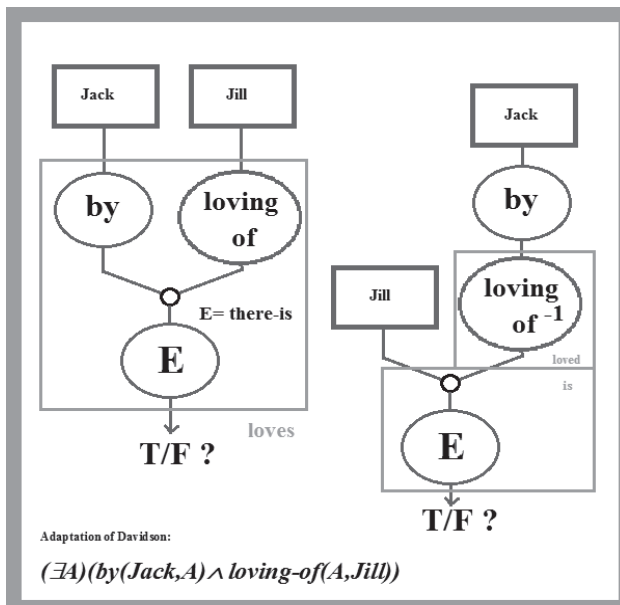
In this paper I shall

- (i) cover A and B under **Concept Intersection**,
- (ii) further cover B under **Operator Inversion**, plus a brief mention of AB, BC and C,
- (iii) finish with a discussion of D under **Actions and Processes**.

Concept Intersection

But coming back to my modelling, I started experimenting with the idea that all binary operators could be reduced to concept intersection, and we can see this in the diagram below, where the nodes represent concept intersection:

(2)



In this diagram we capture “Jack loves Jill.” The finite verb forms are based on underlying verbal nouns, which we directly capture in an adaptation of Davidson’s event analysis: with the introduction of inversion to pick out whatever clause subject we wish, we no longer need for syntactic transformations at any level, although I believe that Chomskyan transformations provide a useful model for language acquisition. The

black node represents concept intersection and the -1 index represents operator inversion, as with ‘square root’.

We should note here that when we have a relationship across time, the different forms, including active and passive, will have different time references. Thus the active voice will involve the time of the action, and the passive voice the time the object or ‘patient’ is affected.

Now this was around 1975 or so, and I was two years off starting Linguistics at University College London. I was very vague about linguistics, though I didn’t agree with Chomsky, and I didn’t get as far as Predicate Calculus in my father’s *Formal Logic* (Prior 1953). Thus I was able to produce structures such as

(3) $E(Ap, Lq)$ there is(E) an activity of loving q, (which-is) (done) by p (Ap)

(4a) Pq either some p are q, or there are neither p nor q (in effect $Pq \equiv Qp$)

or, to expand...

(4b) $Pq \equiv (E(p, q) \vee E(0p, 0q))$ where $0p$ means ‘no p’.

Note that we can write both in Predicate Calculus, which I had never heard of:

(5) $(\exists w)(Agent(p, w) \wedge Loving-of(w, q))$

(6) $(\exists x)(Px \wedge Qx) \vee (\forall x)(\sim Px \wedge \sim Qx)$

But in each we go against standard conventions, firstly that some event like ‘loving’ is treated as a ‘thing’, so can we in fact quantify it? Donald Davidson says yes we can. But I did so independently, without any awareness that philosophers felt a need for a philosophical justification for quantifying over events.

Likewise, when I devised the relationship of concept intersection, which I called semantic apposition, I had no idea that there was a field called Description Logic, which used this relationship.

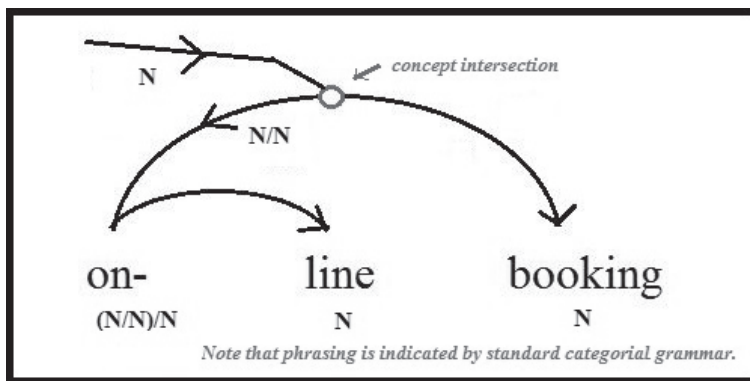
And for items (3) and (4), if we have a proposition Pq , standardly we have a one-place predicate P , and q as a unique argument. But here again we have a challenge to the standard Predicate Calculus, saying that a

predicate on a non-unique argument must have some meaning. And thus we may note within (3), that both p and q may be indefinite expressions.

Turning briefly to my PhD Thesis (Prior, M.H. (1985)), this was devoted to the properties of concept intersection, with particular reference to how far we can capture adjectives with this. Now it is generally accepted that some languages are right-branching, for example VSO languages and most SVO languages, and others are left-branching, such as SOV languages. However non-rigid SOV languages may place heavy expressions to the right.

However the statistics show a degree of irregularity, and in particular adjuncts such as adjectives did not fit in so regularly with this pattern. What I found eventually was that in language, operators either consistently followed or preceded their operands, as shown below with 'on-line': 'on' precedes 'line', and in English, operators will precede operands. But we do not follow Montague Grammar in treating adjectives as operators, but use concept intersection, especially when the adjectives follow the noun, as in 'members present' as opposed to 'present members'. This is captured below by the node represented by a small circle:

(7)



... and across languages, a preceding adjunct phrase of the form operator-operand is least favoured.

But how should we define operator-operand and how should we define concept intersection?

As far as operator-operand is concerned, I shall simply say that operators **include** those with an underlying two-place predicate, so that *square-of* corresponds to the two-place predicate " x is the square of y ." But

there other forms, such as NON, which neither correspond to a two-place predicate nor operate on one. I shall refer to these in the next section and argue that these too can be inverted.
For concept intersection we simply conjoin two definitions, something like:

(8) $(p, q)^{\text{def}}\{\text{result}\} \equiv (p^{\text{def}}\{\text{result}\} \wedge q^{\text{def}}\{\text{result}\})$

Thus we can say that ... is (p,q) if and only if both ... is p and ... is q, where we fill the ... uniformly.

Concept intersection also permits a **four-valued logic**. Basically it will mean “p that is to say q.” Now clearly (T,F) will be the null concept $\perp$. And candidates for the third and fourth truth-values will be “What I am saying is false” ($\perp$), and “What I am saying is true.” Both suggestions need to be examined more closely.

Operator Inversion

From the above discussion we may note three challenges:

- (9)
- (a) the use of abstract entities,
 - (b) the use of non-unique arguments, and
 - (c) inverse operators which don't relate to reverse predicates.

Now normally a monadic operator corresponds to a two-place predicate and its inverse corresponds to the corresponding reverse two-place predicate, and indeed we have the following matches:

(10)

Inverses of open groups corresponding to two-place predicates			
Syntactic description	Example	Inverse	Syntactic description of inverse
present participle	eating	(i) whom/which ... is eating (ii) being eaten by	(i) relative clause (ii) present passive participle plus agent preposition
possessed+of	father of	whose father is	relative clause
preposition	on	on which there is... OR on which ... is	relative clause

But as well as these open groups, capturing two-place predicates, we also have a smaller set, capturing logical concepts:

(11)

Inverses of open groups corresponding to two-place predicates				
Syntactic description	DL symbol	Example	Inverse	Syntactic description of inverse
determiner (traditionally called 'indefinite adjective')	$0v$	all	only	adverb
prefix	v or $\neg$	non-	not all (subject position), not the only (predicate position)	adverb+determiner phrase
determiner (also traditionally called 'indefinite adjective')	i	some	(i) some (ii) some of which are	(i) determiner (ii) relative clause
determiner (also traditionally called 'indefinite adjective')	0	no	(i) no (ii) none of which are	(i) determiner (ii) appositive relative clause

These resemble propositions used in syllogisms, including the symmetry of the last two (Prior, A.N. (1953)).

Let us take a selection of syllogistic statements:

(12a) **Particular affirmative**

Some p are q, **or** There are p, some of which are q.
E(p, q)

(12b) **Some q are p, or There are q, some of which are p.**
E(q, p)

Here we have the commutativity of concept intersection to affirm the that (12b) follows from (12a). Note that the ι above – or iota – which represents “some” is the identity operator, and since $p=\iota p$ and $q=\iota q$, we do not need to put the iota in. Note also that the inverse of iota has to be itself.

We can negate (12) above to give:

(13a) No p is q .
 $\sim E(p, q)$

(13b) No q is p .
 $\sim E(q, p)$

But this is not the universal negative, since neither p nor q need exist. However we may also have

(13c) **Universal negative**
 There are p , none of which are q
 $E(p, 0q)$

which clearly does not imply

(13c) There are q , none of which are p
 $E(q, 0p)$

Thus the universal negative is only commutative if we relax the assumption about existence.

Note here that the relative clause is an **appositive relative clause**, and indeed many appositive relative clauses can be captured by means of 0. Others will use some other quantifying determiner, including numbers. I shall now turn to the particular negative:

(14a) **Particular negative**
 Some p are not q .
 $E(p, vq)$

Note here that q need not exist. But to ensure that we say q exists, we can say:

(14b) There are q , not all of which are p :
 $E(q, v^{-1}p)$

Now clearly we can negate (14a) to get “all p are q”, it is not the traditional universal affirmative since it does not imply that p exists. We can obtain this with:

(15a) **Universal affirmative**

There are p, all of which are q, i.e. none of which are not q
 $E(p, 0vq)$

and in fact we can have

(15b) There are q, which all p are.
 $E(q, v^{-1}0p)$

But while (15a) implies (15b), the reverse does not hold, since it does not require that p exist. The presence of an inverted negative may also trigger an appositive relative clause.

Now I have discussed Description Logic and similar structures in other papers. In Prior, M.H. (2009) I showed how inverses could be incorporated into Categorical Grammar. A brief summary of this Natural Language Categorical Grammar is to be found in Appendix I. I have not yet spelt out in full detail stage BC in (1) above, definition of the elements of concept intersection, but in Prior, M.H. (2014), my most recent paper, and the first since I was informed about Description Logic, I looked at whether we can invert negation, and covered many of the points brought up here.

But I would also like to mention the use of inverted negation in capturing concept conjunction, which unlike standard DL, is different from concept intersection. Now we have

(16a) (drunk, disorderly)
 (those who are) drunk **and** disorderly (concept intersection)

(16b) v (v drunk, v disorderly)
 (those who are) drunk **or** disorderly (concept union)

But we may also have

(16c) v^{-1} (v^{-1} drunk, v^{-1} disorderly)
 those who are drunk **and** those who are disorderly
 (concept conjunction)

As argued in Prior, M.H. (2014), we can capture the following:

- (16d) $E(\bar{v}, v^{-1} \text{ drunk}, v^{-1} \text{ disorderly})$
 There are some people not barred, who some drunkards are not and who some disorderly people are not.

From this contortion we can re-write:

- (16e) $E(\bar{\text{barred}}, v^{-1} (v^{-1} \text{ drunk}, v^{-1} \text{ disorderly}))$
 Some drunkards and some disorderly people are barred.

So why use Description Logic? Quite simply, along with algebraic notation, it is far more compact than predicate calculus. We may indeed start off with predicate calculus as I shall in the next section, but we should not remain in PC to avoid issues raised by more compact notations, closer to natural language including natural language itself. The refinement of negative operators helps us considerably to address these issues.

Can we specify a procedure for relating DL to Predicate Calculus? I discussed this in Prior, M.H. (2003), where additionally I offered a solution to ‘Donkey Sentences’, highlighted in Geach, P. (1962) and Kamp, J.H. (1993), but this analysis only briefly touches negation and needs a fuller write-up.

Actions and Processes

As I have said in the last section, DL makes description more compact and indeed closer to natural language. But to make it more reflective of relations across time, we must find a formalism for tense and aspect. A proper formalism for aspect requires a formalism for tense.

Prior versus Reichenbach

Here we come across the debate over Reichenbach’s approach to tense, at least for English, and that of my father, A.N. Prior (see Prior, A.N. (1968)).

In fact these approaches are complementary, as I have long argued. But in fact Reichenbach can be expressed in terms of Prior but not vice versa. Prior produces a tense system which can relate tense to various philosophical issues, such as the relation between tense and modality (see Prior, A.N. (1957)). His formalism is as follows:

(17)

	Weak	Strong
Past	Pq, q has been true in the past	Hq, q has always been true in the past
Future	Fq, q will be true at some time in the future	Gq, q will always be true in the future
cf. Modal	Mq, q is possibly true (in some possible world)	Lq, q is necessarily true (in all possible worlds)

But Prior’s approach has little to say about the pragmatic concept of reference time. Reichenbach’s account relates three elements: S for Speaker Time, R for Reference Time and E for Event Time. Some examples:

- 17a) I have seen it today.
I had fixed it the day before (he saw it).
Our new committee members went on an induction course before taking up their positions.

E S,R
-----+-----+-----
I have seen it today

E R S
-----+---+---+-----
I had fixed it the day before he saw it

E,R S
-----+-----+-----
Our new committee members went on an induction course
before taking up their positions

- 17b) In other situations we may have an indefinite time reference.
E S,R
-----+-----+-----
I have drunk the coffee

**From Reichenbach's Reference Time to Time
Reference in Tense Logic**

So to capture Reference Time, we must add to Prior’s Tense Logic. In fact Patrick Blackburn does this with nominal propositions, e.g. “**It is**

Christmas Day 2014.” (Blackburn (1994)). However Blackburn only uses nominal propositions for instants, not intervals. In my own adaptation I use dt for instants and δu for intervals.

But firstly we may look at the Present Perfect, where S and R are identical:

- 18a) Some committee members **have visited** Finland (cf. 17a).
- 18b) It has been or is the case, that some committee members are in a state of having visited Finland.
Now I have deliberately spelt out 18b in this 'user unfriendly' manner, since the subject NP may refer to something which is either present-tense or at an indefinite point in the past, but the point of reference of the VP has to be at a point of time prior to that of the NP.

We may actually capture this in predicate calculus as follows:

- 18a) $P^*(\exists x) (Zx \wedge PVx)$
where Zx means *is a committee member*,
 Vx means *visit Finland*
 P^*q means $q \vee Pq$

Note here that according to Reichenbach, S and R correspond (see 17a), and in fact no mention is made of any clear past tense operator other than that preceding Vx . The opening tense operator may or may not be past tense according to context.

For the Simple Past we must identify both Reference Time and Event Time (see 17b). In fact they only need correspond exactly if they form respectively a point of time and a punctual event.

- 19) $P^*(\exists x) (P^{dt}*Zx \wedge P^{\delta u}*V_{\delta u}x)$

where

$P^{dt}*q$ means q was true at a specified point of time (dt) in the past or present.
We may also write it $P^*(dt \wedge q)$.

$P^{dt}*q$ as for $P^{dt}*q$ but means q is/was true at a point of time during the period δt in the past, which may extend into the present.

We may also write it $P^*(\delta t \wedge q)$.

δu must in the above context begin at dt unless the content of V specifies otherwise, and in either case *must be past time*.

and

$V_{\delta u}$ as for V but the particular event concerned must start at or after the start of δu .

Now here we have a similar situation to that of the Present Perfect, in that a tense operator appears twice, but it is only the time reference on the VP predicate that has to be past tense. What we must note is that the external tense operator seems to relate to the subject NP, while the internal tense operator determines the time reference of the verb and furthermore advances the 'narrative time reference'. We are beginning to see the usefulness of a symbolism which parallels differential calculus, which I discussed further in Prior, M.H. (2004) and (2006).

Now what we see in the example of both the Perfect and the Simple Past examples is that there may be a relationship across time between the subject NP and the associated VP.

Expansion of Verbal Expression

Now that we have set up our framework for tense, we may look at aspect:

20a) x visited Finland (V) at time dt .

20b) $P^*(\exists x) (P^{dt}*Zx \wedge P^{\delta u}*V_{\delta u}x)$

20c) $V_{\delta u}x = (\exists Q) (H_{\delta u}*(\exists A) [P^*Agent(x, A) \wedge Visiting(A, Q)] \wedge Compl\ Object(Q, Finland))$
 where $H_{\delta u}p = H(p \supset \delta u)$

$H_{\delta u}*p = H(p \supset \delta u) \wedge p$ (Note the conjunction here compared with the disjunction for P^*)

$Compl\ p = p \wedge G\sim p$

A is an **action** and *Q* is a **process**: **note in the above example that the quantifier for *A* falls within the scope of that for *Q*.**

21a) *x* was visiting Finland (*W*) at time *dt*.

21b) $P^{dt} (\exists x) (Zx \wedge Wx)$

21c) Where we know that the visit was eventually completed:

$Wx = (\exists A) (Agent(x, A) \wedge F^* (\exists Q) [Visiting(A, Q) \wedge Compl Object (Q, Finland)])$

where we may probably drop *Compl* and, if we do not know whether the visit was completed, we replace *F** by *Prog*.

Again *A* is an action and *Q* is a process: **now note that in this example, the quantifier for *A* falls outside the scope of that for *Q*.**

21b) when the object is in fact created by the action, rather than had something done to it, we must rewrite the *Q* expression, for example if *x* blows bubbles:

$(\exists Q) [Blowing(A, Q) \wedge Prog (\exists y) (Bubbles(y) \wedge Object (Q, y))]$

Defining Actions and Processes

To say something more about action and process: I have suggested that the key meaning of a transitive verb, and I believe many intransitive verbs, lies in the relationship between action and process. How can we define this concept of **process**? I suggest we term it the *change or continuation in state* of something, normally the object of a transitive verb, but sometimes too the subject of an intransitive verb.

The separation of action and process also permits us to identify actions which have more than one process. Thus if somebody kills all the inhabitants of a village by putting poison in the well, to give the Anscombe example (Anscombe (1959)), there is a single action but two processes - that of the poison going into the well and that of the villagers dying. This provides a straightforward answer to the difficulty put forward that two activities very different in nature constitute a single action.

Even though I have, along with Davidson(1980) and Bennett (1988), treated **actions** as quantifiable entities, such an approach has not gained

universal acceptance. How does one define a particular event or state for a given predicate? An example of such discussion of the issue may be found in Kamp & Reyle (1993), which does indeed recognise the difficulties of using events within the field of Formal Logic, but nevertheless justifies their use in the 'Discourse Representation Structures' used in their work to capture natural language.

In this paper I have raised the additional question of whether 'processes' can be treated as quantifiable entities, but so far I have treated the concept of an action as given, and indeed I do not believe it can or need be defined in terms of an associated predicate. One possible definition, as an initial hypothesis, would be the change or continuation in the state of the instrument, where for example the 'instrument' might be implements, parts of the body, the senses, etc.

In retrospect

Looking over the above outline I have essentially continued the formal approach required in Econometrics and Operational Research. This essentially took two forms combining for a third:

- (a) Statistical analysis, as with my studies of word- and morpheme-order universals (see Prior, M.H. (2010), in the SCL22 Proceedings),
- (b) logical analysis, as with computing, which in the context of linguistic studies turns out to be semantic, and
- (c) semantic explanation of semantic patterns, combining the above two.

Appendix I. Natural Language Categorial Grammar

Stage AB in scheme (1) above: first discussed in Prior, M.H. (2009) ...

Natural Language Categorial Grammar				
Adjunction				
1a	$[+aX \ X] \rightarrow X$	pre-adjunction	$[+aN \ N]$	+white elephants
1b	$[X \ +aX] \rightarrow X$	post-adjunction	$[N \ +aN]$	books +[on the shelf]
Partial Combination				
2a	$[X:aY \ Y:Z] \rightarrow [X:Z]$	tight	$[aN:aN \ N:S]$	on [the shelf]
2b	$[X:Y \ aY:Z] \rightarrow [X:Z]$	loose	$[S:N \ aN:S]$	it's [on the shelf]
2c	$[X:Y \ Y:Z] \rightarrow [X:Z]$		$[S:N \ N:S]$	that's [it]
(*)2d	$*[X:aY \ aY:Z] \rightarrow [X:Z]$		$[N:aN \ aN:S]$	there's clever (Welsh English phrase)
2e	$[X:Y] \rightarrow [X:K]$		$[N:N](CNP) \rightarrow [N:S](NP)$	on [the shelf]
Full Combination (example)				
3	$[(X:Z)/(C:D) \ (C:D)] \rightarrow [X:Z]$		$[(aN:S)/(S:aN) \ (S:aN)]$	(the shelf) that [it's on]

Note:

- (i) An adjunct should involve concept intersection with its adjoiner, or something within that adjoiner.
- (ii) Something of the form $X:aY$ must combine (see rules 2a, d), which I call “tight combination”, but combination is generally flexible with the form $X:Y$, which I call “loose combination” (see rules 2b, c, e).
- (iii) Note the inverted forms. Compare “it” and “it’s” with $N:S$ and $S:N$, illustrated in rules 2b,c. Also rule 3: the phrase “it’s on” is $S:aN$ and requires a prepositional object. But “that” has the category $(aN:S)/(S:aN)$ which combines with an $S:aN$ expression to form an $aN:S$ expression.

Appendix II. Natural Language Predicate Calculus (PBC)

Turning to Stage C in (1) above, I shall give a very brief outline of this Natural Language Predicate Calculus, which I have always called the Partial Binding Calculus(PBC), which uses Σ and Π operators, rather than the usual $\exists$ and $\forall$. To illustrate the new operators, I shall illustrate a number of identities:

	Simple form		Evaluation	Gloss
PBC0	$\Sigma aPa \wedge \Sigma aQa$	=	$\Sigma a(Pa \wedge Qa)$	Some things are p, and some of them are q.
PBC1	$\Sigma aPa \wedge \Pi aQa$	=	$\Sigma aPa \wedge \Pi a(Pa \supset Qa)$	Some things are p, and all of them are q. $\Pi = \sim \Sigma \sim$
PBC2	$\Sigma aPa \supset \Pi aQa$	=	$\Pi a(Pa \supset Qa)$	If some things are p, then all of them are q.

Whereas disjunction($\vee$) is distributive over the existential quantifier $\exists$ in standard Predicate Calculi, in Natural Language PC, we have **conjunction** being distributive over Σ , the corresponding existential quantifier.

We must also note here that the identity depends on carrying over the same binding variable, here 'a', something we don't meaningfully do in standard PC.

Note that PBC2 is in fact the 'donkey sentence' considered by both Peter Geach(1962) and Kamp & Reyle (1993). My own analysis is covered in Prior, M.H. (2003). To show further that things go differently:

	Simple form		Evaluation	Gloss
PBC3	$\Sigma a(Da \vee Ca) \wedge \Pi aBa$	=	$\Sigma a(Da \vee Ca) \wedge \Pi a((Da \vee Ca) \supset Ba)$	Some people are either drunk(D) or disorderly(C), and they get barred(B).
PBC4	$(\Sigma aDa \vee \Sigma aCa) \wedge \Pi aBa$	=	$(\Sigma aDa \wedge \Pi a(Da \supset Ba)) \vee (\Sigma aCa \wedge \Pi a(Ca \supset Ba))$	Either some people are drunk(D) and they get barred(B) or some people are disorderly(C) and they get barred(B).
PBC5	$\Pi aSa \vee \Pi aHa$	=	$\Pi a(Sa \vee Ha)$	They're all out on strike unless they're on holiday.

Again, whereas disjunction($\vee$) is distributive over the existential quantifier $\exists$ in standard Predicate Calculi, in Natural Language PC, it is not distributive over Σ , but distributive over Π , where in fact we capture disjunction by ‘unless’. And as the above examples show, we find such a difference in Natural Language itself.

Thus PBC3-5 show that Donkey Sentences are not the only oddity in relating Logical Form to Natural Language.

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CHAPTER FIFTEEN

WHEN PARAMETERS FALTER: AN OT ACCOUNT OF WH-QUESTIONS IN NORWEGIAN DIALECTS

MIGUEL VÁZQUEZ-LARRUSCAÍN

Introduction

The so-called verb second or V2-parameter is, as is well-known, a most solid syntactic surface-true generalization in both root declarative and partial questions all over the Germanic world, except for English. A sentence like *yesterday I saw her*, with a fronted temporal adverb, requires subject-verb inversion in German, Dutch, Yiddish, Afrikaans and any Scandinavian language, as seen in the Norwegian translation *i går så jeg henne* (yesterday-**saw**-I-her). Since wh-constituents are systematically fronted, root wh-questions regularly exhibit V2 in Germanic, e.g., *hvem så du i går?* (whom-**saw**-you-yesterday) in standard varieties of Norwegian. The German version is also a V2 construction, namely *wen hast du gestern gesehen?* while the non-V2 counterpart **wen du hast gestern gesehen?* is ruled out. This state of affairs is the norm in all the Germanic languages, except for many non-standard dialects in Norway, where the verb may or may not be in second position: *kem så du i går?* or *kem du så i går?* This is a well-known syntactic variable in, for instance, Tromsø Norwegian (see Iversen 1918 for the first description of syntactic variation; also Westergaard 2003 as the first study to posit different functional values for the different types of wh-clause).

The intriguing fact for any parameter-based theory is that this violation of the solid V2 word order is restricted to root wh-questions, while the rest remains V2, as expected. The fact that these violations of V2 are confined to a highly restricted set of constructions lets us conclude:

- (1) We cannot simply reject the V2 parameter for any Norwegian dialect, even if the parameter is massively violated in root wh-questions.

So, different dialects deviate from V2 in this restricted set of syntactic constructions in ways that vary from place to place. And this variation is structure-sensitive to at least the following conditions (cf. Vangsnes 2005): is the wh-constituent a subject or not?, is the wh-word simple or complex, a head or a dependent in the wh-phrase? (see (11) below). The fact that inter-dialectal variation is so rich and intricate in wh-questions leads us to the conclusion that:

- (2) We cannot relegate non-V2 in root questions to the periphery, and we cannot account for non-V2 in root questions by phonetic means: variation is intricate and sensitive to structural conditions.

In this light, the relevant question seems to be: how can we rethink the logic of parameters? This question is of current interest, not only for the comparative analysis of Norwegian dialects but also for linguistic theory at large.

- (3) Some important theoretical alternatives to classic Parametric Theory are now available.
 - (i) No parameters (Newmeyer 2006)
 - (ii) Refined parameters (Holmberg 2010)
 - (iii) Micro-parameters (Kayne 2000, Vangsnes 2005)
 - (iv) Violable constraints and Optimality-Theoretic grammars (Samek Ludovici 2006).

In this paper I will opt for (3iv), presenting an *optimality theoretic* reanalysis of the syntactic variation found in root wh-questions in Norwegian dialects. My support of OT relies on three considerations:

- (4) Arguments for a constraint-based analysis of Norwegian grammars:
 - (i) competition between principles is not hidden,
 - (ii) better integration with the rest of the grammar,
 - (iii) more flexible to deal with problematic empirical data.

The logic of competition

The first advantage of an optimality-theoretic approach is theoretical consistency and economy. Standard parametric accounts of V2 claim that

the verb-second generalization results from interaction between principles and parameters (see (6) below). The main parameter responsible for verb-second word order normally states that C^0 , the head of the clause—if we assume, as I will do in this paper, a *Barriers*-type clausal architecture (Chomsky 1986a)—contains some feature that must be somehow identified by some lexical or functional element, see (5) below for the equivalence between the *second position* in the traditional *field analysis* of Diderichsen 1946 and the C^0 head in the *Barriers* CP architecture. Several items compete to identify or lexicalize the relevant strong feature in C^0 in different syntactic contexts. In main declarative and wh-clauses the finite verb wins, while in subordinate clauses the winner is normally a conjunction (den Besten 1983 for Germanic, Platzack & Holmberg 1995 for Scandinavian). The underlying assumption is that conjunctions are universally stronger identifiers of C^0 than verbs. Therefore, only independent clauses are V2, since only independent clauses lack conjunctions. The strength of the V2 parameter is such that the rest of the grammar is seen through its lenses: syntactic constructions are parsed in (5) with P2/ C^0 , which is *second-position*, always filled with either a verb or a conjunction. In addition, as we will see below, indirect wh-questions (5e,g,h,i,j) and relative clauses (5k,l) are parsed with *covert*, phonologically empty conjunctions in P2 in order to keep the whole V2 generalization afloat (5e,i,j,l).

(5) V2 in Germanic (examples from Standard Norwegian, Bokmål).

		Fundamentfelt	P2= {v,conj}	n	a	V
(5a)		<i>Derfor</i>	<i>kommer</i>	<i>du</i>	<i>ikke</i>	
(5b)		<i>Hvorfor</i>	<i>kommer</i>	<i>du</i>	<i>ikke?</i>	
(5c)			<i>Kommer</i>	<i>du</i>	<i>ikke?</i>	
(5d)	<i>De sier</i>		<i>At</i>	<i>du</i>	<i>ikke</i>	<i>kommer</i>
(5e)	<i>De spør</i>	<i>Hvorfor</i>		<i>du</i>	<i>ikke</i>	<i>kommer</i>
(5f)	<i>De spør</i>		<i>om</i>	<i>du</i>	<i>ikke</i>	<i>kommer</i>
(5g)	<i>De spør</i>	<i>Hvem</i>	<i>som</i>		<i>ikke</i>	<i>kommer</i>
(5h)	<i>De spør</i>	<i>hvor mange</i>	<i>som</i>		<i>ikke</i>	<i>kommer</i>

(5i)	<i>De spør</i>	<i>Hva</i>		<i>du</i>	<i>ikke</i>	<i>så</i>
(5j)	<i>De spør</i>	<i>hvor mange</i>		<i>du</i>	<i>ikke</i>	<i>så</i>
(5k)	<i>De</i>		<i>som</i>		<i>ikke</i>	<i>kommer</i>
(5l)	<i>De</i>			<i>du</i>	<i>ikke</i>	<i>så</i>
		Spec CP	C⁰	Spec TP	VP adjunct	VP

Many accounts of V2 in the generative literature are based on verb-to-complementizer movement (V-to-C), an idea first advanced by Den Besten 1983 to formalize the observation that verbs are in complementary distribution with conjunctions in P2/C⁰ in V2 languages.

- (6) Lexicalization of CP heads: Fill C⁰ with a finite verb in root clauses, else with a conjunction (Never Fill C⁰ with both a finite verb and a conjunction at the same time).

This successful idea quickly acquired the rank of a parade exemplar for the Principles & Parameters program (P&P), as it captures many properties shared by the syntax of V2 languages, see (7-9) from standard Norwegian. In (7a,b), the verb moves to C⁰ in declarative and partial interrogatives.

(7) V2

- a. Declarative root sentences (=5a).

Spec CP	C ⁰	Spec TP	Adjunct VP	VP
Derfor	kommer _i	du	ikke	e _i

- b. Wh-questions, root sentences (=5b)

Spec CP	C ⁰	Spec TP	Adjunct VP	VP
Hvorfor	kommer _i	du	ikke	e _i ?

In embedded clauses (see 8 and 9), it is the corresponding conjunction that occupies C⁰ rather than the finite verb, which accordingly either raises to some inflectional node, like in Icelandic (8a), or remains in-situ within the

predicate, like in Mainland Scandinavian (8b). This way, the V2 parameter also accounts for the important generalization that all V2 languages have different word orders in root and dependent clauses (Platzack & Holmberg 1995). If we take Norwegian as an example, the finite verb precedes the negative adverb *ikke* in root clauses (5a-c), while in embedded clauses it is the negative adverb *ikke* that precedes the finite verb (5d-l). The whole system therefore works under the assumption that finite verbs either remain in base position or move to a functional head.

(8) Non-V2 in dependent clauses.

Declarative subordinate clauses (=5d)

	Matrix	C ⁰	Spec Tp	T ⁰	Adjunct VP	VP
Icelandic	Ðeir segja	að	þú	kemur _i	ekki	e _i
Norwegian	De sier	at	du		ikke	kommer

Indirect wh-questions, on the other hand, are endowed with *covert* conjunctions to otherwise prevent verbs from raising to C⁰ (9a). Similarly, abstract conjunctions are also needed in relative clauses and clefts for the same purpose (9c). In this paper, covert conjunctions will be represented as $\emptyset_{conj}$. By occupying C⁰, these silent conjunctions are clearly grammatical items, not just zeroes. In (9b), *som* is also a conjunction (Taraldsen 1986). Following Chomsky 1986b, wh-constituents are Operators in Spec CP. Both wh-operators and conjunctions can be covert, but still grammatically relevant, as can be seen in (9c). Covert wh-operators are here represented as *Op*.

(9) non-V2 in embedded clauses.

a. Wh-questions, subordinate clauses (=5e), (Chomsky 1986b/Taraldsen 1986)

Matrix	Spec CP	C ⁰	Spec TP	Adjunct VP	VP
De spør	hvorfor	$\emptyset_{conj}$	du	ikke	Kommer

- b. Relative clause, wh-subject (=5k) (Chomsky 1986b/Taraldsen 1986).

Antecedent	Spec CP	C ⁰	Spec TP	Adjunct VP	VP
De _i	<i>Op</i>	som	<i>e_i</i>	ikke	kommer

- c. Relative clauses, wh-object (=5l) (Chomsky 1986b/Taraldsen 1986).

Antecedent	Spec CP	C ⁰	Spec TP	Adjunct VP	VP
De _i	<i>Op</i>	<i>Ø_{conj}</i>	du	ikke	så <i>e_i</i>

So, why do so many Norwegian dialects violate V2 in root wh-questions in sentences like *kem som ikke kommer?* or *ka du ikke så?* If the rest of the grammar is V2, could we say that the V-to-C requirement is simply suspended *ad hoc* in these constructions? One possible way out of this conundrum is to claim, as Lie (1992) does, that non-V2 questions are actually shortened versions of the corresponding clefts, which comply with the V2 requirement, as in (10a) below. If non-V2 root questions are shortened versions of clefts (see 10b,c below), one could hold that apparent non-V2 are actually V2 syntactically, but nevertheless non-V2 on some phonetic level of representation. In this respect, dialectal variation is just variation in the phonetic realization of otherwise regular V2 word orders. To support this idea, Lie (1992) provides real speech data showing a continuum going from full clefts to typical non-V2 wh-questions. The fact that all these examples are natural speech data in many areas of continental Scandinavia gives some initial credit to Lie's hypothesis.

(10) Non-V2 wh-clauses as phonetic erosion of V2 clefts (Lie 1992).

- a. Hva er det du heter?
- b. Hva er du heter
- c. Hva du heter?

However, Lie's proposal predicts that violations of V2 should be more or less uniform in all Norwegian dialects, which is clearly not the case, see (11) below. Dialects that license non-V2 root questions do so in different ways, and these differences are sensitive to the syntax of the constructions and not to the phonetic characteristics of the dialects.

- (11) Violations of V2 in some Norwegian dialects. Low-level erosion is not enough (Vangsnes 2005).

HORDALAND (a)	TROMSØ (b)	MØRE / ROMSDAL (c)
<i>Hvem som ikke kommer?</i>	<i>Hvem som ikke kommer?</i>	<i>Hvem som ikke kommer?</i>
Hva så du ikke?	<i>Hva du ikke så?</i>	<i>Hva du ikke så?</i>
Hvor mange så du ikke?	Hvor mange så du ikke?	<i>Hvor mange du ikke så?</i>

But if we admit that both there is a V2 parameter and, nevertheless, acknowledge that the V2 parameter is not applicable to non-V2 orders, then we have to conclude that the hidden competition between main verbs and conjunctions as identifiers of CP heads does not follow a universal path but rather displays a maze of possibilities. This scenario seems to stage the competition between different principles or parameters as a competition between violable constraints. Or is it still possible for us to capture the pattern of variation within more conservative research programs which stick to absolute conditions (rules or principles) that must be blindly obeyed whenever met?

The spirit of *hard* principles lives on in micro-parametric studies. These approaches usually appeal to variation of representational conditions and differences in the specification of features of functional items. The classic parametric theory of V2 was based on a hidden competition between verbs and conjunctions to occupy C^0 . For Vangsnes (2005), (11) shows that the initial competition between the potential fillers of C^0 is even more complex. He claims that a sentence like *ka du ikke så?* has *ka*, a wh-word, as C^0 , while a sentence like *kem som ikke kom?* has *som*, a conjunction, as C^0 , while absolute questions have verbs in C^0 , e.g. *kommer du ikke?* So we end up with three potential C^0 heads: conjunctions, wh-items and verbs. This implies a clear scale of preferences as to which of these items is the best filler of C^0 in any syntactic context. The best fillers are conjunctions (including *som*); the next best candidate is wh-X (with a new internal sub-ranking for wh-phrases: *hvem, hva, hvor* > *hvordan, hvorfor, når, hvor mange...*); finally, verbs appear as a last resort, when the imperative of filling C^0 must be obeyed and no other option is available. In my opinion, parametric theories are not well-equipped to deal with this competitive logic of priorities and preferences. My commitment to OT is also a commitment to bringing the logic of competition between principles back into the open, from backstage to

frontstage in the theoretical drama, in accordance with those who claim that the competition between conflicting constraints from different linguistic dimensions is the engine that ultimately drives the grammar of natural languages (Prince & Smolensky 2004).

Better integration with the general wh-grammar

Most studies of non-V2 in Norwegian combine micro-parameters (Borer 1984, Chomsky 1995, Kayne 2000) with nanosyntax (Starke 2009). It is apparent that some non-V2 constructions have forced micro-parametric theorists to make some problematic commitments, which may nevertheless turn out to be unnecessary. One such commitment is to allow for complement-to-head movement in the grammar of sentences like *ka du ikke så?* with the interrogative pronoun *ka* in C^0 (e.g. Vangsnes 2005). By doing so, non-V2 constructions are harder to integrate with other non-V2 wh-constructions in the same dialect, where wh-constituents are usually specifiers of C^0 .

Representations and the micro-parametric approach. Many questions raised by the controversial idea of complement-to-head movement can be avoided if we admit that conjunctions, overt and covert, can be C^0 also in a root clause. If (12b) is a legitimate representation of a root wh-question, then (12a) is not needed, and the representational issues that it raises can be safely ignored.

(12) Alternative representations of non-V2 wh-questions (non-nominative wh-phrase).

	Spec CP	C^0	Spec TP	Neg	VP
a. Microparametric		Hva _i	du	ikke	så e _i ?
b. Optimality	Hva _i	Ø _{conj}	du	ikke	så e _i ?

If (12b) is a legitimate structural candidate, the actual problem worth discussing is not the presence of abstract *covert* conjunctions, otherwise independently needed in subordinate wh-questions and relative clauses in both theories, but rather the claim that conjunctions, overt or not, can be heads of root CP. But there cannot be any disagreement on this point between micro-parametric and optimality theoretic grammars, since both

analyze a sentence like *kem som ikke kom?* with *som*, a conjunction, as the head of a syntactically independent clause, as in (13a,b).

(13) Nominative wh-phrase.

	Spec CP	C	Spec TP	Neg	VP
a. Microparametric	Kem_i	som	e_i	ikke	kom?
b. Optimality	Kem_i	som	e_i	ikke	kom?

In this light, the alternative OT analysis is the only one which can maintain the same structural representation for all wh-constructions (12b and 13b), while the micro-parametric theory cannot (12a and 13a). This is in principle a theoretical advantage of OT worth preserving.

In my reanalysis I generalize the presence of conjunctions as heads of C^0 to all non-V2 cases discussed in this paper, regardless of whether the conjunction is covert or overt, or whether the CP is root or dependent. This is, in the end, the unifying trait of all non-V2 orders in Norwegian, and what affords a uniform representation for all wh-constructions.

(14) Uniform representations for non-V2 in both root and dependent clauses.

Spec CP	C	Spec TP	Neg	VP
Kem	Som	e	ikke	kom?
Kor mange	Som	e	ikke	kom?
Ka	$\emptyset_{\text{conj}}$	du	ikke	så e?
Kor mange	$\emptyset$	du	ikke	så e?

A better integration with the rest of the grammar of wh-constructions. My proposal therefore will generalize the structure usually assigned to dependent wh-constructions (Chomsky 1986b) to any wh-construction, at least as a representational possibility always available to any grammar.

- (15) Chomsky 1986b. Clauses with $OP_{wh} + C^0$ (dependent wh-question and relative clauses).

	Spec Cp	C^0	Spec TP	Adjunct VP	V	Comp VP
	OP_{wh_i}	conj	x_i			
	<i>hvem</i>	<i>som</i>	<i>e</i>	<i>ikke</i>	<i>så</i>	<i>dem</i>
Mannen	<i>Op</i>	<i>som</i>	<i>e</i>	<i>ikke</i>	<i>så</i>	<i>dem</i>
	OP_{wh_i}	conj				x_i
	<i>hvem</i>	$\emptyset$	<i>du</i>	<i>ikke</i>	<i>så</i>	<i>e</i>
<i>De</i>	<i>Op</i>	$\emptyset$	<i>du</i>	<i>ikke</i>	<i>så</i>	<i>e</i>

From this point of view, the challenge we have to face is quite simple: in which dialects is a candidate like (16a) optimal? And, where will it lose to (16b)? These are perfectly natural questions in OT.

- (16) Alternative representational candidates for root wh-questions.

<i>Who didn't see Per?</i>	Spec Cp	C	Spec TP	Adjunct VP	V	Comp VP
	OP_i	C	x_i			
(16a) <i>Kem som ikke så Per?</i>	<i>kem</i>	<i>som</i>		<i>ikke</i>	<i>så</i>	<i>Per</i>
(16b) <i>Hvem så ikke Per?</i>	<i>hvem</i>	<i>så</i>		<i>ikke</i>		<i>Per</i>

Empirical coverage

After this concise and cursory criticism of some problematic aspects in previous micro-parametric theories, I will proceed by introducing the main pieces of an optimality-theoretic reanalysis. In general, the OT constraints that make up the backbone of my proposal will not stray far from the corresponding parameters and micro-parameters reviewed so far in either content or spirit. Moreover, I will also stick to the same data set employed in previous micro-parametric studies, which is now the empirical standard

for current studies on the topic. Vangsnes's (2005) taxonomy is clear and insightfully arranged. It has furthermore been repeatedly confirmed in recent surveys with not only richer corpora, but also more refined searching tools.

The basic clash (see Møre & Romsdal (11c)). As discussed above, V2 word order results from a clash between two competing constraints in languages where the identification of C^0 is compulsory. For reasons of lack of space I will not question the imperative to fill C^0 in V2 languages. Once this structural imperative is accepted, the alternative ways to fill C^0 are determined by the competition between two antagonistic constraints, given in (17) below. The first one, (17a), rewords den Besten's idea (6) that verbs must type C^0 in root clauses (cf. Åfarli & Nordgård 1990), or alternatively, that conjunctions cannot type C^0 in root clauses, with verbs raising to C^0 as a last resort strategy. The second constraint, (17b), encapsulates the new proposal advanced in (14) above: wh-Operators demand conjunctions, overt or covert, as heads of CP. The novelty of our proposal is that constraint (17b) generalizes to all types of wh-constructions (root or dependent, interrogative or relative, with or without an antecedent, clefts or not; and surely more). This extension is only possible if we take (17b) to be a violable constraint, since conjunctions are usually not licensed as heads of root C.

(17) Competing principles.

- a. V-to- C_{root} : Avoid conjunctions in C^0 root. Alternatively, type C^0 with a verb in root CP.
- b. $OP_{\text{wh}} \rightarrow C^0_{\text{conj}}$: Wh-operators require conjunctions in C^0 .

The resolution of the conflict between the two polar constraints in (17) is straightforward in OT. Tableaux in (18), with unranked constraints, illustrate how different syntactic candidates for the same numeration (exemplified with English glosses) fare with respect to the relevant constraints. An asterisk means that the syntactic representation does not respect the structural conditions of the constraint. The lack of asterisks means that the syntactic representation satisfies the constraint. If constraint (17a) dominates (17b), then we have the standard grammar of Nwg, with verbs in second position. If (17b) beats (17a), non-V2 word orders are the best syntactic choice for root wh-questions. When this is the best option what we have is systematic violations of V2 in root wh-questions, as in Møre & Romsdal Norwegian, see (11c).

(18) Conflicting demands for root clauses with wh-operators.

a. Non-subject wh

<i>What didn't you see?</i>	V-to-C _{root}	OP _{wh} -> C ⁰ _{conj}
a. <i>hva så du ikke t?</i>		*
b. <i>ka Ø du ikke så t?</i>	*	

b. Subject wh

<i>Who didn't come?</i>	V-to-C _{root}	OP _{wh} -> C ⁰ _{conj}
a. <i>hvem kom t ikke?</i>		*
b. <i>hvem som t ikke kom?</i>	*	

The effects of (17b) are most clearly visible in embedded wh-constructions in any dialect, standard or not, since V-to-C_{root} is by definition vacuously satisfied in all embedded clauses. Consequently, hypothetical candidates containing subordinate clauses with V2, as in (19a), are universal losers under any ranking of (17a,b).

(19) Uniformity of non-V2 in dependent clauses.

<i>(I don't know) what you didn't see</i>	V_to_C _{root}	OP _{wh} -> C ⁰ _{conj}
a. (jeg vet ikke) <i>hva så du ikke t</i>		*
b. (jeg vet ikke) <i>hva Ø du ikke så t</i>		

Structured variation. In addition, dialects that depart from the standard V2 patterns do so in different ways, and this is something that makes it unlikely that non-V2 word order in root wh-questions are caused by low level processes of phonetic erosion, as suggested by Lie (1992). I shall not challenge the existence of phonetic erosion in these and many other contexts, but I shall rather emphasize that phonetic erosion is insufficient to understand the complexities of non-V2 in root clauses and their variable instantiation in the dialects of Norway.

Hordaland in the West (see (11a)). I will start my review of non-symmetric violations of V2 with the grammar of Hordaland Norwegian, geographically in the west. Here V2 appears in wh-questions if the wh-operator does not have nominative case, see (11a) above. V2 root wh-questions must satisfy the same sub-ranking found in the standard varieties, that is, $V\text{-to-}C_{\text{root}} \gg OP_{\text{wh}} \rightarrow C^0_{\text{conj}}$. However, violation of V2 is massive if the wh-constituent is a subject, like in *kem som ikke kom?* There must be another constraint, presumably a conjoint constraint (cf. Smolensky 1995) as in (20) below, making *som* insertion obligatory in these cases. This new constraint is presumably independently needed, not only in Hordaland but also in any other Norwegian variety, since *som* is everywhere obligatory with nominative wh-operators in embedded wh-constructions.

- (20) $OP_{\text{nom}} \rightarrow \text{som} = OP\text{-wh} \rightarrow C^0_{\text{conj}} \ \& \ \text{NOM-t}$
 $OP\text{-wh} \rightarrow C^0_{\text{conj}}$ = If Spec Cp is OP-wh, then C^0 is a conjunction.
 NOM-t: If C^0 governs a nominative trace, then C^0 has phonetic content.

- (21) Hordaland: $OP_{\text{nom}} \rightarrow \text{som} \gg V\text{-to-}C_{\text{conj}} \gg OP_{\text{wh}} \rightarrow C^0_{\text{conj}}$

a. Non-nominative wh-questions

<i>What didn't you see?</i>	$OP_{\text{NOM}} \rightarrow \text{som}$	V_to_C	$OP\text{-} \rightarrow C^0_{\text{conj}}$
a. <i>Hva så du ikke t?</i>			*
b. <i>Hva Ø du ikke så t?</i>		*!	

b. Nominative wh-questions

<i>Who is not coming?</i>	$OP\text{-wh}_{\text{nom}} \rightarrow \text{som}$	V_to_C	$OP\text{-} \rightarrow C^0_{\text{conj}}$
a. <i>Hvem kommer t ikke?</i>	*!		*
b. <i>Hvem som t ikke kommer?</i>		*	

Diagram (22) clarifies why *som* is compulsory in C^0 whenever the wh-component binds the trace of the subject of the embedded clause. No conceivable ranking of the three relevant constraints can make the sentences **jeg vet ikke hvem ikke kommer* or **jeg vet ikke hvem kommer*

ikke plausible grammatical alternatives to *jeg vet ikke hvem som ikke kommer*, which is always the grammatical *optimum* in any variety of Norwegian. When *hvem som ikke kommer* is embedded, both syntactically and semantically, then the presence of *som* is inevitable, given that all relevant constraints will always make it a winner (about the logic of comparative tableaux, see Prince 2002). The decisive reason why this regularity holds in all dialects is that $V\text{-to-}C_{\text{root}}$ is vacuously satisfied in any embedded question or clause, and, therefore, nothing prevents the satisfaction of $OP\text{-}wh_{\text{NOM}} \rightarrow som$ in this context. Moreover, any violation of $OP_{wh} \rightarrow C^0_{\text{conj}}$ will always imply a violation of $OP\text{-}wh_{\text{NOM}} \rightarrow som$, which it inevitably subsumes.

(22) Obligatory *som* in embedded wh-clauses with nominative wh-phrases.

<i>I don't know who didn't come</i>	$V\text{-to-}C_{\text{root}}$	$OP_{wh} \rightarrow C^0_{\text{conj}}$	$OP\text{-}wh_{\text{NOM}} \rightarrow som$
a. <i>Jeg vet ikke hvem som t ikke kom</i>			
b. <i>Jeg vet ikke hvem Ø t ikke kom</i>			W
c. <i>Jeg vet ikke hvem kom t ikke</i>		W	W

Tromsø in the North (see (11b)). Another famous sample of inter-dialectal variation responds to an indexed version of (17b) above. In Tromsø Norwegian, probably the non-V2 stereotype, only *simple* wh-operators (basically, the equivalents of *who*, *what* and *where*) require conjunctions in C^0_{root} (Elstad 1982), whether the conjunction is overt, as in *kem som ikke kom* (but not in **kor mange som ikke kom*), or covert, as in *ka du ikke så?* (but not **kor mange du ikke så?*). The index E in (23) means that the constraint is only active when the construction has one of the so-called Elstad's wh-operators.

(23) $OP_{wh}^E \rightarrow C^0_{\text{conj}}$: WH^E -operators require conjunctions in C^0
 $[WH^E = \{who, what, where\}]$

The reason non-V2 is restricted in Tromsø to Elstad root questions is because the grammar has the same ranking as the standard grammar, except for the fact that the indexed version of the constraint appears on top. In (24) we see this asymmetry in simple and complex nominative wh-phrases.

(24a) Simple WH_{NOM}

<i>Who didn't come?</i>	OP _{wh} ^{E-} >C _{conj} ⁰	V_to_C _{root}	OP _{wh} ⁻ >C _{root} ⁰	OP _{NOM} ⁻ > <i>som</i>
<i>a. Kem som t ikke kom?</i>		*		
<i>b. Kem Ø t ikke kom?</i>		*		*!
<i>c. Kem kom t ikke?</i>	*!		*	*

(24b) Complex WH_{NOM}

<i>How many didn't come?</i>	OP _{wh} ^{E-} >C _{conj} ⁰	V_to_C _{root}	OP _{wh} ⁻ >C _{root} ⁰	OP _{NOM} ⁻ > <i>som</i>
<i>a. Kor mange som t ikke kom?</i>		*!		
<i>b. Kor mange Ø t ikke kom?</i>		*!		*
<i>c. Kor mange kom t ikke?</i>			*	*

Variation in the East. Finally, I shall claim that the optimality theoretic approach is not only more economic and theoretically more consistent than the micro-parametric approach, but it is also more flexible in tackling a significant part of the data that the micro-parametric approach has repeatedly declared will fall outside the scope of its predictions.

The empirical challenge. In certain varieties of East Norwegian we observe a distribution which is the exact opposite of the Hordaland pattern reviewed in (21). In Hordaland, only nominative wh-operators force non-V2 in root clauses, while in the East, only non-nominative wh-operators do so, see (25a) and (25d).

(25) Østerdalen (Lie 92, Vangsnes 2005, Reitan 2011), comparative view.

a. HORDALAND	b. TROMSØ	c. MØRE / ROMSDAL
<i>Hvem som ikke kommer?</i>	<i>Hvem som ikke kommer?</i>	<i>Hvem som ikke kommer?</i>
Hva så du ikke?	<i>Hva du ikke så?</i>	<i>Hva du ikke så?</i>
Hvor mange så du ikke?	Hvor mange så du ikke?	<i>Hvor mange du ikke så?</i>
	d. ØSTERDALEN	
	Hvem kommer ikke?	
	<i>Hva du ikke så?</i>	
	<i>Hvor mange du ikke så?</i>	

The micro-parametric approach has repeatedly acknowledged that it cannot account for Østerdalen (Vangsnes 2005, Westergård, Vangsnes & Lohndal 2015). The data was first pointed out by Lie 1992, considered as plausible by Vangsnes 2005, and recently confirmed by Reite 2011 in a detailed case study. In accordance with my analysis, a proper treatment of Østerdalen requires not only a review of non-V2 wh-questions but also a global view of the whole grammar of wh-constructions. I will therefore start with the analysis of the spell-out properties of wh-constructions in virtually all Norwegian dialects.

Spell-out in Wh-constructions. It is now time to get back to the grammar of wh-constructions, comprising not only interrogative clauses, root and dependent, but also relative clauses and clefts. The basic pattern of wh-constructions requires new constraints in charge of the phonetic spell-out of its functional elements. Only for simplicity's sake I will not draw any distinction between wh-words and conjunctions as DUMMIES, i.e. phonetically omissible overt functional units.

(26) Towards a general Norwegian wh-grammar (wh-questions, relative clauses, clefts, etc...).

Hvem	som	så det	<i>Jeg vet ikke [hvem *(som) så det]</i>
Hvem		du så	<i>Jeg vet ikke [hvem (som) du så]</i>
	som	så det	<i>(det var) mannen [OP *(som) så det]</i>
		du så	<i>(det var) mannen [OP (som) du så]</i>
Spec CP	C ⁰		examples

The set of constraints in (27) will account for the distributional regularities in the spell-out of dummies in the C domain of different wh-constructions.

(27) Relevant constraints for spell-out of OP and Conjunctions in wh-constructions.

(28)

- a. Op-φ: Phi-identify OP_{wh} when there is no antecedent.
- b. NOM-trace: Nominative traces must be governed by overt heads.
- c. DUM-C: Avoid DUMMIES in the C domain

Comparative tableaux in (28) offer a common sub-ranking for all Norwegian varieties. Loser candidates are here marked as W if they violate a polar constraint in such a way that the violation makes the optimal candidate emerge as winner. If, on the other hand, the loser is marked L by a constraint C^A, which means that C^A makes the suboptimal candidate a local winner, then C^A must be dominated in the relevant language-specific hierarchy by some other constraint, C^B, which marks the same suboptimal candidate as W, which means that C^B makes the optimal candidate the local winner. According to the comparative tableaux of (28) below, only DUM-C must be the weakest of the three constraints in any particular variety, since this constraint is the only one that receives L.

(28) Comparative tableaux for the spell-out of the C_{WH} domain.

	OP-	NOM	DUM-C
<i>en mann OP Ø du ikke så t</i>			
<i>en mann hvilken som du ikke så t</i>			W
<i>en mann hvilken Ø du ikke så t</i>			W
<i>en mann OP som du ikke så t</i>			W
<i>en mann OP som t ikke kom</i>			
<i>en mann OP Ø t ikke kom</i>		W	L
<i>en mann hvilken som t ikke kom</i>			W
<i>en mann hvilken Ø t ikke kom</i>		W	
<i>Hvem som t ikke kom</i>			
<i>Hvem Ø t ikke kom</i>		W	L
<i>OP som t ikke kom</i>	W		L
<i>OP Ø t ikke kom</i>	W	W	L
<i>Hvem Ø du ikke så t</i>			
<i>Hvem som Ø du ikke så t</i>			W
<i>OP Ø du ikke så t</i>	W		L
<i>OP som du ikke så t</i>	W		

The grammars that are consistent with the comparative tableaux should, in principle, conform to the following ranking conditions: NOM-t, OP- $\varnothing$ >> DUM-C. We take this sub-ranking to be an integral part of any variety-specific grammar within the Norwegian language continuum. It plays an important role in deriving the special pattern of Østerdalen, together with the constraints from previous sections.

The grammar of wh-questions in Østerdalen. The most important thing to notice is that the Østerdalen pattern, which could not be analyzed by the

micro-parametric approach, almost comes for free in our OT grammar. The only enrichment needed is a strong constraint against overt functional heads in root clauses: $\text{LexHead}_{\text{root}}$ (29). Unlike $\text{V_to_C}_{\text{root}}$, which penalizes both overt and covert conjunctions, $\text{LexHead}_{\text{root}}$ only targets overt functional items as heads, but ignores any covert item with a similar function. In Østerdalen, unlike in the rest of the reviewed V2 dialects, $\text{LexHead}_{\text{root}}$ is stronger than the preference for *som* in nominative root wh-constructions. If $\text{LexHead}_{\text{root}}$ were weaker, *som* would otherwise surface under a ranking where both NOM-t and $\text{OP}_{\text{wh}} > \text{C}^0_{\text{conj}}$ dominate $\text{V-to-C}_{\text{root}}$, a quite normal outcome elsewhere. Therefore, in Østerdalen the main effect of $\text{LexHead}_{\text{root}}$ is that only root clauses with nominative wh-operators resort to the usual V2 pattern, see (30). Otherwise $\text{OP}_{\text{wh}} > \text{C}^0_{\text{conj}}$ is respected, beating $\text{V-to-C}_{\text{root}}$ whenever covert conjunctions are licensed, see (31).

- (29) $\text{LexHead}_{\text{root}}$: Overt functional items cannot function as heads of root CP.

- (30) *Hvem kom ikke?*

<i>Who didn't come?</i>	LexHead	NOM-t	OP-φ	DUM	$\text{OP}_{\text{wh}} > \text{C}$	$\text{V_to_C}_{\text{root}}$
<i>Åkin kom t itte?</i>				*	*	
<i>OP kom t itte?</i>			*!		*	
<i>OP Ø t itte kom?</i>		*!	*			*
<i>Åkin som t itte kom?</i>	*!			**		*
<i>OP som t itte kom</i>	*!		*	*		*
<i>Åkin Ø t itte kom</i>		*!		*		*

When the constraint NOM-t does not have to be satisfied, a covert conjunction satisfies DUM-C . Such a candidate, with a silent conjunction in C^0 , will also satisfy $\text{LexHead}_{\text{root}}$, which ignores any covert head. The winner is (31a) accordingly.

- (31) *Hvem du ikke så?* (also *Hvor du ikke skal til?* or *Hvilken bil du ikke så?* etc.)

<i>Who didn't you see?</i>	LexHead _{root}	NOM-t	OP-φ	DUM	OP _{wh} ->C	V_to_C
<i>Åkin Ø ru itte så t?</i>				*		*
<i>Åkin så ru itte t?</i>				*	*!	
<i>Åkin som ru itte så t?</i>	*!			**		*
<i>OP Ø ru itte så t?</i>			*!			*

Conclusions

An ambitious part of the original Principles and Parameters program launched in the early eighties was to pursue the logic of construction-independent grammars to its ultimate consequences. However, serious empirical challenges to some of the most successful parameters, e.g. pro-drop (Rizzi 1982, Gilligan 1987) as well as meta-theoretical considerations (Boecks 2011), have led linguists to question the nature, the number and the theoretical status of parameters. The general trend has been to move gradually towards ever more concrete micro-parameters with a shorter empirical range than originally envisioned. In my view, the micro-parametric revision of the classical paradigm may in the long run not be sufficient to satisfy the logical problem of language acquisition, arguably the most ambitious goal of the generative enterprise at large. In this paper I have tried to show that the revision of the original P&P framework should not focus so much on the content of principles as on the logic of interaction between them, bringing the competition between incompatible structural conditions to the theoretical center. In this paper, I have argued that OT may beat micro-parametric theories at analyzing syntactic variation within a language-specific area. Yet I have surely fallen short of giving the reasons why this may be so in the long run in the general case.

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CHAPTER SIXTEEN

INDEFINITE DETERMINER DOUBLING: DATA AND METHODS

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Introduction

Syntactic doubling, expressing a constituent twice (or more) when a single occurrence should suffice, is surprisingly common, especially where functional elements are concerned (Barbiers 2008:5). Some well-known examples include multiple negation/negative concord, found in many languages, and double definiteness, found in some Scandinavian languages.

In this chapter¹, we focus on doubling of indefinite determiners in the Germanic languages, that is, on nominal expressions in which the indefinite article occurs more than once within the same DP (determiner phrase, i.e. nominal expression). Such constructions are reported most extensively in varieties of German, such as Swiss German and Bavarian German (Weber 1948:203ff; Merkle 1975:89; Lindauer 1991; Leu, 2001:63; Plank 2003:366; Kallulli & Rothmayr 2008), but they are found more generally across the Germanic languages, in Standard English and regional English (Wood 2002:109; Wood 2013), and in Scandinavian: Northern Swedish (Delsing 1993:142-145; Delsing 2003; Garbacz 2014), Northern Norwegian (Delsing 2003; Garbacz 2014), Standard Danish

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(Wood & Vikner 2011; Wood & Vikner 2013). For an overview see also Alexiadou (2014: 95-109).

Typical examples are presented below. Frequently, examples with two articles are found associated with degree words, as in (1) with *such*, as in (2) with the etymologically related *so*, and as in (3), with German *ganz*. There is also a northern Scandinavian type found with attributive adjectives, and in which more than two articles are permitted, as in (4) and (5).

- (1) En. My rules are to cut down drinking, control my temper if I am drinking, not to drink in a such a large group and not to waste much money.
(BNC, academic writing, 1991, quoted in Wood 2002:109)
- (2) Da. Og jeg vil gerne også kunne lave en så let en film
And I will like to also could make a so light a film

som Frisørens mand,
as the-female-hairdresser's husband,

hvis jeg har lyst til det.
if I have desire to that.
(KorpusDK, newspaper, 1991)
- (3) SGe. Ä ganz ä schönä Baum
a totally a beautiful tree (= ‘a totally beautiful tree’)
(Swiss German, Leu 2001:63)
- (4) NSw. En stor en ful en kar
a big a ugly a guy (= ‘a big, ugly guy’)
(Northern Swedish, Delsing 1993:143)
- (5) NNor. Æ hadde ei svart ei bok.
I had a black a book.
‘I had a black book.’
(Northern Norwegian, Garbacz 2014:48)

Our focus in this chapter is on examples of the type shown in (1), (2) and (3) which involve degree adverbs.

Although it has long been recognised that doubling of indefinite articles is attested in Germanic languages, the construction was, until recently, reported only in dialects of German and Scandinavian. Typical comments, from those confronted with data such as that above, mirrors that of Plank (2003:367), who writes that in Standard German, such

examples “may now and then be encountered as slips of the tongue or perhaps even the pen”. Consequently, there has been little systematic research outside of varieties of German and northern varieties of Swedish and Norwegian. For example, although example sentences of the types ‘a black a horse’ and ‘a so black a horse’ were tested among Norwegian, Swedish and Finland-Swedish informants when data was collected for the Nordic Syntax Database (Garbacz 2014:43), these sentences were not tested on Danish speakers. In this chapter, we argue that doubling of indefinite article examples is more prevalent than originally thought, and that it is too frequent and widespread to be a “slip of the tongue”. It is somehow able to slip in under the “radar” and, although it is not part of Standard English or Danish, it is not stigmatised in any way.

We first survey and compare different data collection methods in the three subsections called *Dialect grammars and historical dictionaries*, *Elicitation*, and *Corpora*, and argue that the doubling data are too systematic and too frequent to be “performance errors”. We then, in the section called *What are the relevant cases of indefinite determiner doubling?*, compare languages and show that German and English are the least restrictive as to which lexical items allow doubling within a DP. In the section called *When does indefinite article doubling occur?* we test on our Danish and English data the hypothesis Kalluli & Rothmayr (2008:98) suggest for German as to when article doubling may occur. We find that the hypothesis needs to be revised in order to apply to Danish and English as well as German.

Data Sources

Linguists rely on data from a number of different sources, including elicitation, field work interviews, descriptive grammars, dictionaries and various corpora. Although internet searches are sometimes useful, it might seem that random Google searches can turn up almost anything these days. Such examples should not be taken in isolation as the sole source. We agree with the decision Kalluli & Rothmayr (2008:107) make about French. Concerning the French example in (6) below provided by a reviewer of their article, they note: “Not having been able to find any literature on this construction in the non-standard varieties of French in which it occurs, nor to locate any informants that speak such a variety, we will however not consider these data in the present paper”.

- (6) Fr. C’ est vrai que j’ ai une belle une gueule.
 It is true that I have a beautiful a face.

We also note that the French pattern shown in (6) is different from the German, English and Danish examples, as in those languages doubling occurs with a degree adverb. The French example is similar to the northern Scandinavian type in examples (4) and (5), which involve attributive adjectives.

Although indefinite determiner doubling is not considered part of the standard languages, we suggest that doubling data should be taken seriously in Standard English and Danish. We show that it occurs in many different genres and in formal as well as colloquial speech and writing.

Data Sources (1): Dialect grammars and historical dictionaries

Indefinite determiner doubling was first reported in German dialect grammars, giving the initial impression that it is somewhat “exotic”. Generally, it is found in southern and western dialects of German. It is attested in Germany (Upper and Lower Bavaria, Upper Palatinate, Alemannic): Merkle (1976), Henn-Memmesheimer (1986); in Austria (Carinthia): Pohl (1989:62); in the Czech Republic (Bohemia): Schiepek (1989, cited in Kallulli & Rothmayr 2008:101) and in Switzerland: Weber (1948), Henn-Memmesheimer (1986). Typical examples are shown below.

- (7) SGe. Mer wöisched en rächt en gueten Apitit.
We wish a real a good appetite.
 (Zürich German, Weber 1948:203)
- (8) Ba. A so a großa Bua
a so a big boy (= ‘such a big boy’)
 (Bavarian, Kallulli & Rothmayr 2008:97, (2a))

Not only are examples attested in dialect grammars of German, but examples from the Leicestershire dialect of English were reported in a 19th century description of that variety, as shown in (9) (Evans 1881). Doubling in this dialect appears to have escaped general attention, although example (12) from the *Oxford English Dictionary* (OED), found under the dictionary entry *gurry*, is cited in Wood (2002:109).

- (9) En. Shay’s got a sich a tong.
She’s got a such a tongue
 (= such a command of abusive language) (Evans 1881:276)

We should note then that the OED also proves to be a useful source. Although the actual OED dictionary entries for *such* and *quite* do not report any examples of doubling, we found additional examples of ‘*a such a N*’ and ‘*a quite a N*’ in the definition text of the dictionary, (10) and, under the entry for other words, (11) and (12).

- (10) En. produced or obtained by a such a process, and therefore unpredictable in detail.
(OED, Dictionary entry *random*, definition C.1.b)
- (11) En. There is a quite a telling mysticism in the wise men of the east, who are astrologising —studying the heavens—on their mountain, and first behold the wondrous star.
(OED, Dictionary entry *astrologize*, 1883
L. Scott: *Renaissance of Art in Italy*)
- (12) En. I had a such a gurry on me as if I hadn’t eaten nothink of a fortnit. My stomach was so upset, ...
(OED, Dictionary entry *gurry*, quoting Evans 1881:165, also cited in Wood 2002:109)

Likewise, example (13), from 1839, is cited in *Ordbog over det Danske sprog* (ODS), the Danish counterpart to the OED, under the entry for ‘Goliath’.

- (13) Vel er jeg kun en lille David mod en saadan en
Admittedly am I only a little David against a such a

Goliath, som I, men jeg er rask, er jeg.
Goliath as you, but I am fast, am I.
(Christian Winther: *Hesteprangeren*, first published 1839,
here cited from *Samlede Digtninger*, vol 8, p. 53, published 1860)

We note that example (10) is particularly interesting, being a definition written by the dictionary compilers, and not an example sentence from an outside source. The compilers of the dictionary were literate, well-educated individuals, yet did not notice the extra article.

Although dialect grammars and dictionaries are a valuable resource, they are limited, and linguists have tended to use them as stepping stones for further investigation, e.g. by attempting to elicit examples from informants who speak the relevant regional varieties.

Data Sources (2): Elicitation

The sociolinguistic interview (Labov 1972) is a widely accepted and proven method for collecting spontaneous speech and stylistically varied data. However, syntactic examples are more difficult to collect from spontaneous speech than phonological ones, for the simple reason that instances of the target feature may not turn up in sufficient quantity, if at all. Therefore, elicitation is often a more efficient method. However, the disadvantage of elicitation is that people's conscious judgements are often affected by the standard. Although we have not found the doubling expressions that we are interested in proscribed in any grammars and style guides, once people's attention is drawn to them, they are usually judged to be ungrammatical. This makes it difficult to use elicitation for collecting data, particularly for the standard languages.

Nevertheless, elicitation data on doubling has been collected as part of the Nordic Syntax Database (NSD). Judgments by 924 Nordic dialect speakers from 207 places were collected, although, as mentioned, not all sentences were tested in each locality. Norwegian, Swedish and Finland-Swedish speakers were asked about the acceptability of the sentences below.

- (14) Sw. Vi såg en svart en häst.
We saw a black a horse. (Garbacz 2014:43, (3))
- (15) Sw. En så svart en häst har jeg aldrig set förr.
A so black a horse have I never seen before.
 (Garbacz 2014:43, (4))

It was found that the test sentence (14) was accepted in all 3 regions, with higher acceptability in north-west Sweden (Garbacz 2014: 44, map 1). The test sentence (15) is widely accepted in parts of Norway and Sweden (Garbacz 2014: 48).

Associated with NSD is the Nordic Dialect Corpus (NDC). This contains 2.8 million words of spontaneous speech from Norwegian, Swedish, Danish, Faroese, Icelandic and Övdalian. Doubling examples of the type as in (14) are found in Norway and Sweden, as well as examples with three articles, as was seen in (4), although there are few hits. Some of the informants participated in both the NSD and the NDC and, interestingly, although speakers in Ballangen and Sømna in northern Norway reject the test sentence (14), they do actually produce sentences of this type (Garbacz 2014:48), illustrating the point that was made above about the reliability of elicitation.

(16) Ge. $\frac{\text{Ein}}{a} \frac{\text{so}}{so} \frac{\text{ein}}{a}$ großer Bub $\frac{\text{big}}{big} \frac{\text{boy}}{boy}$ (= ‘such a big boy’)
(Kallulli & Rothmayr 2008:97, (2b))

Although reports have focused on non-standard varieties, i.e. regional German and Scandinavian, it is clear from the data in the following section that the indefinite article doubling construction is less exotic than first reported.

As the discussion above has shown, eliciting judgements on doubling data is challenging. When asked for sentence judgments, some informants may be influenced by the standard language, and although spontaneous speech is more reliable, the data can be sparse or non-existent. Therefore, a data collection method of spontaneous speech and writing gives more reliable results, although a large amount of speech and writing is needed to be sure that we are not dealing with slips of the tongue or pen. This is where large corpora that have been assembled for language investigations have an advantage. As was mentioned, sentences of the type (14) and (15) above were not thought to occur in Danish, and therefore were not tested in Danish in the NSD and NDC projects above. Somewhat surprisingly, then, we found examples of doubling in KorpusDK. This corpus consists of 56 million words representing modern Danish speech (collected 1983-1992) and 1998-2002 from a variety of sources including publishing houses, newspapers, periodicals, schools, and private individuals. There is a total of 12 examples from novels and newspapers:

five examples of *en sådan en* (common gender version of ‘a such a’),
 two examples of *et sådan et* (neuter version of ‘a such a’),
 three examples of *en så ADJ en* (common gender version of ‘a so ADJ a’),
 two examples of *et så ADJ et* (neuter version of ‘a so ADJ a’).

- (17) Da. Det modsatte er, at du er en sådan en smart fyr,
The opposite is that you are a such a smart guy
 der er meget ude om natten.
who is much out at night. (KorpusDK, novel, 1999)

- (18) Da. Men et så stort et projekt i byens hjerte
But a.neut so big.neut a.neut project in town-the's heart
 kræver selvsagt en langt højere informationsgrad.
demands of-course a far higher information-degree.
 (KorpusDK, newspaper, 2001)

Although we urged caution with data collected from Google searches, we nevertheless entertain the possibility of supplementing the Danish data with internet data as long as the researcher is discriminating. In the examples below, although some of these internet examples from Danish are colloquial as in (19), which is from a comments section on a newspaper website, it is evident from examples like (20), which is from a legal periodical, that Standard Danish is represented here as well.

- (19) Da. Nu er der jo altid 2 parter i en sådan en sag.
Now are there indeed always 2 parties in a such a case.
 (<http://newz.dk/cowi-skak-betale-en-halv-mio-i-bod>, 2013)
- (20) Da. Man kunne håbe på, at Justitsministeriet i det
One could hope on that the-Ministry-of-Justice in the
 mindste kunne komme til en sådan en konklusion, ...
least could come to a such a conclusion ...
 (KorpusDK, newspaper, 2001)

Although the data above represents Standard Danish we are reasonably confident that doubling constructions are to be found in regional Danish also, for example, in Bornholm (p.c. Karen Margrethe Pedersen).

Turning to publically available corpora of English, we searched the *British National Corpus* (BNC) (written and spoken), the *Corpus of Contemporary American English* (COCA) (written and spoken), the *Corpus of Historical American English* (COHA) (written only) and the

Corpus of American Soap Operas (SOAP) (written to be spoken). The raw figures are shown in table 1.

Table 1.

corpus	words	<i>a such a</i>	<i>a quite a</i>	<i>a rather a</i>	<i>a many a</i>	<i>a still a</i>
BNC spoken	10 mill.	6	46	8	0	3
BNC written	90 mill.	4	2	0	0	1
COCA spoken	109 mill.	14	22	3	0	9
COCA written	411 mill.	43	15	0	7	7
COHA (-1950)	400 mill.	6	2	0	8	0
COHA (1950-)		11	4	0	0	0
SOAP	100 mill.	13	8	1	0	3

There is a large number of written examples in American English compared with spoken examples. Since it is easier to monitor and edit written text, we would expect proportionally more spoken than written examples. This is additional evidence to show these “mistakes” go almost unnoticed. In British English, the number of spoken examples is greater than written, which is the expected result.

As far as text types go, there is no discernable bias. Taking examples of *such* it can be seen that newspapers are represented in both the BNC and COCA written components and an academic journal in COCA.

- (21) En. He had a such a legendary police career that Hollywood modeled a hard-boiled TV character after him.
(COCA, News, *Associated Press*, 2002)
- (22) En. There was no foreseeable possibility of a such a scheme.
(BNC, News, *Guardian*, 1989)
- (23) En. During our interview, he ticks off what he believes the daily life of a such a worker would have been like.
(COCA, Academic Journal, *Archaeology*, 2010)

It is well known that the two corpora, BNC and COCA are not directly comparable. Similar text types are represented in part, for example newspapers, but the BNC contains a larger range of text types than COCA. The spoken components differ considerably. In COCA most of the spoken examples are from the Public Broadcasting Service and everyday conversation is not represented, whereas more colloquial speech is found in the BNC. In example (24), from COCA, the speaker is Sir Leon Brittan, educated at Trinity College Cambridge and former Member of the British

Parliament. Example (25), from the BNC is from a recorded conversation. Notably, the four examples from everyday conversation in the BNC are from four different conversations with four different sets of participants.

- (24) En. If you are able to break a logjam that's existed for two or three years and achieve agreement on a such a complex detail but important matter as a single market in securities, that says that we're still in business.

(COCA, ABC Business Report, 1992)

- (25) En. He sounds like a such a wanker when he does it though.

(BNC, Conversation, around 1990)

The fact that the two corpora discussed above are not directly comparable is sometimes a disadvantage when comparing American and British English. In this case, we consider the fact that so many text types are represented across the corpora to strengthen our argument that indefinite article doubling in English and Danish is not a slip of the tongue or pen. As the data in this section show, cases of indefinite article doubling are found in a wide variety of speakers, across different methods of data collection, and different genres and styles. We find that they are too frequent or too systematic to be false starts or performance errors.

What are the relevant cases of indefinite determiner doubling?

Recapitulating the data, we have:

(i) Varieties of the Northern Swedish and Northern Norwegian type, (4) and (14). More than two articles are possible (i.e. not just doubling, but also tripling, etc.), each extra article accompanying its own adjective, and degree words are not necessary. We suggest that this is a different phenomenon, which has a separate explanation.

(ii) Varieties that permit only doubling (no tripling).

- a. Standard Danish, where we have found doubling only with *so* and *such*.
- b. German and English, where doubling also occurs with other degree words.

We have found examples of *a rather a (Adj) N*, *a quite a (Adj) N*, *a many a (Adj) N* and *a still a (Adj) N*, as well as *an even a (Adj) N*. These

have the German equivalents *ziemlich*, *ganz*, *manch*, and *noch* (ambiguous between *even* and *still*).

Rather:

- (26) En. You realise that accountability is a rather a hot and fashionable word in education these days.
(BNC, radio, around 1990)
- (27) En. So I believe it is a rather a waste of money.
(BNC, radio, 1994)
- (28) SGe. Es esch en ziemlich en fine Tee.
It is a rather a delicate tea.
(Kalluli & Rothmayr 2008:104, (24))

Quite:

- (29) En. I note that there is a quite a demand for snake virus.
(OED, Dictionary entry *virus*, Bedford (Pa.) *Gazette*, 1909)
- (30) SGe. Ich wünsche üch en ganz a schöne abe.
I wish you a.MASC quite a nice evening.
(Kalluli & Rothmayr 2008:127, (86c))

Many:

- (31) En. “Done put away a many a friend and relative; ain’t none upset me like this.”
(COCA, Fiction, 1993)
- (32) Ge. ... ein manch ein Handball- Fan aus der Region.
a many a handball fan from the region.
(Kalluli & Rothmayr 2008:133, (ii))

Even:

- (33) En. it’s an even a worse problem when the person is somebody you know, right?
(COCA, CBS 48 Hours, 1993)
- (34) Ba. a. ein noch wärmers Bier
an even warmer beer
b. noch ein wärmers Bier
even a warmer beer
c. ein noch ein wärmers Bier
an even a warmer beer
(Plank 2003:366, (100), the gloss is ours)

Still:

- (35) En. It's a still a very difficult situation. There are many challenges we have to overcome.
(COCA, *PBS Newshour* 2012, speaker is David Cameron)
- (36) En. The New York area is a still a hub, and I think it's as good a bet as any.
(COCA, *New York Times*, 1992, quoting direct speech)
- (37) En. ... but there is a still a long uphill battle to go for the cleanup and containment of this stuff.
(COCA, *Fox Special Report*, 2010)
- (38) Ge. oder ob man für wenig Geld ein noch ein
or whether one for little money a still a

funktionierendes Altgerät erwerben kann.
functioning old-appliance acquire can
(www.helkueb.de/dienstleistung/restauration-und-reparatur, 2015)

Finally, the first of the two indefinite articles can be replaced by quantifiers like *no* and *any*, resulting in structures of the type *no such a* and *any such a* as in the following.

- (39) En. ... and there was no, no such a thing as bales in those days, duckie.
No such a thing as bales of straw, it was loose hay stacked.
(BNC, oral history, around 1990, quoted in Wood 2002:110)
- (40) En. Japanese kinship had no such a rule, except for a very top echelon of the samurai class.
(COCA, academic writing, 2004)
- (41) En. ... on the basis of any such a proposal or application form ...
(BNC, 1992, quoted in Wood 2002:110)

When does indefinite article doubling occur?

Kalluli & Rothmayr (2008:98, 108) observe that certain degree words like *so* 'so' and *ganz* 'quite' occur with doubling in Standard German and Bavarian, whereas other quantifying expressions like *sehr* 'very' and *irrsinnig* 'insanely' do not allow for determiner doubling. They therefore suggest that article doubling occurs only with elements that do not have to be adjacent to an adjective phrase.

The point is that *so* and *ganz* can modify an AdjP even when they are separated from this AdjP by an indefinite article, as shown by (42)b and (43)b. Consequently, doubling is also possible, as seen in (42)c and (43)c.

- (42) Ge. a. ein so großer Bub
 b. so ein großer Bub
 c. ein so ein großer Bub
 a so a big boy
 (Kalluli & Rothmayr 2008:97-98, (4a), (7a), (2b))

- (43) Ge. a. ein ganz blöder Fehler
 b. ganz ein blöder Fehler
 c. ein ganz ein blöder Fehler
 a quite a stupid mistake
 (Kalluli & Rothmayr 2008:97-98, (4b), (7b), (3b))

sehr and *irrsinnig*, on the other hand, can only modify an AdjP if they are adjacent to it, as shown by (44)a,b and (45)a,b. Consequently, determiner doubling is not possible, see (45)c and (46)c:

- (44) Ge. a. ein sehr großer Bub
 b. * sehr ein großer Bub
 c. * ein sehr ein großer Bub
 a very a big boy
 (Kalluli & Rothmayr 2008:98, (5a), (8a), (6a))

- (45) Ge. a. ein irrsinnig blöder Fehler
 b. * irrsinnig ein blöder Fehler
 c. * ein irrsinnig ein blöder Fehler
 a insanely a stupid mistake
 (Kalluli & Rothmayr 2008:98, (5b), (8b), (6c))

Strictly speaking, given the formulation by Kalluli & Rothmayr (2008:98, 108), namely that article doubling occurs only with elements that do not have to be adjacent to an adjective phrase, we would not expect doubling in English and Danish with *so* and *så*. This is because *so* and *så* are degree words that cannot be separated from the AdjP that they modify, i.e. the equivalent of (42)b is not possible in Danish or English, as seen in (46)b and (47)b.

- (46) Da. a. en så stor succes
 b. * så en stor succes
 c. så stor en succes
 (a) so (a) big (a) success

- (47) En. a. ?? a so big success
 b. * so a big success
 c. so big a success

Although the exact formulation in Kalluli & Rothmayr (2008:98, 108) thus does not hold for Danish and English, it might be that the more general idea could still be on the right track, namely that in order for doubling of an indefinite article to be possible, a single article has to be possible in each of the two doubling positions.

Given that both (46)a,c are possible in Danish, it would thus not be surprising that we found three examples of *en så ADJ en N* and two of *et så ADJ et N* (see also (18) above).

- (48) Da. Men detektivarbejdet har været en så stor en succes, at ...
But detective-work-the has been a so big a success that
 (KorpusDK, newspaper, 2001)

- (49) Da. Det var første gang, at den kommunistiske ledelse
That was first time that the communist leadership

på så markant en plads tillod kritik
in so prominent a place permitted criticism

af et så kontroversielt et projekt.
of a.NEUT so controversial.NEUT a.NEUT project.

(KorpusDK, newspaper, 1999)

As for English, given the marginal status of (47)a, it would not be too surprising either that although our searches in the above mentioned English corpora failed to find any examples of *a so ADJ a*, we did find one internet example.

- (50) En. However, in a so long a process, the genetic variability, knowledge and know-how determine the vital capacity for genetic improvement in the future.

(www.actahort.org/books, 2015)

However, even this broader formulation (i.e. in order for doubling of an indefinite article to be possible, a single article has to be possible in each of the two doubling positions) runs into trouble when it comes to *such* in English.

- (51) En. a. * a such complex detail
 b. such a complex detail
 c. * such complex a detail

Although the indefinite determiner is only possible in one position, (51)b, doubling is nevertheless found here, as seen e.g. in (24) above, ... *agreement on a such a complex detail*²

It therefore seems that all we can say is that in order for doubling of an indefinite article to be possible, it must be possible to have, e.g., a degree word to the left of the article, i.e. either (46)b/(47)b or (46)c/(47)c must be possible.^{3 4}

Conclusion

We first surveyed and compared different data collection methods. We argued that the doubling data were too systematic and too frequent to be “performance errors”.

We then compared languages and argued that the doubling type found only in Northern Swedish and Northern Norwegian was of a different type, which allowed not just doubling but also tripling (etc.) of articles, and which did not require a degree word. We then showed that within the doubling type that requires degree words, German and English were less restrictive than the Scandinavian languages, as to which lexical items (degree words) within a nominal allow doubling.

We also tested on Danish and English two hypotheses as to when article doubling may occur in German, concluding that all that is required for doubling of an indefinite article to be possible is that it must be possible to have a degree word to the left of the article.

² These data, i.e. (24) and (51) together, also show that the phenomenon cannot just be dismissed as the result of the speaker being confused. It is clearly not possible to claim that the speaker of (24) started out with (51)a, then forgot where he was and inadvertently switched to (51)b midstream, given that (51)a is clearly not an option to begin with.

³ This still leaves open the question why doubling is not possible without an element intervening between the two occurrences of the article.

⁴ As for a detailed syntactic analysis, we refer to our suggestions in Wood & Vikner (2011, 2013).

Sources

British National Corpus (BNC)	http://corpus.byu.edu/bnc
Corpus of American Soap Operas (SOAP)	http://corpus.byu.edu/soap
Corpus of Contemporary American English (COCA)	www.americancorpus.org
Corpus of Historical American English (COHA)	http://corpus.byu.edu/coha
KorpusDK	http://ordnet.dk/korpusdk
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CHAPTER SEVENTEEN

TOWARDS A FORMAL SYMBOLIC OCCURRENCE LOGIC

FARSHAD BADIE

Introduction

Time has been one of the most paradoxical concepts that human minds need to deal with. According to (Soave, 1804), time could be interpreted as a continuous succession of moments. In fact, time can be considered as a *relation* between different time points (or so-called ‘moments’). It shall be stressed that we cannot be sure whether ‘time points’ and ‘moments’ are equivalent, but for now I consider them equivalent to be comprehensible in the context and in logical analysis. Referring to (Kant 1924 ed.), time is not an entity (in an ontological sense) but a pure perceptual form [produced by] the human beings’ senses. Accordingly, we may interpret time as a *function* (that is existentially a *relation*). It is undeniable that time, as a relation between different moments, plays a fundamental role in our thinking, and, thus, there is a need for precise reasoning about it, like the ones we may see in computational and formal linguistics, see (Kusanagi 1980, Lewis 2009).

Tense Logic as developed and elaborated by A. N. Prior is any system of rules and symbolism for representing, and reasoning about, propositions qualified in terms of time, see (Prior 1967, Prior 1957, Prior 1976). The term ‘tense logic’ has been broadly used to cover all approaches to the representation of tense information within a logical framework. At this point I shall stress that tense logic sees the concept ‘time’ as a source of its rules. I especially need to refer to the modal logic type of that approach under the label of tense logic, which is the result of an interest in the relationships between tenses and modalities, see (Øhrstrøm 1995).

In this research I will focus on Hans Götzsche’s alternative kind of logic: *Occurrence Logic* (*Occ Log*), which, among other things, is

perceived and utilised by an alternative approach to the question of ‘how time is (could be) logically conceptualised by human beings?’, see (Götzsche 2013). Occurrence Logic has been the basis for the construction of Götzsche’s theory of *Deviational Syntactic Structures*. It could provide a proper background for designing and analysing logical inferences concerning events and occurrences, and, respectively, could support a ‘truth-functionally independent symbolic logic’. Note that Occurrence Logic doesn’t focus on the existence of the moments and doesn’t aim at answering the question ‘what is the real meaning of the moment?’.

Kindly observe that the idea of ‘truth vs. falsity’ is based on the assumption that the truth values of statements about things beyond actual settings can, indisputably, be determined. And note that false statements about settings are just counterfactuals. So, actually, Occurrence Logic doesn’t focus on ‘truth vs. falsity’. Instead, it is analysed and applied for semantic analysis of events and occurrences and their validations with regard to the phenomenon of ‘time’ (and by seeing ‘time’ as a relation). This kind of semantics focuses on analysing statements independent from a truth point of view, instead investigating whether those statements could occur (and/or could be capable of occurring) at different moments, see (Prior 1962, Franssen 1971). Furthermore, in my opinion, Occurrence Logic can support us in having a better understanding of logical relationships between various moments.

Let me start out my logical analysis with reviewing the representation of the flow of time, see (Engelfriet and Treur 2002, p. 391). A [discrete] flow of time is a pair like $(T, <)$ consisting of (i) a non-empty set T of time points (what we could interpret as moments), and (ii) a binary relation ‘ $<$ ’ on the Cartesian product $T \times T$, called the *immediate successor relation* that is (i) irreflexive, (ii) anti-symmetric, and (iii) transitive. Note that what is in logic and epistemology often called states of affairs of the real world (whatever these things are) could be called *local universes* (LU). The local universes are constructed based on *Entities* and *Properties*. Assume two local universes are described by two statements, respectively, like ‘Bob is driving’ and ‘Bob is talking to Mary’. Obviously, the time difference is not transparent (for instance concerning ‘before’ and ‘after’). One way of conceiving of the occurrence of entities and/or properties in these local universes, is to look for, in at least one of them, cues that indicate structural relations (e.g. causal relations, whatever that is) between local universe one (LU_1) and local universe two (LU_2). Instead, the logical relationships between the occurrences of entities and/or properties could be described by what Hans Götzsche has called an *Occurrence Logic*. Considering the moment m [and its local universe],

when we are at this moment we are not able to know what time is out of m (and out of its local universe). For example, we are not able to know what time is at the moment n , where $n \neq m$ and n has a separated local universe. For the moment m , we could confine ourselves to elucidating the relation between tense logic and classical symbolic logic. In the following sections I will focus on logical analysis of Occurrence Logic, Occurrence strong implications, occurrence values, validity of inferences in Occurrence Logic, fundamental operators and logical symbols in Occurrence Logic. Then, I will make a conceptual and logical comparison between Occurrence Logic and Tense Logic.

The Occurrence Logic (Occ Log)

The vocabulary and the rules of Götzsche's combinatorial system introduced in (Götzsche 2013) under the label EFA(X)3 correspond to, and, are in accordance with, some truth-functional relations established in traditional symbolic logic. The most fundamental idea in Occ Log is that this approach is independent from truth values [and truth functions]. In fact, there is no assignment of truth values into non-logical symbols within world descriptions in Occ Log. Occ Log is a basis for formal systems, the capability of which is to describe the occurrences [of things/phenomena and of their interrelationships]. For instance, we may need a formalism that could express the fact that an item, say y , would only occur (take place, be present, appear) in case another item, say z , occurred (took place, was present, appeared). Regarding EFA(X)3 the occurrence of events can be represented by the logical formula $z \circ > y$ (i.e., y occurs in case and only in case z occurs) in our formal system. Therefore, the formal system, is, in due course, based on a certain kind of logic (logic of occurrences) expressed in a format like $z \circ > y$. This logical term represents the fact that 'y occurs in case and only in case z occurs'.

Note that the symbol ' $\circ >$ ' is the main building block of the logical expression $z \circ > y$. Relying on symbolic logic, z and y are two variable symbols. In fact, they can accept an infinite number of constant symbols. Also, the phenomenon of '*Occurrence*' has been assigned to these variables. And, in other words, *Occurrence* has been asserted to z and y . Consequently, the world descriptions *Occurrence*(z) and *Occurrence*(y) represent the fact that z and y are two occurrences and, in fact, z and y are expressible in the form of *occurrences*.

Moreover, it could be interpreted that any formula in Occ Log focuses on the relationships between two (and, of course, more) occurrences. Actually, Occ Log relates two (or more) occurrences to each other. Let me

take the concept of ‘binary relation’ into my formalism. Formally, relying on Occ Log, there exists a *Relation* such that $Relation(Occurrence, Occurrence)$. It shall be concluded that the formula $z \circ> y$ has been expressed with regard to $Relation(Occurrence, Occurrence)$. More specifically, $z \circ> y$ could be represented by $\circ>(z, y)$. The logical term ‘ $\circ>(z, y)$ ’ represents a relationship between z and y . It must be concluded that:

- The logical term ‘ $z \circ> y$ ’ is the logical consequence of $Relation(Occurrence, Occurrence)$, and
- $Relation(Occurrence, Occurrence)$ is the logical consequence of the term ‘ $z \circ> y$ ’.

Therefore, there is an equivalence relationship between $z \circ> y$ and $Relation(Occurrence, Occurrence)$.

Note that the logical expression ‘ $z \circ> y$ ’ has, so far without any reference to formal logic, been labelled *Strong Implication*. At this point it shall be stressed that z and y are not propositions in EFA(X)3, but only ‘symbols’, which either are present (occurring) or are absent (not occurring) in certain functions in the formal system according to the rule combining the symbols.

Anyhow, in this article I have aimed at assessing $z \circ> y$ by applying classical symbolic logic. As mentioned above, the phenomenon of ‘*Occurrence*’ has been assigned to the variables z and y . I shall draw your attention to the fact that *Occurrence* is a non-logical concept in Occ Log and doesn’t have any logical value in Occ Log. In the other hand, the *Occurrence Strong Implication* is a logical symbol and causes logical consequences, but these logical consequences are not dependent on truth-values. More specifically, the logical symbol ‘ $\circ>$ ’ causes logical consequences in a formal system, but it doesn’t, by itself, express any kind of truth value semantics. So, it shall be claimed that Occ Log doesn’t focus on the truth/falsity of propositions, but it focuses on ‘validity’ of the existence of occurrences. Therefore, relying on Occ Log, any occurrence is strongly dependent on *Occurrence Values*. Here you see three inferences. The first inference is structured based on classical symbolic logic. The second one has translated the symbols P and Q (from the first inference) into the equivalent propositions ‘ y occurs’ and ‘ z occurs’ respectively. Finally, the third inference is structured in Symbolic Occurrence Logic.

$$\begin{aligned}
 \text{Inf 1: } & ((P \Rightarrow Q) \quad \& \quad P) \Rightarrow Q. \\
 \text{Inf 2: } & ((y \text{ occurs} \Rightarrow z \text{ occurs}) \quad \& \quad z \text{ occurs}) \Rightarrow y \text{ occurs} . \\
 \text{Inf 3: } & ((z \circ> y) \quad \& \quad y) \Rightarrow z .
 \end{aligned}$$

Here inference 1 (that is a ‘Modus Ponens’ and represents a conditional relationship between two symbols P and Q) has been translated into inference 3 (that is a strong implication in Occ Log and represents a logical relationship between two symbols y and z). Let me start out with the formula (logical implication) $P \Rightarrow Q$ in the first inference. In $P \Rightarrow Q$ the symbols P and Q could be, e.g., two propositions in propositional logic, two predicates in predicate logic. There are four possible interpretations over $P \Rightarrow Q$ (consisting of [i] True $\Rightarrow$ True, [ii] True $\Rightarrow$ False, [iii] False $\Rightarrow$ True, and [iv] False $\Rightarrow$ False). I need to focus on the first interpretation that expresses “if (1) P is True and (2) Q is True, then (3) $P \Rightarrow Q$ is True”. According to this logical expression, we could deduce that “if (1) $P \Rightarrow Q$ and (2) P , then (3) Q ”. The last statement expresses the logical consequence of inference 1.

Now we are going to move toward inference 2. Let me assume that the symbol P expresses the proposition ‘ y occurs’ and the symbol Q expresses the proposition ‘ z occurs’. By taking into consideration the translated symbols, it’s possible to deduce that inference 1 could be translated into inference 2 in order to express “if (1) it’s true that ‘ $y \text{ occurs} \Rightarrow z \text{ occurs}$ ’ and (2) it’s true that ‘ $z \text{ occurs}$ ’, then (3) it’s true that ‘ $y \text{ occurs}$ ’”. Equivalently, “if (1) $y \text{ occurs} \Rightarrow z \text{ occurs}$ and (2) $z \text{ occurs}$, then (3) $y \text{ occurs}$ ”.

Now let me take into consideration the features of the logical implication ($\Rightarrow$) and Occ Log’s strong implication ($^{\circ}>$) and translate the logical term ‘ $y \text{ occurs} \Rightarrow z \text{ occurs}$ ’ (in inference 2) into ‘ $z ^{\circ}> y$ ’ (and place it in inference 3). This translation is the most significant building block of the third inference. Note that the values of the logical expression ‘ $z ^{\circ}> y$ ’ (in inference 3) could also be represented by $^{\circ}1$ (or $^{\circ}0$) in order to express the fact that the existence and the structure of these values are, logically and semantically, different from truth-values in inference 1. I will be more clear.

Occurrence Values

As mentioned above, the logical symbol ‘ $^{\circ}>$ ’ has strong logical consequences, but these logical consequences are independent from truth-values. Regarding inference 3, our deduction has been dependent on assignment of logical values to the ‘occurrences’. According to this fact, the logical values $^{\circ}1$ and $^{\circ}0$ could be identified as *Occurrence Values*. Subsequently, in inference 3 if y has an occurrence value (and ‘ y occurs’), then z has an occurrence value (and ‘ z occurs’). Subsequently, by knowing the fact that ‘ y occurs’, we can conclude, for certain, that ‘ z occurs’

(occurred/has occurred); i.e. it follows by necessity from the ‘occurrence of y ’ that ‘ z occurs’. It shall be highly emphasised that the first inference (over the logical expression $P \Rightarrow Q$) is ‘opposed’ to the third inference (over the logical expression $z \circ > y$). It is then evident that *the succession ‘ $P \dots Q$ ’ is the opposite of the succession ‘ $z \dots y$ ’*. This opposition expresses the label ‘inverted/reversed version of traditional logical implication’ in (cf. Prior 1955 (1962) p. 48 seqq).

Considering y and z in a logical context, we can justifiably say that y takes place in case and only in case z takes place. In fact, in case and only in case the local universe of y (or LU_y) differs from the local universe of z (or LU_z) with regard to at least one but not all entities and properties, LU_y can, potentially, be said to be a change of LU_z . Therefore, any occurrence value can be meaningful with respect to this justification.

Validity of Inferences in Occ Log

To say that an inference in Occ Log (like inference 3) is meaningfully valid, is to say that if its logical premises, all (i) are constructed over occurrences, (ii) have the occurrence value of either ‘occurrence’ or ‘non-occurrence’, and (iii) are connected by means of strong implications (or some other logical connectors), then, the conclusion would necessarily (i) be constructed over occurrences, (ii) has the occurrence value of either ‘occurrence’ or ‘non-occurrence’, and (iii) follow from all the logical premises.

Conclusion. A logical inference in Occurrence Logic could be structured in a way that gives someone a reason to accept that an occurrence can take place (can be capable of occurring) regarding the identified occurrence values. Considering $z \circ > y$, if someone accepts that the occurrence z has taken place, then a valid inference provides her/him with a reason to accept that she/he could expect the occurrence y to take place.

Fundamental Operators (Logical Symbols)

Occ Log interprets any occurrence as a dynamic reference in order to check the priority of various occurrences. In this section I propose the most primary fundamental operators in Occ Log which are efficient in representing the priority of occurrences with regard to two important facts: (A) An occurrence is present (= taking place Now) in case and only in case another occurrence takes place at one other moment. The latter is equivalent to ‘took place’ in natural language. (B) An occurrence is absent and takes place at one other moment (it’s equivalent to ‘will take place’ in

natural language) in case and only in case one occurrence is taking place [Now].

I apply N for representing any present occurrence [that is occurring Now] and apply O for representing any occurrence that occurs at one moment. I need to suppose that O could be any moment except N (i.e. any absent moment). Then, $O \neq N$. In fact, the logical term ' $O \neq N$ ' is equivalent to ' $\neg=(O,N)$ '. Also, the term ' $\neg=(O,N)$ ' expresses a relationship between O and N (i.e., $Relation(O,N)$).

Therefore, $O \neq N$ expresses a relation between O and N . The following items focus on specifying $Relation(O,N)$ and on identifying the most fundamental operations in symbolic Occurrence Logic.

The Occurrence Strong Implication $O \circ > N$

The logical term ' $O \circ > N$ ' describes that ' N takes place in case and only in case O takes place'. In natural language we say: " N is taking place in case and only in case O took place". The occurrence strong implication $O \circ > N$ could express the concept of '*Pastness*' (but in Occ Log and from another perspective). Note that Tense Logic represents '*pastness*' by employing the modal operator P . Employing P in Tense Logic we have the statement "it has at some time been the case that ...".

The Occurrence Strong Implication $N \circ > O$

The logical term ' $N \circ > O$ ' describes that ' O takes place in case and only in case N takes place'. In natural language we say: " O will take place in case and only in case N is taking place". The occurrence strong implication $N \circ > O$ could express the concept of '*Futurity*' (but in Occ Log and from another perspective). Note that Tense Logic represents '*futurity*' by employing the modal operator F . Employing F in Tense Logic we have the statement "it will at some time be the case that ...".

The Strict Occurrence Strong Implication $O \circ \circ > N$

The logical term ' $O \circ \circ > N$ ' describes that ' N takes place, strictly, in case and only in case O takes place'. In natural language we say: " N is taking place in case and only in case O has taken place". The strict occurrence strong implication $O \circ \circ > N$ could express the concept of '*what has always been*' (but in Occ Log and from another perspective). Tense Logic represents this concept by employing the modal operator H . Employing H in Tense Logic we have the statement "it has always been the case that ...".

The strict occurrence strong implication $O \circ\circ> N$ is the restricted form of the occurrence strong implication $O \circ> N$. Thus considering the variable x as any arbitrary [present or absent] occurrence we have: $\forall x [(O(x) \circ\circ> N(x)) \Rightarrow (O(x) \circ> N(x))]$.¹

The Strict Occurrence Strong Implication $N \circ\circ> O$

The logical term ' $N \circ\circ> O$ ' describes that ' O takes place, strictly, in case and only in case N takes place'. In natural language we say: " O will be going to take place in case and only in case N is taking place". The strict occurrence strong implication $N \circ\circ> O$ could express the concept of '*what will be going to be*' (but in Occ Log and from another perspective). Note that Tense Logic represents this concept by employing the modal operator G . Employing G in Tense Logic we have the statement "it will be going to be the case that ...". The strict occurrence strong implication $N \circ\circ> O$ is the restricted form of the occurrence strong implication $N \circ> O$. Thus considering the variable x as any arbitrary [present or absent] occurrence we have: $\forall x [(N(x) \circ\circ> O(x)) \Rightarrow (N(x) \circ> O(x))]$.

Other Logical Symbols

Let z and y be two variable symbols which the concept of 'Occurrence' could be asserted to. Consequently, the world descriptions $Occurrence(z)$ and $Occurrence(y)$ state that z and y are expressible in the form of occurrences respectively. The compound formula $z—y$ (over any connective like ' $—$ ') is a *Compound Occurrence Formula* and denotes that the symbols z and y are connected to each other and formed a *string*.

According to Götzsche (2013), in Occ Log the term ' $z \circ y$ ' represents 'a string of z and y '. Subsequently, the symbol ' $\circ$ ' must be connectable to the basic logical symbols in order to become capable of expressing them in the form of strings. More specifically, the basic symbolic logical connectors must be supported by ' $\circ$ ' in order to express the concept of 'occurrence'.

For example, the occurrence conjunction $z \circ \wedge y$ represents a string of conjunction of z and y . Note that z and y could be said to have an

¹ This formalism has been expressed by Predicate Logic. In fact, the variable x has been supposed to be expressed by the unary predicates O and N . Also, the symbols $\circ\circ>$ and $\circ>$ represent binary predicates (relations). Additionally, the universal quantifier ($\forall$) has expressed that for all variables (like x) we have such a relationship.

occurrence conjunction if and only if they both have an occurrence value. Consequently, if we know the occurrence values of z and y individually, then we can conclude the occurrence of the compound formula $z \circ \wedge y$ accordingly. Furthermore, $z \circ \wedge y$ could assist us in assessing common issues, characteristics, and properties of z and y . According to this conception of strings, the collection of the following items is the set of fundamental logical symbols in formal Occurrence Logic:

- ‘ $\circ$ ’ denotes any occurrence operator (so, ‘ $x_1 \circ \dots \circ x_n$ ’ denotes any string over n variables),
- ‘ $\circ \sim$ ’ denotes occurrence negation,
- ‘ $\circ \wedge$ ’ denotes occurrence conjunction,
- ‘ $\circ \vee$ ’ denotes occurrence disjunction,
- ‘ $\circ >$ ’ denotes strong implication,
- ‘ $\circ \circ >$ ’ denotes strict strong implication, and
- Parentheses and brackets clarify the logical preferences in compound logical descriptions.

Occurrence Logic VS. Tense Logic

Regarding the main characteristics of Occ Log I make a conceptual comparison between Tense Logic and Occurrence Logic. The following results can epistemologically support more specific (and sensitive) semantic analysis of symbolic Occurrence Logic.

- Tense logic interprets time as a *source*. On the contrary, the Occurrence Logic interprets time as a *context* (which is produced by the human’s senses).
- ‘Time’ is the most important [and is the most central] entity in Tense Logic. In the other hand, the Occurrence Logic does not evaluate time as an entity (in an ontological sense), but it evaluates *Occurrence* as the most important entity.
- Tense Logic is dependent on *truth functions* and on assignment of *truth values* into propositions and symbols. But the Occurrence Logic is independent from truth functions. It is dependent on *occurrence values* (and on assignment of values into occurrences).
- The central goal of Tense Logic is *verification* of the logical formulae. But the main objective of Occurrence Logic is *validation of occurrences* [and checking the *validity* of the logical formulae].
- The central focus of Tense Logic is on A-series (‘past’, ‘present’, ‘future’) and B-series (‘before’ and ‘after’). But the central focus of

Occurrence Logic is on ‘occurrences’ and on ‘occurrences priorities’.

Concluding Remarks and Future Researches

In this research I have focused on an alternative kind of logic, Occurrence Logic (Occ Log), which is truth-functional independent and has been designated and analysed for semantic analysis of occurrences (based on natural language analysis). Occ Log mainly focuses on checking the validity of occurrences. It does not evaluate time as an entity in an ontological sense, but it evaluates ‘Occurrence’ as the most important entity. Occ Log checks occurrence conditioning and the priority of occurrences by employing occurrence values. This research has mainly focused on logical modelling of how Occ Log can be formalised in order to characterise logical arguments concerning events and occurrences. Furthermore, it has focused on providing a logical background for analysing a formal semantics based on symbolic Occurrence Logic. This article has presented some fragments of the framework of Occ Log and illustrated the fundamental relationships between classical symbolic logic and Occurrence Logic. It has also considered Tense Logic and has checked its conceptual and epistemological relations with Occ Log. The consequences of this research will be used for providing a proper logical foundation for formal Occurrence Logic based on Predicate Logic (as mentioned, Occ Log evaluates ‘Occurrence’ as the most important entity. So, I will need to consider the ‘Occurrence’ as the most central predicate in Occurrence-Predicate Logic). In future research I will focus on a more sensitive formal semantic analysis concerning events and occurrences. In my opinion, this approach could be able to support me in providing a computer-based truth-functional Independent logic (and formal semantics).

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