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Chapters of Dependency Grammar

A historical survey from Antiquity to Tesnière

Edited by
András Imrényi
Nicolas Mazziotta

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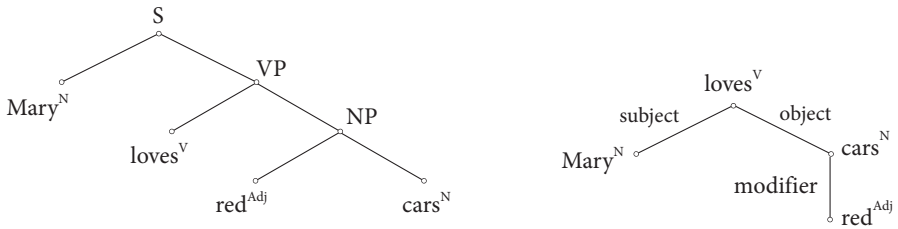
Aspects of the theory and history of dependency grammar

Nicolas Mazziotta and András Imrényi

Dependency and constituency are alternative frameworks for syntactic analysis. They provide conceptual and formal tools to describe how words combine to form utterances. Modern syntactic theories are grounded on one logic or the other. Constituency is the core concept of phrase structure grammars (henceforth "PSG"). These focus on how words are grouped together to form larger constructions that, in turn, can be grouped with other constructions. The resulting diagram shows part/whole (mereological) relations, and foregrounds unit types (e.g. N, V, NP, VP). As a first approximation, dependency analysis can be regarded as a description of pairwise hierarchical relations between words. In this approach, the focus is on *specific relations that can be classified into different types* (Kahane & Mazziotta, 2015; see Chapter 4, Section 4 for a more detailed comparison). The family of theories taking the latter perspective is called "dependency grammar" (henceforth "DG"). The difference between the two approaches appears clearly when analyses are encoded in diagrams (Figure 1).



(a) Constituency tree *(b)* Dependency tree

Figure 1. Constituency tree (a) *vs.* Dependency tree (b)

Chomsky's *Syntactic structures* (1957) marked the beginning of decades dominated by PSG frameworks, particularly in theoretical linguistics, so much so that DG

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has been shunned for years by many scholars.[1] Consequently, many studies that make use of DG constantly have had to explain what dependency is (e.g. Osborne, 2006, Section 5), and justify its usefulness, sometimes through criticizing PSG (e.g. Maxwell, 2013). However, interest in dependency grammar is growing, mainly through the development of large treebanks and through the results achieved by natural language processing, up to the point that

> due to the acceptance and spread of dependency in computational linguistics, […] overlooking DG is becoming more difficult. In fact a critical mass may be reached at some point, in which case extensive awareness of the dependency vs. constituency distinction could extend from computational linguistics to theoretical linguistics, and from theoretical linguistics to pedagogical applications.
>
> (Osborne, 2015, p. 1043)

Osborne's final remark suggests that the spread of DG in pedagogical applications may be triggered by advances in theoretical linguistics. However, in many parts of the world, traditional (pedagogical) grammar has long been more DG- than PSG-oriented to begin with (cf. Mel'čuk, 1988, p. 3, see Section 1 below), and it is hardly a coincidence that many of the grammarians whose work is reviewed in the present volume had a strong pedagogical commitment. Overall, it seems fair to say that DG has had a strong, and growing, status in syntactic analysis that is geared toward practical application, in partial independence from the trends of theoretical linguistics. As practical applicability is increasingly seen as a criterion for evaluating the fruitfulness of grammatical research, the future of DG appears to be bright in theoretical linguistics as well.

Since 2011, the *International Conferences on Dependency Linguistics* (Depling)[2] have been held every two years (in Barcelona, Prague, Uppsala, Pisa and Paris), which testifies to an ever growing community using DG models.[3]

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1. Quotations such as the following are emblematic of stances that reject DG on an *a priori* basis: "In fact, dependency trees smack more of semantics than of syntax, in that the value category of each functor stands not so much for a well-defined set of syntactic properties as for a semantic value in a model, whereby the highest value category S can be interpreted as a truth value in a model. While this can be considered to have the advantage of integrating syntactic and semantic description, it must at the same time be admitted that the formal syntactic part of the equation is not entirely transparent." (Seuren, 2015, p. 405). We will not discuss thoroughly the compared validity of PSG and DG, but the sole existence of efficient formal DGs (→4.3) suffices to reject such criticism.

2. See <http://www.depling.org/>.

3. Additionally, Timothy Osbone presented an unpublished poster at Depling 2013, demonstrating a growing interest in DG through the increasing number of hits on the pages of *Wikipedia* devoted to dependency.

In this introduction we will first focus on the need for historical studies on DG (→1). Section →2 offers a brief presentation of the eight chapters of this book in order to introduce their primary topics. Each chapter contains cross-references to other chapters. To complement this, Section →3 emphasizes some global characteristics that may be used to define a common ground about what dependency is. Section →4 briefly acknowledges some related topics that are out of the scope of this book.

1. The need for studies on the history of dependency grammar

The popularity of DG has increased in the last decade, but little attention has been paid so far to the historical precedents of DG-oriented theories. The most renowned scholar in the history of dependency linguistics is Lucien Tesnière (1893–1954). His seminal book, *Éléments de syntaxe structurale* (1959), is often considered as the birth certificate of dependency-based approaches. Tesnière's key concept is "connection" (Fr. *connexion*):[4]

> [A] sentence of the type *Alfred speaks* is not composed of just the **two** elements, *Alfred* and *speaks*, but rather of **three** elements, the first being *Alfred*, the second *speaks*, and the third the connection that unites them – without which there would be no sentence.

A connection is a hierarchical grammatical relation between words, where a governor word (Fr. *régissant*) is connected to a subordinate word (Fr. *subordonné*) (Tesnière 1966/2015, Chapter 2; Kahane & Osborne, 2015, p. xxxviii), that is to say, it is a genuine syntactic dependency.

It was not until 2015 that Tesnière's book (second edition, 1966) was finally translated in English (Tesnière 1966/2015), whereas translations in other major languages had been made available before: German (1980), Russian (1988), Spanish (1994), Italian (2001). It seems that the longer the wait, the more focus Tesnière drew in the DG community (Ágel et al., 2003, Part II, contains ten papers on Lucien Tesnière's life and works). However, "Tesnière is not the first inventor of dependency grammars" (first sentence of the abstract of Chapter 8, by Patrick Seriot), and, to quote Mel'čuk (1988, p. 3):

> Dependencies as a formal means of representing the syntactic structure of sentences have been the staple diet of traditional syntacticians for centuries, especially

4. A more precise term would be "structural connection": Tesnière distinguishes between structural connections (i.e. syntactic ones) and semantic connections (Tesnière 1966/2015, Chapter 21).

> in Europe and particularly in Classical and Slavic domains. Their popularity culminated in the brilliant work of Lucien Tesnière (Tesnière, 1959), which laid the groundwork for all subsequent explorations in the area – but which, most unfortunately, is all but ignored by the mainstream of today's syntactic research.

Nonetheless, studies on dependency concepts in syntax before Tesnière are sparse and barely scratch the surface of our topic. For instance, there are some introductory "Überblicke" in Ágel et al., 2003. Percival's paper on the history of dependency concepts is an excellent first overview of the most ancient Western grammars, but it does not dive into the texts (1990), and Graffi's monumental *200 years of syntax* on the birth of syntax is more focused on PSG approaches. Hays's bibliography (1965) does not acknowledge any pioneer before the 19th century.

In an attempt to redress this situation, we intend to raise awareness of dependency-oriented approaches in the history of syntactic ideas. The volume brings together papers on the history of dependency-based approaches to grammatical theory and the diagramming conventions that have developed around them. It explores the pre-modern and early modern eras (up to Tesnière), and demonstrates the rich tradition of dependency-based perspectives on grammatical structure in the history of linguistics.

Recent research on Tesnière (Mazziotta & Kahane, forthcoming) has revealed that he knew about Jespersen's rank theory (see Chapter 7) as well as about American developments in sentence diagramming (for more on the latter topic, see Chapter 4). The issue of any *transmission* of ideas to Tesnière remains unsolved, and perhaps it is of lesser importance. The chapters of this book are linked by cross-references that highlight similar ideas shared by various linguists. Whereas it would be absurd to ignore overt legacies (such as medieval scholars quoting Priscian; Chapter 1) and the transmission of systems that are so complex that they could not have been invented independently (such as the diagrams in Chapter 4, Section 6), intellectual history is often better described through the notion of a "climate of opinion". The term is used by Konrad Koerner (1976, p. 690) and ultimately goes back to Carl Becker (1932, p. 5). In the present volume, Sériot frames his chapter by emphasizing this methodological issue. The following passage is worth quoting in full (Chapter 8).

> Unlike the diffusionist hypothesis, which rejects the possibility of multiple inventiveness and posits that an invention can only be transmitted by imitation and contact, I propose here to examine the fact that researchers without any link between each other can reach conclusions that are identical or very similar, because they have read the same books, or they share the same "climate of opinion", or they reject the same thesis, because they find it unsatisfactory.

Sériot's reference to "rejecting the same thesis" appears to be especially relevant. To a large extent, aspects of dependency-oriented thinking were surfacing and re-surfacing through the ages as a result of opposition to a dominant school of thought, inspired by Aristotelian logic, that regarded the subject and the predicate as having equal status (on verb centrality, see →3.4). Those who opposed this view need not have had any direct or indirect contact, and in at least certain cases, dependency theory appears to have been invented and re-invented again without the authors being aware of like-minded grammarians. This is especially clear in the case of Sámuel Brassai, who produced an entirely dependency-based sentence diagram in 1873, which Franz Kern and Tesnière were almost certainly unaware of. As Imrényi and Vladár note (Chapter 5), also remarking on shared aspects of the backgrounds of these authors,

> the early history of DG seems in no small measure to have been a series of independent breakthroughs in similar directions. While there are absolutely no grounds to assume that Franz Kern or Tesnière knew about Brassai, their congeniality is striking. It almost seems as if being a polyglot with Classical erudition and having a strong pedagogical commitment predisposed one to become a DG theorist.

The present volume thus brings together like-minded grammarians of the past, many of whom would have been quite surprised to learn that others had arrived at so similar conclusions. Geographical, historical, linguistic and other barriers kept them from experiencing this joy of discovery. On the pages of this book, they now finally belong together.

2. Presentation of the papers

In her chapter (**Chapter 1**) on syntactic relations in Ancient and Medieval grammatical theory, Anneli Luhtala (University of Helsinki) explores the development of syntax in Europe up until the Late Middle Ages. She highlights the fact that medieval grammarians described syntax in terms of linkages between two words (rather than phrases), in line with the tenets of dependency grammar. However, the assumption of verb-centricity, another key feature of dependency grammar, competed with views inspired by logic that regarded the subject as equal or even prior to the predicate.

In **Chapter 2**, on the notion of dependency in Latin grammar in the Renaissance and the 17th century, Bernard Colombat (University Paris Diderot) examines the links of dependency that are woven between words or phrases in Latin syntax according to Latin grammarians between 1500 and 1650. He discusses the distinction between *convenience* or *concord* (agreement) and *rectio* or *regime* (government),

depending on whether an element controls another element or not. The chapter also addresses a range of particular constructions such as the treatment of prepositions, relative pronouns and conjunctions.

In his chapter (**Chapter 3**) on syntax in the French *Enyclopedia* (1765, Volume 14), Sylvain Kahane (Université Paris Nanterre) accounts for the progressive definition of syntactic analysis concepts from Port-Royal to Beauzée. He shows that the authors provided a clear delimitation of *syntax* as well as preliminary dependency-based definitions of parts of speech and relations, and accounted for the order of the words. Their efforts led to Beauzée's clear distinction between morphology and syntax, which corresponds to a view of syntax that is very close to our modern understanding of dependency.

Chapter 4, by Nicolas Mazziotta (Université de Liège), focuses on Stephen W. Clark's *Practical Grammar* (1847) in the context of an American tradition of sentence diagramming. As the chapter shows, Clark's diagrams merged aspects of constituency- and dependency-based analysis. His diagramming system made use of labeled bubbles, and was a precursor of the famous Reed & Kellogg system. When Clark's analyses are systematically evaluated with respect to five general characteristics of dependency grammatical description, they turn out to be dependency-based to a remarkable extent.

In **Chapter 5**, András Imrényi (Eszterházy Károly University, Eger) and Zsuzsa Vladár (ELTE, Budapest) present the syntactic model of Sámuel Brassai, a Transylvanian polymath of the 19th century. In his instructive metaphors, Brassai likened sentences to feudal societies and the solar system, putting the verb at the top and in the centre of a network of word-to-word relations. In 1873, he produced the first entirely dependency-based, verb-centred sentence diagrams of clause structure, preceding Kern by ten years and Tesnière by several decades. The chapter also demonstrates that Brassai's discovery of a bipartite (information structural) division of the sentence is seamlessly integrated into his dependency-oriented approach.

In **Chapter 6**, Timothy Osborne (Zhejiang University, Hangzhou) examines Franz Kern's main works, revealing that his concept of sentence structure is closely similar to many modern analyses in the tradition of dependency grammar. Kern took the finite verb as the sentence root and positioned the subject and object phrases as equi-level dependents of the verb. His numerous sentence diagrams are similar to the stemmas Tesnière used approximately 60 years later. This raises the question whether Tesnière knew about Kern's works, or whether he was indirectly influenced by him through the ideas of other German grammarians.

In his chapter on aspects of dependency in Otto Jespersen's structural syntax (**Chapter 7**), Lorenzo Cigana (FNRS, Université de Liège) challenges the assumption that Jespersen's model anticipates immediate constituency analysis. He argues for a more dependency-oriented interpretatation, focusing on Jespersen's theory of

three ranks. This model is discussed in detail, and evaluated against the five basic characteristics of dependency-based description outlined by Kahane and Mazziotta (2017). Finally, it is shown how Jespersen's model influenced Louis Hjelmslev's purely relations-oriented morphosyntactic theory.

In the final chapter (**Chapter 8**), Patrick Sériot (University of Lausanne / State University of Saint-Petersburg) explores the philosophical and ideological origins of Dmitrievsky's dependency grammar in Russian intellectual history, and their possible influence on Tesnière, who visited Leningrad on two occasions at a time of heated debates in linguistics in the Soviet Union. Dmitrievsky states that the nominative is "but a case like the others". In his own hierarchy, syntactic functions are more important than parts of speech, and the predicate is the element of the sentence which depends on nothing, and not what is said of the subject.

3. What dependency is

This short presentation of the chapters may have suggested that dependency is a unified concept. However, this would be, at best, an oversimplification.

> To begin with, linguists do not agree on a definition of "dependency". Moreover, the terminology used by grammarians over the centuries to discuss dependency relations has been highly volatile. Hence, both the terms and the underlying concepts are problematic. (Percival, 1990, p. 29)

The idea of dependency syntax is a complex concept that allows diversity, both from a historical point of view and in terms of the theory and practice of modern studies. There are many ways to "do dependency syntax" nowadays: theories such as *Meaning-Text Theory* (Mel'čuk, 1988) and *Word Grammar* (Hudson, 2008) are not equivalent, and annotation conventions such as *Universal Stanford Dependencies* (de Marneffe & Manning, 2008) or large corpora such as the *Prague Dependency Treebank* (Hajičová, 2000) are just a few examples of the most widely used frameworks nowadays. All these systems have it in common that they focus on *hierarchical relations between words,* rather than part-whole relations as in PSG approaches. Nevertheless, beyond this simple principle, many differences arise. The present volume also reflects this inherent variability. The choice between dependency and constituency cross-cuts the division between formalist and cognitive-functional approaches to grammar, hence it is only natural that authors working in DG may have very different ideas about fundamental issues.

Even if no two of the eight chapters follow the exact same conception of dependency, it remains possible to grasp this complex concept through broad

characteristics that were made explicit in Tesnière's *Elements*, having been more or less focal points in syntax for centuries: the distinction between linear order and structural order (→3.1); the use of diagrams (→3.2); the issue whether, and to what extent, syntax is autonomous (→3.3); the centrality of the verb (→3.4) and the concept of *valency* (→3.5). For each of these topics, we will review Tesnière's stance (by referring to Tesnière 1966/2015, and to Kahane & Osborne, 2015) and provide references to the most relevant sections of the chapters in this book.

3.1 Linear vs structural order

The distinction between linear order and structural (or analytical) order is one of the foundational ideas in Tesnière's treatise (1966/2015, Chapter 6). His main point is that linear order, although visible and grammatically constrained, is not a genuine part of the "structural" hierarchy of the sentence.

The concept of order pertains to the very definition of syntax. The earliest grammatical works that acknowledge syntax in the western tradition define the task of the grammarian as the pursuit of describing the rules of the "natural order" of words (Chapter 1, Section 3.1). Following Apollonius Dyscolus (2nd century A.D.), this order was established by analytic procedures: grammarians discussed the prominent position of the noun or the verb by means of linguistic tests such as deletion (Chapter 1, Section 3.3; Chapter 5, Section 2.2). Such methods were geared toward the analysis of structural organization rather than merely linear order. However, the discrepancies between natural ordering and "syntactic ordering", such as the position of the preposition before the noun despite its secondary role (Chapter 1, Section 3.6), demonstrate how difficult it is to acknowledge both linear and structural order simultaneously.[5] For a long time, grammarians were unable to separate linear order from other formal constraints; e.g. Guarinus (Chapter 2, Section 3) describes the combination of the verb with its arguments through their morphology *and* relative position.

The transition from Latin grammar to the grammar of modern languages was completely achieved in 18th century France. Probably inspired by Buffier and Girard's observations on "style" (for details, see Chapter 3, Sections 3.2.4 and 3.3.3), Beauzée, who strove to identify the head word for complements (Chapter 3, Section 2.1), recognized the importance of word order in expressing structural

5. The status of function words has been a complex topic for long (see also, e.g., Chapter 2, Section 5.3 and Chapter 4, Section 5.1.2). It remains a hotly discussed issue (Osborne & Gerdes, 2019).

relations between the verb and its arguments (Chapter 3, Section 2.3), thus anticipating modern considerations on projectivity and discontinuous constituents.

3.2 Diagrams

Syntactic diagrams are graphical tools that encode the analysis. Rather than merely reflecting a pre-existing analysis, they facilitate the discovery of new patterns in the data (Mazziotta, 2016). The process of abstracting the analysis away from linear order succeeded when new formal means were defined for expressing the relations between words. Using a symbolic notation, Jespersen (1937, see Chapter 7, esp. Section 3) already acknowledged both hierarchical ranks and linear order (see the example of *the furiously barking dog* and *the dog barked furiously*, Chapter 7, Section 2.1, or the use of brackets to mark extrapositions, Chapter 7, Section 3), but to go one step further, one needs graphical representations as well. Tesnière is well known for his ubiquitous use of *stemmas*, i.e. diagrams representing syntactic relations, mainly by strokes between words (Figure 2; see Kahane & Osborne, 2015, pp. xlii–xliv for a comparison between stemmas and dependency trees).

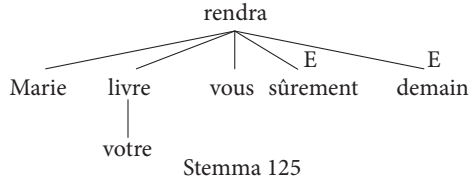

Figure 2. Sample of stemma (Tesnière, 1959, Chapter 56, Section 9)

Several chapters of this book demonstrate that he was not the first to draw diagrams to represent syntax, see in particular the attempts by Billroth (1832, see Chapter 6, Section 1), Clark (1847, see Chapter 4), Brassai (1873, see Chapter 5, Section 3.2) and Kern (1883, see Chapter 6). These diagrams correspond to various formal objects, Brassai being the first one to use a genuine tree in the dependency tradition.[6] Diagrams allow for representing syntactic order at a level of detail that analyses embedded in the running text cannot achieve:

6. Thus predating PSG "trees": "the first actually drawn tree diagram in the linguistic literature (with the root at the bottom end) is not found until Nida (1946: 87) […] close to the end of the period we now identify as that of structuralist linguistics. Tree diagrams did not become common until after 1960." (Seuren, 2015, p. 414). Nida's diagram is similar to Figure 3 in Chapter 4, Section 4 and is not exactly a tree (see Mazziotta & Kahane, 2017, p. 122).

> The linear order of the sentence can of course be ignored in analytic commentaries as well, but the latter also being linear texts, they cannot represent structural configurations in a geometric way. (Chapter 4, Section 3)

Scholars who use diagrams have the means to separate their analyses from linear order. For example, Kern places both main-clause and subordinate verbs on top of their respective subtrees, despite the fact that subordinate verbs are clause-final in German (see Chapter 6, Section 2.2). Nevertheless, this does not mean that authors using diagrams necessarily overlook word order. For instance, Brassai adopts the metaphor of attraction (Chapter 5, Section 3.1) to describe the relationship between heads and dependents, with strong implications for linearization (Chapter 5, Section 3.3.2).

3.3 Approaches to the autonomy of syntax

We have noted above that the choice between dependency and constituency cross-cuts the division between formalist and cognitive-functionalist approaches to grammar. Hence, DG grammarians may have fundamental disagreements despite all favouring dependency-based representations. One particularly sensitive issue is the autonomy of syntax with respect to semantics, an idea which cognitive linguists are deeply uneasy with, arguing that language is all about (the structuring and symbolization of) meaning.[7] In this section, we briefly discuss Tesnière's position in the context of grammatical theory and the history of grammatical theorizing.

Tesnière clearly posits that morphology, syntax and semantics are independent.

> Syntax is therefore quite distinct from morphology; it is independent from it. It has its own laws. It is autonomous. (1966/2015, Chapter 15, Section 6)

> The structural plane and the semantic plane are thus entirely independent of each other from a theoretic point of view. (1966/2015, Chapter 20, Section 17)

Tesnière's separation of morphology and syntax can only receive cursory mention here. Essentially, it marks a move from word-based to sentence-based grammatical description; an emphasis on the fact that syntax studies structural relations rather than classifying words and morphemes as if they occurred in isolation. For a discussion of how the same trend unfolded in 19th century American school grammar, with morphological parsing giving way to true sentence analysis, see Chapter 4, Section 2.

7. Cf. Geeraerts, 2008, p. 3. For a comprehensive overview of Cognitive Linguistics, see Dancygier (Ed.), 2017.

When it comes to the relationship between syntax and semantics, Tesnière's position is more nuanced than the phrase *entirely independent* might suggest. Having separated the two planes from a theoretical point of view, he goes on to make the following proposal.

> In practice, the two planes are in fact parallel because the structural plane has no other purpose than to render the expression of thought possible, that is, to render the expression of the semantic plane possible. While they are not identical, there is parallelism between the two planes. (1966/2015, Chapter 21, Section 1)

Note that Tesnière treats *semantic plane* and *thought* as synonyms, thus in essence he is arguing against the confusion of language with thought. This is also evident in the way, reminiscent of Chomsky (1957), in which he seeks to demonstrate the independence of structural syntax from semantics.

> The best proof is that a sentence can be semantically absurd and at the same time syntactically perfectly correct. Take the meaningful sentence *Le signal vert indique la voie libre* 'The green light indicates right of way' […]. If I replace all the words charged with meaning by the words of the same type that immediately follow them in alphabetic order in the dictionary, I obtain the sentence *Le silence vertébral indispose la voile licite*, lit. 'The vertebral silence antagonizes the lawful sail' […]; the structure remains intact, but the sentence now makes no sense whatsoever. (1966/2015, Chapter 20, Section 17)

It seems clear, however, that the absurdity of this thought does not prove the autonomy of syntax with respect to semantics (as we understand it today). On the contrary, it proves that not only the words but also the syntactic pattern is meaningful. In particular, our sense of absurdity derives from the fact that the referent of *silence* is to be interpreted as the agent of antagonizing; that *vertebral* must be understood as referring to a quality of the silence, etc. And we are guided to the recognition of these semantic relations (agent-of, quality-of, etc.) by the structural pattern, with special regard to word order in the French and English examples under study.

In a similar vein, Langacker notes that

> Tesnière equates semantic structure (*le plan sémantique*) with ideas, thoughts, or concepts that are rich in content and exist independently of linguistic expression […]. Yet there is more to meaning than just "raw conceptions", or conceptual "content". Linguistic semantics must also accommodate our multifaceted ability to construe such content in alternate ways. […] If terms like meaning and semantics subsume not only conceptual content but also semantic correspondence and other aspects of construal, it follows that meaning and grammar are not at all separate or independent. (Langacker, 1994, pp. 69–70)

To conclude, Tesnière's suggestion that "[the] structural plane and the semantic plane are […] entirely independent of each other" (1966/2015, Chapter 20, Section 17) needs to be interpreted with caution. Most importantly, the meaning of *semantic plane* can be construed in various ways, these construals defining sharply different theoretical positions which were not yet explicitly articulated in Tesnière's time. In the early history of dependency-oriented theorizing, the overarching trend is that structure and meaning go together, which can be regarded both as a merit (from a cognitive-functionalist perspective) and as a shortcoming (if one is committed to an axiomatic separation of syntax and semantics on a mathematical basis).

Many ancient grammars are founded on the Stoic concepts of *onoma* and *rhema*, taken over from logical semantics. Additionally, grammarians working on Latin would rely on morphology to interpret the meaning of a sentence. Heir to this already long tradition, Priscian defines transitivity by means of morphological, semantic and syntactic criteria together (Chapter 1, Section 3.7.3), and his definition of the sentence rests heavily on meaning (Chapter 1, Section 3.3). The roots of a distinction between different types of criteria are already visible at this time (as stated above, Apollonius Dyscolus already used distributional tests as proofs), but it is not until the 15th and 16th centuries that scholars manage to distinguish between agreement and government (Chapter 2, Section 1). However, descriptions continue to combine criteria of the three kinds (e.g. Chapter 2, Section 4.1 demonstrates this about transitivity). Beauzée provides semantic definitions to support his syntactic analysis (Chapter 3, Section 2.1), and Clark attempts to define the concept of "object" semantically in his syntactic description of the "offices of the words" (Chapter 4, Section 5.3.2).

When it comes to disentangling syntax from logical semantics, a key step was the thesis of verb centrality and the corresponding rejection of the dualistic view of the sentence, i.e. the *onoma/rhema* tradition rejuvenated by Port-Royal (Chapter 3, Section 3.1.2). In the 19th century, the "climate of opinion" tended to turn against the dualistic view, with Brassai (Chapter 5, Section 2.2) and Dmitrievsky (Chapter 8, Section 3) overtly rejecting it.

3.4 Verb centrality

Probably influenced by the ideas of his time, Tesnière considered it very important to place the verb on top of the hierarchy of the sentence, and many scholars consider this one of the defining features of a dependency-based description (see, e.g., Chapter 6). Tesnière criticized several Russian grammarians because they placed the subject at the same level as the verb (Tesnière, 1966/2015, Chapter 3, Section 3, Note 9; see also Kahane & Osborne, 2015, pp. xxxix–xli, as well as Chapter 8, Section 3

in this book), and he often repeated his point in the letters he wrote to his friend Fernand Mossé (23rd June 1932 and 7th July 1932, cf. BnF NAF 28026, Box 59). It is clear, though, that he was not the first one to overtly express the prevalence of such a hierarchy: to quote Dmitrievsky, "[t]he predicate is the absolute ruler, the Tsar of the proposition" (Chapter 8, Section 3). Likewise, Brassai described the verb as the monarch of the sentence (Chapter 5, Section 3.1; see also Imrényi, 2013).

Actually, verb centrality contrasts with two other descriptive options. The first one obviously corresponds to the PSG approach, which is rooted in the aforementioned *onoma*/*rhema* tradition (→3.3), and posits no clear hierarchy between the subject and the verb. This descriptive option has been prominent for several decades. It appears in the *S* → *NP VP* derivation rule, emblematic of PSGs since Chomsky, 1957, who, of course, had inherited it from the tradition culminating with Bloomfield (1933, Chapter 12). Chapter 3 (Section 3.2.3) shows that this remains the only bit of non-dependency-based description in Buffier's approach. Chapter 4 (Section 5.3.2) shows how difficult it can be to interpret the exact stance of the grammarians. Chapter 5 (Section 2.2) illustrates how Brassai firmly opposed to this "dualistic" view, similarly to Tesnière. Most importantly, Chapter 8 demonstrates that the debate between mereological and dependency-oriented approaches has been a long and complex process that witnesses the cohabitation of both.

The second alternative is to posit that the noun is actually the main word of the sentence. The dilemma is very old: "There was a constant tension between a verb- and a noun-centered view of sentence construction in medieval theories." (Chapter 1, Section 3). This remains an issue at least up to Jespersen's somewhat ambivalent stance toward the hierarchical position of the verb (Chapter 7, Section 2.2.3).

3.5 Valency

In accordance with the prominent place of the verb in his theory, Tesnière made an elaborate proposal based on the concept of *valency* (1966/2015, Part I, Book D). In his view, overtly inspired by chemistry, the valency of a verb refers to its ability to connect to compulsory complements, *actants*, that are at least semantically implied (→3.3). He distinguishes between verbs that only govern a subject (*monovalent verbs*), those governing a subject and a direct object (*divalent verbs*), and those standing with a subject, a direct object and an oblique (*trivalent verbs*). Such a model is useful for classifying verbs and complements as well as for explaining relationships between equivalent sentences (voice transformations).

This part of his theory is considered as a prominent aspect of DG, even by scholars who mostly use constituent-based models:

> The only form of theory-based structuralist syntax developed in Europe is *Dependency Grammar*, also called *Valency Grammar* (cf. Klotz, this volume), developed by the French linguist Lucien Tesnière (1893–1954), whose actual theory was not published until well after his death in Tesnière (1959).
>
> (Seuren, 2015, p. 401)

Valency theory elaborates on the principle of dependency by stating the rules for combining dependents with their governors (be they verbs or other types of words). DG actually becomes a true grammar at the moment when valency is acknowledged and formalized.

The metaphorical concept of valency actually serves to systematize issues that have been major concerns since Latin grammar in the Middle Ages (see e.g. Chapter 1, Section 4.2.4) and the Renaissance (Chapter 2, Section 4.1). The description of valency implies a distinction between strict complements and more loosely related ones which are not significantly constrained by the lexical choice of their governors. Such a distinction is already overtly made in the *Encyclopedia* (Chapter 3, Section 2.1) and in early-modern works such as Clark's (Chapter 4, Section 3). Incidentally, the systematization of the description through the concept of valency seems to have occurred in the Soviet Union in parallel to Tesnière (Chapter 8, note 149).

4. Beyond the scope of this book

This short section introduces three kinds of dependency-related topics that remain beyond the scope of this book: other concepts in Tesnière's theory (→4.1); similar dependency-based description in the Arabic and Indian grammatical traditions (→4.2); post-Tesnièrian developments of DG (→4.3).

Just as this book was conceived as a follow-up to the publication of *Éléments de syntaxe structurale* in English translation by Osborne and Kahane in 2015, we strongly believe that other books should follow suit, addressing the issues and topics mentioned in this section.

4.1 Other concepts in Tesnière's theory

There are two major concepts in Tesnière's theory that are not surveyed in this book: "transfer" (Fr. *translation*; Tesnière 1966/2015, Part III) and "metataxis" (Fr. *métataxe*; Tesnière, 1966/2015, Part I, Book E).

Although a prominent part of Tesnière's theory, transfer is not a focal point in this book. A transferred word is a word that changes part of speech. To illustrate

this, Tesnière (1966/2015, Chapter 151) compares *Alfred's book* (Fr. *Le livre d'Alfred*) with (*the*) *red book* (Fr. *le livre rouge*). He argues that *red* and *Alfred* both depend on the noun, which, according to his system, is "natural" for an adjective such as *red* but needs to be explained for a noun such as *Alfred*. In his view, the genitive marker *'s* (or the French preposition *de*/*d'*) is a grammatical means allowing a word to change its part of speech. It turns the noun *Alfred* into an adjective; therefore, it can depend on a noun (*book*). Transfer is a special grammatical relation that has been investigated further by some scholars (e.g. Lemaréchal, 1989, 1997), but the uptake of this concept in DG is rather poor in comparison with the foundational notion of *connection* (→1). This may be because transfer does not correspond to a stereotypical dependency: the group formed by the transferred word and the grammatical tool that makes the transfer possible constitute a node in the dependency structure, which may seem to resemble PSG (for alternate descriptions of the problem, see Osborne, 2013, pp. 268–270; Mazziotta, 2014, pp. 137–140; Kahane & Osborne, 2015, pp. 50–60).

Metataxis is another important concept in the *Elements* (Koch, 2003), which reflects Tesnière's interests in translation and language typology. Metataxes are operations that explain how syntactic structures are altered when a sentence is translated from one language to another. The formal means to achieve the description of such operations is graphical (→3.2). Tesnière links the stemmas of the two sentences with dashed strokes to assess the semantic equivalence of units that appear in different syntactic positions (Figure 3).

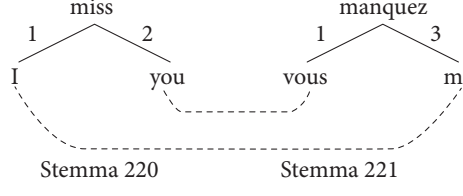

Figure 3. Sample of metataxis (Tesnière, 1959, Chapter 123, Section 2)

Starting from Schubert (1987), metataxis has been investigated further in natural language processing and machine translation (Schubert, 2003; see also →4.3).

4.2 Dependency in other traditions

All of the grammarians and linguists investigated in the chapters of this book either belong to the Western world (Chapters 1 to 7 all focus on Europe, except for Chapter 4, which deals with American grammar) or have evolved in interaction

with it (Chapter 8 focuses on the Russian tradition, closely related to German philosophers and connected to Tesnière himself). Outside of the Western culture, at least two traditions deserve a closer look with respect to their dependency-like approaches: Pāṇini's *Aṣṭādhyāyī* and Arabic grammarians. We briefly summarize their key concepts below.

The most ancient is Pāṇini's *Aṣṭādhyāyī* (ca. 5th century BC), describing the grammar of Sanskrit and dealing with major components of linguistics. It is well known that Bloomfield (1933) drew inspiration from Pāṇini's morphology for grounding his distributionalist approach. However, as far as syntax is concerned, Bloomfield's model was Wundt's *Völkerpsychologie* (Percival, 1976). This does not mean that Pāṇini had overlooked syntax, rather, the problem was that Pāṇini's treatment of the topic did not suit Bloomfield's behaviorist approach. Pāṇini defined six *kārakas* by their semantic roles (Raster, 2015, Section 3). In a sense, this approach is very close to Latin grammar in the Antiquity and the Renaissance (Chapters 1 and 2). Connectivity was later developed by Kātyāyana (3rd century BC): "A sentence consists of a finite verb together with indeclinables, *kārakas* and qualifiers." (quoted by Raster, 2015, p. 226).

In their search for the first manifestation of the concept of "dependency", Gerdes et al. (2011, p. iii) mention Ibn Maḍāʾ (1116–1195) as "the first grammarian ever to use the term *dependency* in the grammatical sense that we use it today". They briefly point out a debate about the most suitable term for discussing dependency (*taʿalluq vs ʿamal*). According to Owens, Ibn Maḍāʾ is just one of the many grammarians in the Arabic tradition who are very close to "modern" dependency theory (that of Tesnière 1966/2015 and Robinson, 1970). The role of inflection is prominent (Owens, 1988, pp. 39–41sqq.). An in-depth evaluation of the adequateness of the term "dependency" to describe the Arabic tradition is offered by Owens, 2015, based on previous works of the same scholar.

4.3 After Tesnière

The evolution of DG after Tesnière would deserve a whole book series by itself and this section is a very brief summary of what we consider to be the most prominent developments.

On the theoretical side, despite the overwhelming presence of constituency-based systems inherited from Bloomfield, and popularized by Chomsky and his disciples, DG continued to spread in scholarly environments. Prominent theoretical initiatives to achieve complete dependency-based systems include Meaning-Text Theory (MTT, Mel'čuk, 1988, 2009), with an emphasis on formalism, and Word Grammar (WG, Hudson, 2007), with an emphasis on cognition. Foundational concepts such as *valency* (Ágel, 2000) have been further refined and theoretically grounded.

In cognitive linguistics, the fields of research that are most directly relevant for dependency linguistics are frame semantics (Fillmore, 1982) and construction grammar (e.g., Fillmore, 1988; Goldberg, 1995; Langacker, 1987; Croft 2001). A key insight of what was to develop into frame semantics is that "[t]he sentence in its basic structure consists of a verb and one or more noun phrases, each associated with the verb in a particular case relationship" (Fillmore, 1968, p. 21). Frame semantics studies the semantic-syntactic valencies of frame-evoking elements, with e.g. the verbs *buy, sell, pay* and *cost* all evoking the frame of a commercial transaction, a coherent body of knowledge underlying our understanding of these words' meanings (cf. Fillmore, 1982, p. 116).

While the development of frame semantics was inspired by valency theory and DG (cf. Fillmore, 1982, p. 114), the possible merging of ideas between construction grammar and DG has received less attention in the literature, which is somewhat surprising in view of the close links between frame semantics and construction grammar. The core tenet of construction grammar is that lexicon and syntax form a continuum of learned pairings of meaning and form (signs, constructions). For a discussion of how WG may inform construction grammar, see Hudson, 2008; for the role of dependency trees and the concept of catenae in the description of constructions, see Osborne & Groß, 2012; for a combination of ideas between Langacker's Cognitive Grammar (a variety of construction grammar) and DG, see Imrényi, 2017.

From the beginning, most constituency-based systems have embedded elements of dependency (Mazziotta & Kahane, 2017). This is still the case with Head-driven phrase structure grammar (Pollard & Sag, 1994), which combines the description of a dependency tree alongside the constituents (Kahane, 2009), and Lexical functional grammar (where grammatical functions are represented in the "f-structure"; Bresnan et al., 2015). Moreover, while the idea of verb-centrality may be important for dependency-based systems, it is by no means specific to such descriptions. X-bar syntax, which posits endocentricity as a foundational principle (Haegeman, 1999, p. 105), treats verbal inflection (I) as the head of the clause (IP). According to Lecerf's mathematical evaluation (1961, Section 3a), such a structure is equivalent to a dependency tree where inflection is the root. That is to say, some part of the verb actually is the main element of the sentence.

The implementation of syntactic theory in NLP tools first followed PSG approaches in the wake of Chomsky (1957). After decades of slow progress in the use of DG for automatic translation (e.g. Zholkovskij & Mel'čuk 1965; Schubert, 1987), dependency-based tools first began to grow extremely popular at the beginning of the 21st century. Popular parsers – such as MaltParser (Nivre et al., 2007) and MATE (Bohnet, 2010) – are developed and enhanced through "shared tasks" initiatives proposed by *The SIGNLL Conference on Computational Natural Language*

Learning (CoNLL, <http://www.conll.org/http://www.conll.org>; see Nivre et al., 2007). Of course, parsing tasks are associated with the development of corpora that use dependency-based annotation schemes, such as the pioneering *Prague Dependency Treebank* (<http://ufal.mff.cuni.cz/pdt2.0/>; see Hajič et al., 2000) and numerous others that are regularly presented at NLP conferences such as ACL, and more theoretically focused ones, such as Depling. With the ever-growing data available in such databases, the issue of a common annotation scheme has become prominent. This is the whole point of the *Universal Stanford Dependencies* (de Marneffe & Manning, 2008), which is still hotly discussed in scholarly debates (see, e.g. Osborne & Gerdes, 2019).

Since the 19th century, diagrams have become an increasingly important part of linguistic formalization. Their widespread use to deal with pedagogical, communicative and computational issues has been greatly inspired by Tesnière's stemmas (Mazziotta, Forthcoming). DG linguists offer alternate representations of dependencies that help solve formal problems such as projectivity. For instance, both diagrams in Figure 4. contain crossing arrows or strokes that correspond to violations of projectivity.

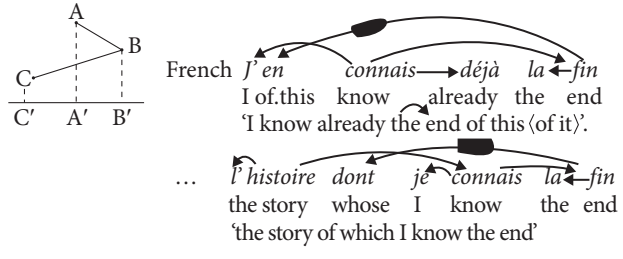

Figure 4. Diagrammatic evaluation of projectivity (Ihm & Lecerf, 1963, p. 8 and Mel'čuk, 1988, p. 37)

Perceived as valuable formal tools, dependency diagrams have also been proposed to model valency constraints and combinatory rules (Kahane, 2004; Kahane & Lareau, 2005).

Considering its long tradition and the future perspectives of its development, one can but foresee a lively evolution of DG and its applications in our efforts at understanding language.

Scientific committee

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CHAPTER 1

Syntactic relations in ancient and medieval grammatical theory

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It was the Stoics among the ancient philosophers who most vividly developed the philosophy of language as part of their logic. Within their theory of meaning, they recognized various types of predicates which required one or more cases or 'arguments' to complete their meaning. A minimal complete statement consisting of a verb and one or two nominals formed a logical proposition. This minimal statement also became the point of departure for syntactic analysis when a theory of syntax began to be integrated in grammars. Indeed, some of the basic elements of Stoic logic were adopted into the earliest grammatical theory of syntax, the one composed by the Greek grammarian Apollonius Dyscolus (2nd century AD). His theory, as transmitted to the Middle Ages by the Latin grammar of Priscian (c. 500 AD), established itself as the foundation of the Western theory of syntax. Within this framework, the verb was regarded as an incomplete expression, which needed one or more nominal cases to perfect its meaning. It would then appear that the approach was verb-centered, as it was the verb that drew the nominal parts of speech into a construction. In the Middle Ages, grammar came under the influence of Aristotelian logic, and the functional notions of subject and predicate were incorporated into medieval syntactic theory. As the predicate was defined as saying something about the subject, it could be maintained that logically the subject is prior to its predicate. The same view was implied in the medieval idea of a logical or natural ordering of the parts of speech, whereby the noun occupied the primary position. Thus, the noun occupied the first place, because the verb drew some of its features from the noun, such as number and gender. Such tensions in the inherited theories provided ingredients for lively scholarly discussions throughout the Middle Ages.

1. Introduction

At the time when Tesnière wrote his works, the initial division of the basic clause into subject and predicate was the dominant approach to sentence analysis. He rejected this approach, which he regarded as deriving from logic and as inappropriate

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for grammar and linguistics. He also believed that this approach to syntax had prevailed in syntactic analysis since Aristotle: "this remnant stems from the epoch that extends from Aristotle to Port-Royal, when all grammar was founded on logic" (49, § 2–5 quoted by Kahane & Osborne, 2015, p. xxix). However, Aristotelian philosophy only began to influence syntactic theories in the Middle Ages, and it was then that the subject-predicate distinction was integrated into mainstream grammar. The syntactic theories in ancient grammar depended directly on Stoic logic, and in fact it was the Stoics among the ancient philosophers that contributed most to language study and to syntax in particular. However, the Stoic theory on language was poorly known at the time when Tesnière developed his framework, and it was not until the 1970s that the nature and importance of the Stoic theory began to be properly appreciated. Today, many scholars agree that the description of the logical proposition in Stoic logic involved several elements that can be identified as rudiments of a dependency-based syntactic theory.

Stoic logic formed the basis of the ancient grammatical theory of syntax, as developed by the Greek grammarian Apollonius Dyscolus (2nd cent. A.D.). It was adapted to Latin grammar by Priscian, who taught grammar in Constantinople c. 500 A.D. Priscian's *Institutiones grammaticae* became the standard textbook on advanced grammar in the Middle Ages, and its doctrine was developed in association with Aristotelian logic, physics and metaphysics. The division of the clause into subject and predicate was first applied to Priscian's theory as early as the 9th century, and in the 12th century it was part of the standard doctrine, not only in advanced grammar but also at the secondary level of grammar education. Stoic philosophy was not known directly in the Middle Ages, and throughout the Middle Ages, there was a tension between verb- and noun-centered syntactic analyses, which will be illustrated in this essay.

2. Stoic logic[1]

2.1 Stoic proposition

The understanding of grammatical syntax is fundamentally dependent on logic. The point of departure for syntactic analysis in ancient grammar was a sentence expressing a minimal statement, amounting to a logical proposition. In early Aristotelian logic, known as the "old logic", the logical proposition was defined as a simple

1. The account of Stoic logic depends largely on my doctoral thesis (Luhtala, 2000a, p. 55–139).

statement which could be true or false.[2] Such an expression consisted either of a noun and a verb (*Socrates currit* 'Socrates runs') or of two nouns joined by a copula (*Socrates est albus* 'Socrates is white').[3]

The predicate was defined as saying something about the subject, but at this early stage of language description, no specific functional terms were used for 'subject' and 'predicate'; the terms used were 'noun' (*onoma*, *nomen*) and 'verb' (*rhema*, *verbum*).[4] In Stoic logic, which was developed by Chrysippus (280–206 B.C.), in particular, the terms 'subject' and 'predicate' were used, and, importantly, only one of the ways of defining the proposition was in terms of truth value.

According to Diogenes Laertius (Diogenes Laertius, *Lives of Eminent Philosophers* 7, 65, henceforth "DL"), "a proposition is that which is true or false, or a complete state of affairs (*pragma autoteles*) which, so far as itself is concerned, can be asserted" (tr. Long & Sedley, 1987, p. 206). It is the latter definition of the proposition in terms of a complete state of affairs (*autoteleia*) that formed the basis for the future definitions of a sentence in grammar. The state of affairs (*pragma*) points to the contents of the logical propositions, and probably as signifying physical bodies in action and undergoing action.

2.2 Self-sufficiency (*Autoteleia*)

The Stoics also described the proposition as a complete sayable (*lekton*), as opposed to incomplete sayables, such as predicates. The *lekton* was a specifically Stoic term describing 'that which can be said or thought', pointing to a kind of existence or rather non-existence associated with our thought and speech. According to Stoic ontology, only physical bodies properly exist (DL 7,65); the Stoic propositions are said to be about physical bodies.

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2. "Every sentence (*logos*) is significant […] but not every sentence is a statement-making sentence, but only those in which there is truth or falsity" (*Peri hermeneias* 17a1–6). A proposition is defined as "a simple statement, affirming or denying something of something" (17a20); "An affirmation is a statement affirming something of something, a negation is a statement denying something of something" (17a25–26); "A single affirmation or negation is one which signifies one thing about one thing" (18a13–14); the translations are by Ackrill (1963, p. 45–46).

3. The term 'copula' was introduced for the verb *esse* "to be" in the 12th century; the term substantival verb (*verbum substantivum*) was used by Priscian.

4. "The *onoma* is a vocal form with conventional timeless meaning, no part of which is significant separately (*Peri hermeneias* 16a19–20); *rhema* is what consignifies time, no part of it has separate meaning and it is always the sign of what is said of something else" (16b6–7), Trans. Arens, 1984, pp. 21–22.

The central role played by predicates/verbs in Stoic propositional analysis emerges from the fact that 'state of affairs' (*pragma*) was a feature not only of the proposition but also of the predicate. This is manifest in the second of the three definitions of the predicate offered by Diogenes Laertius:

> (1) The predicate is what is said of something, (2) the predicate is a state of affairs construed around one or more subjects, according to Apollodorus, or (3) the predicate is a defective sayable which has to be joined to a nominative case in order to yield a judgement (DL 7,64)

Only the first of these definitions aligns with Aristotle's concern with truth value. The second and third definitions are uniquely Stoic, and it is these definitions that provided the essential ingredients for the description of sentences in ancient grammar. From the second definition we learn that a state of affairs is construed around one or more subjects: for convenience, we may call these subjects referents, or human referents; in any case they were physical bodies. The second definition implies that Stoic logic also included propositions consisting of two nouns and thus involving two actants. If we interpret *pragma* as a state of affairs involving one or two actants, we are reminded of the later grammarians' notion of transitive action. This was a new aspect in propositional analysis.

The third definition of a predicate includes the important term *autoteles*, meaning 'complete' or 'sufficient'. The predicate is an incomplete sayable, which requires something in order to complete its meaning. An incomplete sayable leaves a question in the mind of the hearer. For instance, a predicate such as 'writes' leaves a question in the mind, unless it is joined to a nominative case, e.g. 'Socrates'. Then the complete sayable 'Socrates writes' satisfies the mind of the hearer. The Stoics seem to have introduced into linguistic analysis a criterion for the definition of a proposition, which relies on the competence of a (native) speaker to judge the acceptability of a statement in terms of its completeness or incompleteness. This takes place on hearing the expression. This is reminiscent of Tesnière's concept of introspection (Tesnière, 1966/2015, p. 30–32).

2.3 Stoic predicate types

In the Stoic framework, some predicates are regarded as direct, others reversed and yet others neuter. Direct predicates are construed with one of the oblique cases in order to accomplish a proposition, such as 'hears', 'sees', 'converses'. Reversed predicates are construed in the manner of the passives, such as 'I am being heard', 'I am being seen'. Neuter predicates such as 'to think' and 'to walk' have none of these features, and reflexive predicates, among the passives, resemble actions, as in 'he

shaves'. Consequently, the verb as a part of speech is defined as signifying a simple predicate or as an uninflected element of a sentence signifying something that can be attached to one or more (subjects), e.g. 'I write', 'I speak' (DL 7, 58). The Stoic list also included at least two more items, which are less clearly described, but from various sources we can infer that they represent what we understand as impersonal verbs. They fall outside the scope of this overview.

These predicate and verb types correspond to the transitive (active and passive), neuter, and reciprocal verbs of ancient grammar, whereas the existential verb 'to be' is absent from this classification. Indeed, there is no evidence for propositions containing the copula in Stoic logic (Brehier, 1951, p. 70). The Stoic classification of verbs survives in ancient grammar, which however abandoned the functional notion of a predicate and discussed the basic clause in terms of verbs, nouns and other parts of speech.

2.4 Referentiality

The Stoics were keen to relate propositions to facts in the real world whereby their truthfulness depended on the state of affairs being demonstrably true. For this purpose the question of the lower and higher referentiality of the subjects was crucial. By means of the three nominal parts of speech – the proper and common noun and the demonstrative pronoun – the Stoics were able to distinguish between more and less highly referential subjects and consequently, different kinds of propositions in terms of their varying degrees of definiteness. On the basis of their subject nominals, the Stoics divided simple affirmative propositions into three types:

> An assertoric proposition consists of a nominative case and a predicate, e.g. 'Dion is walking'. A demonstrative proposition consists of a nominative demonstrative case and a predicate, e.g. 'this one (*houtos*) is walking' An indefinite proposition consists of one or more indefinite parts and a predicate, e.g. 'Someone (tis) is walking', 'that one (*ekeinos*) is moving' (DL 7, 70, tr. Long & Sedley 1987, p. 205)

The assertoric proposition has a proper noun as subject, the demonstrative proposition a demonstrative pronoun and the indefinite proposition an indefinite pronoun. The definite pronouns included the pronoun *houtos* and probably personal pronouns (Pinborg, 1975, p. 99; Lloyd, 1978, p. 286; Long & Sedley, 1987, p. 207).

It appears that the Stoic theory did not present one uniform classification of propositions. As regards the truth value of propositions, the prototypical Stoic proposition was one in which the subject is a demonstrative or a personal pronoun, which are taken to be the most highly referential linguistic items, tantamount to the gesture of pointing to the referent who is present. In this case, the truthfulness

of the statement can be proved by sight. When an alternative method, the criterion of self-sufficiency, is used, the correctness of the statement depends on the hearing of the expression, and the examples involve sentences with two actants (Luhtala, 2000a, pp. 87–88).

The fact that personal pronouns occupy the subject position suggests that human referents were involved in Stoic propositional analysis. Indeed, many verbs used as examples pertain exclusively to human actions, such as conversing and shaving, and the examples of the passive verbs, hearing and seeing, are given in the first person singular. Consequently, the term 'person' (*prosopon*, *persona*) when used in ancient syntactic analysis often points to human referents but it was gradually transferred to contexts also involving non-human actants.

3. Ancient theory of syntax[5]

Apollonius Dyscolus was a grammarian active in Alexandria in the first half of the 2nd century A.D. He wrote separate treatises on various aspects of grammar (e.g. voice, syllables, orthography, parts of speech, and syntax). Four of his books on syntax have been preserved to us, the last of which is incomplete. Apollonius may have been the author of the first grammatical syntax ever written in the Western tradition. An earlier work, Varro's treatise on the Latin language (*De lingua Latina*), contained some kind of syntactic theory in its last book, of which only fragments survive. These fragments are direct quotations from a handbook on Stoic logic, and it is therefore not certain that grammatical syntax had become dissociated from Stoic logic in the first century B.C.

3.1 Rationalistic grammar

Apollonius's syntactical theory is based on rational rules underlying linguistic usage. The rules of a rationalistic grammar are derived from first principles. Apollonius established the first principles of his art by drawing parallels between the various levels of language behaviour. Language like any natural product is subject to order, and it is the task of the grammarian to discover this order. Just as the letters of the alphabet are presented in a certain well-founded order, so also are cases, genders, tenses, and so on. Even the parts of speech have a natural order determined by

5. The account of the Apollonius's theory of syntax is largely based on my doctoral thesis (Luhtala, 2000a, p. 146–176). For a French translation of Apollonius's syntactical theory, see Lallot, 1997. For the birth of syntax in Rome, see Baratin, 1989.

nature. The rationality of syntax is expressed essentially in terms of the notion of congruity (*katallelotes*/*congruitas*), which covers the well-formedness of a linguistic expression in a broad sense and in a narrow sense the concord or agreement that morphological features show when words are joined to form phrases.

At the beginning of his work on syntax, Apollonius defends the usefulness of the investigation into the rational rules of language, by claiming that these rules enable one not only to identify errors but also to correct and explain them. He also claims that the things one ascertains by reasoning are not dissimilar to those which one learns from experience. His method then consisted in a twofold procedure whereby a particular usage could be judged to be correct from experience and could be proved by *apodeiksis*, i.e. by demonstrating the rule governing that use (Blank, 1982, p. 11–19; Luhtala, 2000a, pp. 149–151).

3.2 Meaning (intelligibile)

At the beginning of his syntactic work, Apollonius takes pains to show that it is intelligible items (*noeta*), that is, meanings, that are combined in sentences. Indeed, the congruity or well-formedness of a linguistic expression ultimately depends on the intelligible items (*noeta*) (*GG* II.2: 2.10–11; *GG* II.2: 2.3–3,2). The *noeton*, translated as *intelligibilis* by Priscian, was defined as the meaning subsisting in every word that is the constituent of a sentence. This term was probably meant to replace the Stoic term *lekton* which Apollonius had abandoned (Blank, 1982, p. 19).[6] Having introduced this term, Apollonius no longer uses it in the subsequent discussion, but rather operates with grammatical congruity, in which two grammatical relations play a significant part: the concord or agreement of the morphological features of the parts of speech and the relation of dependency, whereby a (head) word demands or requires a constituent to complete its meaning. How are we then supposed to understand the *locus* of well-formedness: does it depend on the combination of the formal features of the parts of speech or on their meanings? The ultimate answer to this question is that the two levels are supposed to match: a sentence is well-formed when the formal features of language match the states of affairs in real life (see below).

6. The Stoic *lekton*, whose philosophical underpinnings and connection with rational impressions had been lost in grammatical analysis. Frede has related the absence of *lekton* to the general confusion and ambiguity concerning this term even by Stoic writers (1977, p. 69).

3.3 Definition of sentence

Since Apollonius's definition of the sentence has not been preserved to us, I will quote the one put forward by Priscian: *Oratio est congrua ordinatio dictionum perfectam sententiam demonstrans* (*Inst.Gram*. II.15; *GL* II: 53.28–29) 'A sentence is a congruent ordering of words showing a perfect meaning.' The term *congruus* is the Latin equivalent of *katallelos*, "congruous, well-formed", and *perfecta sententia* points to the Stoic notion of *autoteleia*, which implies not only that a sentence yields perfect sense but also that it does so minimally. In Apollonius's theory of syntax, the truth value of statements is no longer present, but it is implied in the congruity of the statement (see below).

3.4 Congruity (*katallelotes*, *congruitas*)

The two parallel ways of describing sentences in Stoic logic – in terms of states of affairs (*pragmata*) and structural completeness (self-sufficiency, *autoteleia*) – persist in Apollonius's and Priscian's descriptive frameworks. As far as I can see, the Stoic state of affairs (*pragma*) is accounted for by both grammarians semantically, in terms of (in)transitive action, whereby a sentence is depicted as expressing a process involving one or two actants, an agent and a patient. When the description focuses on self-sufficiency, a sentence is said to involve a verb and one or two nominals. Yet another Stoic feature persisting in grammar is the importance assigned to the high referentiality of the subjects of sentences, which is why both the personal and the demonstrative pronoun play an important part in syntactic description. It is sometimes possible to discern a tension between these various approaches to sentence analysis. which Apollonius spells out by referring to the notion of well-formedness (*katallelotes*).

The fact that Apollonius bases his understanding of a sentence on the Stoic notion of self-sufficiency emerges from the following passage, in which he explains the notion of well-formedness (*katallelotes*):

> No nominative constitutes a complete utterance without at least a verb – and more, if the verb is not intransitive. The sentence *houtos peripatei* ("that man is walking") is complete, but not *houtos blaptei* ("that man is injuring"), because you must still ask "whom <is he injuring>"? (*GG* II.2, 274.1–5, tr. Householder, 1981, p. 156)

In the above passage Apollonius uses a sentence expressing a minimal statement as his point of departure for what he calls the ordering of the parts of speech, adopting the Stoic principle of self-sufficiency. This ordering amounts to the question as to why the various parts of speech were 'invented', that is, what is their 'raison d'être',

and the answer is: they were invented for the purposes of forming a statement. Indeed, the ordering of the parts of speech is said to be "a reflection of a complete statement" (*mimema tou autotelous logou*) (*GG* II: 2.16.12–17.1).

Apollonius takes pains to prove that the noun and the verb are indispensable for sentence-construction, by deleting one constituent after the other from a clause which contains all the parts of speech except the conjunction and the preposition: 'the same (man) slipping today fell down'. He arrives at the simple clause, 'a man fell down' which is complete in itself. The deletion technique introduced by Apollonius is also used by Priscian to prove the indispensability of the noun and the verb for sentence-construction, and he uses the same example (*Inst.Gram*. XVII.13; *GL* III: 116.11–19). In the subsequent account I will discuss Priscian's Latin interpretation of Apollonian doctrine, in which Stoic philosophy is occasionally reinterpreted in terms of Aristotelian philosophy.

3.5 Noun-centered view

Having established that the noun and the verb are the principal parts of speech, because they can form a statement on their own, Priscian – in Apollonius's footsteps – proceeds to discuss their mutual ordering, placing the noun first:

> The noun necessarily precedes the verb because acting and being acted upon are properties of substance and name-giving pertains to substances, on which depends the property of the verb, namely action and undergoing of action.
>
> (*Inst.Gram*. XVII.14; *GL* III: 116.25–27, my translation)

I will now spell out the implications of the logical priority of the noun over the verb. Sentences are said about persons (and things) in the external world. The persons (and things) are substances expressed by means of nouns, whereas their actions and the undergoings of action are signified by verbs. Substance is the first of Aristotle's ontological categories, and it is the only category of the ten which can subsist on its own, whereas action is an accident of a substance, which by definition cannot subsist without a substance. The accidents are either said about substances, such as Socrates walking ("Socrates is walking") or they inhere in them, as whiteness in Socrates ("Socrates is white"). Since substances are logically and ontologically prior to the accidents, the noun is consequently prior to the verb. At the morphological level, the priority of the noun finds support in the fact that some of the morphological features of the verb, such as number and gender, would appear to depend on the noun in subject position.

3.6 Verb-centered view

Having established the noun and the verb as the principal parts of speech, Priscian hastens to state that the verb as joined to the first or second person pronouns also renders a complete meaning, e.g. "I walk" (*ambulo*) "you walk" (*ambulas*) (*Inst. Gram*. XVII.14; *GL* III: 116.21). He quotes these verbs as complete statements without an overtly expressed pronoun, as in both Greek and Latin the nominative is implicitly present in verbs. In Priscian's view, if the first and second person pronouns in the nominative case are overtly expressed, they mark contrast. Thus, a verb but not a noun alone can form a complete statement:

> The nominative is implicitly present in verbs, and it is definite in the first and second person, but indefinite in the third because of the unlimited number of possible referents, except in the case of such unique actions as *fulminat* ("it is lightening") and *tonat* ("it is thundering") (*Inst.Gram*. XVII.14; *GL* III: 116.27–117,3)

In the last sentence, Priscian mentions verbs signifying lightening and thundering which seem to contradict the view that the third person nominative implicit in the verb is indefinite. Indeed, it is definite because it is Jupiter that is responsible for this meteorological phenomenon (*Inst.Gram*. XVII.14; *GL* III: 117.2–4).

Under Priscian's assumptions, the pronoun was invented for the sake of the verb and therefore the pronoun must necessarily come after the verb in the ordering of the parts of speech (*Inst.Gram*. XVII.15; *GL* III: 117.10–11). It is argued that the pronoun must come after the verb because verbs preexisted, containing the indication of person in themselves. The verb with its implicit personal pronoun in the nominative case was unable to express contrast, which is the characteristic feature of these pronouns when they are overtly expressed. The personal pronouns are also defined as signifying pure substance without quality (*Inst.Gram*. XVII.16; *GL* III: 118.1–13.)

Only the ordering of the first three parts of speech is syntactically motivated. This can obviously be related to the fact that Stoic logic was only concerned with the syntax of the noun, the pronoun and the verb. The participle is ordered immediately after the principal parts because it derives its properties from both the noun and the verb (p. 119.12–28). The preposition derives its name from its position in front of the noun or the declinable parts in general (*prae* + *ponere* "to put in front of"). According to its syntactic position, the preposition thus precedes the declinable parts but not according to nature, which demands that it should occupy the sixth position among the parts (p. 120.18–121.2). As for the adverb, the name of this part of speech suggests a close association with the verb (*ad* + *verbum*) which is reflected in its syntactic position. It nevertheless occupies the fifth position in the ordering of

the parts (p. 121.3–9). The conjunction is the last part of speech because it simply serves to conjoin the parts of speech (p. 121.9–12).

Henceforth, I will only discuss the "raison d'être" of the three first parts of speech.

3.7 Transitivity

The Stoic sentence type in which a verb is construed with a nominative and an oblique case is discussed in terms of transitive action in ancient syntactic theory. The following passage shows that Priscian applied the theory of transitivity to the two Stoic predicate types. Referring to the Stoics, he states that the nominatives that can be presented alone together with the verb intransitively are absolute, as in *Ego Priscianus ambulo* 'I, Priscian, am walking'. Immediately afterwards, Priscian proceeds to identify the Stoic constructions which additionally include an oblique case as those involving transition of action from one person to another, such as *Cicero servat patriam* 'Cicero saves the fatherland' (*Inst.Gram*. XVIII.2; *GL* III: 211.19–27).

3.7.1 Genus verbi *(Diathesis)*

The concept of transitive action is closely associated with verbal voice (*diathesis*, *genus* or *significatio verbi*), whereby verbs are divided into active, passive, neuter, common and deponent. The point of departure for describing verbal voice is an active verb which is construed with two actants, one in the nominative and the other in the oblique case. It is this kind of expression that serves as the basis for the passive transformation. Priscian's work provides evidence for two interpretations of transitivity, which could be called narrow and broad respectively.

According to the narrow interpretation, any of the four oblique cases can be the second actant of the transitive process. At the beginning of his chapter on "the oblique cases associated with the different *genera verbi*" (*Quae genera vel significations verborum quibus casibus construuntur*), Priscian maintains that all active verbs in Latin, which can be turned into the passive and show transition towards human beings, are no doubt joined to the accusative case, as in *oro te* 'I ask you' and *oror a te* 'I am asked by you' (*Inst.Gram*. XVIII.127–128; *GL* III: 267.12–19.27). It is not surprising that all active verbs which involve transition are associated with the accusative case by the Romans, when even the Greeks maintain the same construction (*Inst.Gram*. XVIII.156–157; *GL* III: 278,7–9). In yet another passage Priscian states that most active verbs are joined to the accusative (*Inst.Gram*. II.18–21; *GL* II: 54.20–56.27, XVIII, 22, 388, 15ff).

According to the broad interpretation, the transitive verb can be construed with any of the oblique cases, such as *noceo tibi* "I harm you". These transitive verbs can undergo the passive transformation (*Inst.Gram*. II.18–21; *GL* II: 54.20–56.27, 374,13–23, XVIII,137,271,11–16), but Priscian is in fact hesitant about this; elsewhere he states that such verbs do not have the passive *usu deficiente* ('in the absence of usage', *Inst.Gram*. III: XVIII.137–138; *GL* 271,14–16). However, such verbs are said to be altogether few and perhaps ought to be counted among *acquisitiva* or *aequiperantia* rather than active transitive (*Inst.Gram.* XVIII.139; *GL* III: 271.29–272.8, XVIII.130, *GL* III: 268.20–21; *Inst.Gram.* XVIII.139; *GL* III: 271.29–272.8). These facts are awkward as it appears that in Classical Latin only the verbs governing the accusative can actually form the full passive, whereas the verbs requiring other oblique cases have an impersonal passive, that is, only in the third person singular (e.g. *nocetur tibi* 'you are harmed').

Intransitive verbs, such as 'to dine', 'to run', 'to walk', and 'to live', belong to the neuter *genus*, and are defined negatively, as having none of the above characteristics: they do not require oblique cases as second actants, nor is their action directed towards human beings (*in homines*). They have either of the two possible significations of the verb – action or the undergoing of action. When the neuter verbs do appear with a patient noun, as in *vivo vitam* 'I live a life', an inanimate rather than human patient is involved which lacks speech, and hence these verbs do not allow first person singular passive ending in *-or* (*Inst.Gram.* VIII.10; *GL* II: 375.8–19). When they are used in the passive voice, an inanimate referent is at issue, as in *aratur terra* 'the land is ploughed' and *curritur spatium* 'the distance is run'. When these verbs do occur in the first person, the figurative expression of personification is involved (*aror* 'I am ploughed', *curror* 'I am run') (*Inst.Gram.* VIII.10; *GL* II: 375.20–376.10). Only a fleeting mention of the *appositio* is made (*percurrit homo excelsus* 'an excellent man is running'), being identified as an intransitive construction (*Inst.Gram.* XIIII.14–15; *GL* II: 32.22). *Appositio* is generally discussed as a figure of speech rather than a grammatical construction in ancient grammar.

3.7.2 *A third actant?*

It is worth asking if Priscian's theory recognized a third actant for a verb, such as for instance an indirect object. This area remains obscure. In the following sentence, the dative *Euryalo* is a typical example of what is regarded as an indirect object in traditional grammar, but it is treated by Priscian as an example of a transitive verb which is construed with the dative as the second actant: *Aeneas praemia dat Euryalo* 'Aeneas gives presents to Euryalos' (*Inst.Gram.* XIII.9; *GL* II: 212.28). Elsewhere, however, it is stated that some verbs require a dative case in addition to the accusative, these verbs being *acquisitiva*. As regards the ablative, Priscian maintains that the ablative is the case of the passive voice and cannot be joined to active

verbs, unless another case – here the accusative *solem* and *filium* – intervenes, as in *video solem oculis* 'I see the sun with my eyes' and *prohibeo filium turpitudine* 'I prevent my son from disgrace'. Similarly the accusative cannot be associated with passive verbs unless used figuratively, as in *frangitur pedem* 'he breaks his leg' and *pascuntur silvas* 'they find pasture from the woods' (Vergilius *Ecloga* 3, 314; *Inst. Gram.* VIII.9, *GL* II: 374.25–375.8). Although Priscian sporadically mentions constructions in which a verb requires two 'objects', this doctrine is not integrated into his framework of description, which focuses on verbal voice and on the sentence types established in Stoic logic.

3.7.3 *Mixed criteria*

Priscian's theory of transitivity is defined by means of mixed morphological, semantic and syntactic criteria. According to the morphological description, transitive verbs are described in terms of action proceeding from the nominative case to one of the oblique cases (*a nominativis actus proficiscentes ad obliquos*, *Inst.Gram.* XIII.23; *GL* III: 15.10), or in referential terms, as action proceeding from one person to another (*transitionem personae ad personam*); a subtype of the transitive process is the reflexive (Lat. reciprocal) construction when the first and the second actant are the same, as in *Phemius se docuit* 'Phemius taught himself' (*Inst.Gram.* VIII.10; *GL* III: 223.20–23, XVII.34, *GL* III: 15.14–16). It appears then that the nominative is the origin of action. Emphasis is however sometimes placed on the verb so that it is the verb that seems to "show transition" towards the person who undergoes the action:

> Truly active or 'direct' are called verbs ending in -o and forming a passive by adding the ending -r , […], which can transfer their action to a person and are joined with the genitive, dative or accusative case, e.g. 'abstineo irarum' "I refrain from anger", (…) 'impero tibi' "I command you", 'maledico tibi' "I curse you", 'invideo tibi' "I envy you", 'oro te' "I beg you", 'amo te' "I love you", 'accuso te' "I accuse you" (*Inst.Gram.* VIII.9; GL III: 374.13–21)

It is noteworthy that all the examples are in the first person singular and lack the overt subject pronoun. Given that in Priscian's theory the nominative is understood in the finite verb when not overtly expressed, we should interpret this passage as meaning that the action proceeds from the nominative implicit in the verb to the oblique (*Inst.Gram.* XIII.26; *GL* III: 17.22–23). This is shown by the following quotation: *et per sola quoque verba nominativus intellegitur et transit rursus ad obliquos, dedi tibi, honoravi te* 'a nominative is understood in verbs and it shows transference to the oblique cases, as in *(I) gave you*, *(I) honored you*' (*Inst.Gram.* XIII.23; *GL* III:15.12–14). In sum, the accurate view seems to be that action takes place *between* two referents in the real world and *in* both two referents. The verb

is a relational element of language which combines a nominative and an oblique case in a sentence, depicting an extra-linguistic situation in which two referents or persons are acting and undergoing an action. The nominative is either overtly expressed or implicit in the verb.

3.8 Concord and coreferentiality

Yet another essential way of describing the two basic sentence types is in terms of the concord of the inflecting parts of speech. Priscian's discussion on agreement and lack of agreement establishes the fundamental principle that agreement occurs in a construction when the constituents refer to the same referent (*persona*). In an intransitive sentence involving only one actant, the verb and the noun/pronoun agree in number and gender, and both parts of speech refer to the same referent. On the other hand, a transitive sentence exhibits a change of referent, and therefore the two case forms involved in this construction fail to show agreement:

> The parts of speech exhibit various inflectional patterns, some being inflected for case and number – e.g. the noun, the pronoun and the participle – others for number and person – e.g. verbs and pronouns – and yet others for tense, like the verb and participle […]. Therefore, in the process of sentence-construction, the inflecting classes of words must be joined to each other in matching agreement, so that the singular is joined to the singular and the plural to the plural, when the constituents pertain to the same referent intransitively, as in *ego Priscianus scribo intellegens*, and *nos oratores scribimus intellegentes*. Whenever transitive states of affairs are at issue, it is possible to use different numbers, e.g. *docemus discipulum* et *docemus discipulos* […] (*Inst.Gram.* XVII.153; *GL* III:182.26–183.12)

4. Syntactic theory in the High Middle Ages

Priscian's *Institutiones grammaticae*, poorly known during the first medieval centuries, began to circulate more widely from the late 8th century onwards, and its first 16 books, known as the *Priscian maior*, began to receive commentary. The last two books on syntax, the *Priscian minor*, only became widely known in the 12th century.[7] Until this time, the commentary on Priscian largely took the form of glossing, but we also know two short treatises on syntax from the 9th and 10th centuries, focusing on word order. One of the treatises also makes use of the subject-predicate division, adopting it from the fourth book, *De dialectica*, of Martianus Capella's

7. For the study of syntax in the 9th and 10th century, see Luhtala, 1993.

(fl. c. 410–420) *Nuptiae Philologiae et Mercurii*.[8] From the 12th century on, the simple sentence was regularly described in terms of the position of the elements before (*ante*) or after the verb (*post verbum*). The subject-predicate division established itself as a regular part of syntactic theory in the 12th century.[9]

The 10th century remains an obscure historical period; the records are few and the sources difficult to date. We are better informed about the developments from the mid-11th century on when Priscian's grammatical theory offered ingredients for a speculation on philosophical problems not only in grammar but also in logic. Traces of an interaction between grammar and philosophy can be seen in an anonymous commentary tradition on Priscian's *Institutiones grammaticae*, known as the *Glosulae* tradition.[10] This network of texts contains references to the teaching of William of Champeaux (c. 1070–1121), a famous philosopher, who taught at the cathedral school of Laon from 1095 to 1100 and after that in Paris c. 1100–1110, and Abelard, another brilliant scholar, who probably attended William's course on Priscian (Grondeux & Rosier-Catach, 2011a, pp. 146–147).[11] The *Glosa Victorina*, an anonymous commentary on the *Priscian minor* from the 12th century,[12] is intimately associated with the *Glosulae* texts (Fredborg, 2011, p. vi).[13] Independent treatises on syntax also began to appear.

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8. This anonymous treatise adopted the terms used by Martianus: *subiectivum* and *declarativum* (*De Nuptiis* 4, 393). In the 10th century these logical tools of analysis find a highly sophisticated application in a remarkably original treatise composed in St. Gall, the so called St. Gall Tractate (ed. Grotans & Porter, 1995), which also adopted the terms used by Martianus Capella (see Luhtala, 2000b, pp. 124–125 for details).

9. For the introduction of this distinction into grammar in the 12th century, see Rosier, 1994.

10. This network of texts consists of three sets of glosses: the *Glosule on the Priscian maior*, the *Glosule on the Priscian minor* and the *Notae Dunelmenses*, which makes use of the *Glosulae* treatises (see Grondeux & Rosier-Catach, 2011, p. 107). Paris, Bibliothèque Nationale, n.a.l. 1623, Chartres, Bibliothèque Municipale, 209, Köln, Dombibliothek, B. 201, Metz, Bibliothèque Municipale, 1224. Brussels, B Royale, 3920, Vatican, Vat. lat. 1486 (Hunt, 1941–1943; Gibson, 1979; Fredborg, 1977, 1979).

11. Other names referred to in these commentaries are Anselm (possibly of Laon or of Canterbury), Lanfranc (probably Lanfranc of Bec) is also mentioned in the two commentaries

12. It is preserved in one manuscript, Paris, Bibliothèque de l'Arsenal 910, f. 133ra-140vb (s. xii), edited by Fredborg (2011). This manuscript belonged to St. Victor in the 12th century.

13. It is related to the so-called *Guido commentary on Priscian minor*, preserved in ms. London, British Library, Burney, 238, f. 3–11, 30–35,12, ms. Orléans, Bibliothèque Municipale, 90, p. 359–371 [359–388], and ms London, British Library, Harley 2713. Other commentaries on the *Priscian minor* from the 12th century include *Grammatica Porretana* (Fredborg & Kneepkens 1988); and the anonymous fragmentary gloss *Promisimus* in Fredborg 1999.

I will now present a specimen of medieval syntactic doctrine as presented in the *De Grammatica* (c. 1120) of Hugh of St Victor (1096–1141). To my knowlegde, it is the earliest treatise incorporating a section on syntax into the structure of medieval pedagogical grammar.

4.1 Hugh of St. Victor's *De grammatica*

Very little is known about the early life of Hugh of St. Victor, but we know that from 1115 until his death in 1141 he resided at the Abbey of St Victor in Paris, advancing to become the head of the school. By now the logical division of subject (*suppositum*) and predicate (*appositum*) had been integrated into theoretical grammar. Hugh's syntactic theory was updated with a number of medieval innovations, but the subject-predicate (*suppositum – appositum*) distinction is absent from it. By the end of the 12th century this division was also incorporated into school grammar, as is attested by the Donatus commentary of Ralph of Beauvais and the two popular verse grammars.

4.1.1 *Well-formed and perfect construction*

In the footsteps of Priscian, Hugh takes the notion of simple sentence as the point of departure for his syntactic theory, exploiting the key notions of Priscian's theory, concord, government, and transitivity. A number of new developments are involved in Hugh's interpretation of Priscian's doctrine. Firstly, prominence is assigned to the notion of construction, and rather than opening his syntactic section by defining a sentence (*oratio*), Hugh introduces *constructio*: *Constructio est dictionum congrua in oratione ordinatio* "Construction is a well-formed ordering of words in a sentence" (*De grammatica* 106.917). In fact, he turns Priscian's definition of a sentence into the description of a construction by omitting the phrase *perfectam sententiam significans* "signifying a complete meaning". The focus in the study of syntax has indeed shifted from a complete sentence to the various constructions of which it is formed. This modified definition is later used, for instance, by Peter Helias and Martin of Dacia.

Hugh then divides syntax into three types: proper syntax (*proprietatis sui*), which is based on concord/congruence and takes the form of rules; figurative syntax (*secundum proprietatem*), consisting of tropes and figures; and improper syntax (*contra proprietatem*), dealing with grammatical errors, barbarisms and solecisms (106.917–928). Proper syntax is Priscianic, whereas the other two types are based on the contents of the third part of *Ars maior*, *vitia virtutesque orationis*. Priscian had made sporadic use of figurative constructions in his theory of syntax, and a further step is taken here (or in the works of Hugh's medieval predecessors) to assign

figurative usage a place of its own in the theory of syntax. A division of syntax into regular and figurative occurs somewhat regularly in grammars until the end of the Middle Ages and beyond (Colombat, this volume, Chapter 2).

Hugh's account of the simple sentence occurs in the context of a discussion on the ordering of parts of speech. It is here that he introduces the idea of a perfect construction (*constructio perfecta*), which is a minimal statement consisting of a noun and a verb. These two parts of speech are given primacy because they can make perfect sense without the other parts of speech; the remaining parts cannot produce perfect meaning (*sensus perfectus*) unless they are associated with the principal parts. The pronoun can also make up a sentence together with the verb, but the rest of the parts can only modify or determine (*determinant*) the other parts (106.929–939). *Determinare* is a novel term, which assumes a specific meaning in medieval grammar (see Peter Helias). The noun is prior to the verb and its guide (*dux*), because the noun signifies the person to which the action determined by the verb pertains.

So far Hugh's theory is reminiscent of Priscian's noun-centered view of sentence-construction. Hugh proceeds to point out that the verb appears to be the primary part in a sentence involving the first and second person pronouns, because there is no need for a noun (*nomen* here meaning the subject rather than a noun), but all the same the person (expressed by the pronouns implicit in the verb) is prior to the action expressed by the verb (106.939–943). An additional device for describing a sentence in Hugh's framework was the notion of a logical or natural order which had been incorporated into syntactic analysis in the early Middle Ages.

4.1.2 *Transitivity*

Hugh's interpretation of Priscian's theory of transitivity[14] involves important modifications. He describes a sentence with two actants, such as *Socrates percutit Platonem,* as consisting of two constructions, *intransitio* (*Socrates percutit*) and *transitio* (*percutit Platonem*) (*De grammatica* 106. 944–107.962). Indeed, he announces in an authoritative manner that "every construction is completed by means of *transitio* and *intransitio*". The first is the *intransitio* between the noun in the nominative case and the verb, and the second is the *transitio* between the verb and the oblique noun. As in the definition of construction, the emphasis has moved from the simple sentence to its constituent parts.

Another shift in the application of these terms can be seen in the fact that transitivity now also applies to noun phrases, which do not involve a verb at all. Thus, *intransitio* takes place between two or more nominative cases (*Scipio Africanus*)

14. For the concept of transitivity in the Middle Ages, see also Rosier-Catach, 1984 and Kneepkens, 1990.

or between oblique cases (*Scipionem Africanum*), or between a verb and a nominative (*Scipio vicit*); in each of them both constituents point to the same referent. Transition takes place between a verb and an oblique case (*vici Hannibalem*), or between a nominative and an oblique case (*vincens Hannibalem*), or between two oblique cases (*parentem Hannibali*), whereby the two constituents point to two different referents (107.973–108.989).

Intransitio is also involved in impersonal verbs, *paenitet me* 'I regret' *statur a me* 'I sit', transition in *poenitet me illius* 'I feel sorry for him', *miseret me tui* 'I feel pity for you' a reflexive construction occurs either in impersonal verbs, as in *miseret me mei* 'I feel pity for myself', or in personal verbs, as in *video me* 'I see myself', *accuso me* 'I accuse myself' (108.189–992). To define transitivity in terms of the coreferentiality of the constituents or its absence is a feature that goes back to Priscian's theory. However, Priscian's view that *intransitio* involves agreement is absent from Hugh's framework.

Hugh concludes his section on syntax by addressing the various relations of government that verbs have with oblique cases, listing them by their semantic or syntactic force. A somewhat similar account, based on Priscian's second book on syntax, can also be found in Peter Helias's *Summa*, and several other medieval works. Therefore I will discuss them only once, as they are presented in Peter's popular *Summa*.

4.2 The *Summa super Priscianum* of Peter Helias

Many new developments in syntactic description are incorporated into Peter Helias's *Summa super Priscianum* (c. 1140), a systematic textbook studied at advanced levels which became highly popular throughout Europe up until the early 15th century. Peter was active as a teacher in Paris and Poitiers from c. 1135 to c. 1160, specializing in grammar and rhetoric, after having been a student of Thierry of Chartres in Paris in the 1130's. Peter's *Summa* depends heavily on the earlier version of William of Conches's commentary on the Priscian Major (1125–30) (see, for instance, Fredborg, 1988, pp. 179, 181–2, 184, and Fredborg, 2011). He taught grammar at Chartres in the second quarter of the 12th century, and by the mid-12th century, grammar had interacted with dialectic for several centuries, and the domains of the two disciplines were felt to have been blurred. Peter made an effort to work out a new division of labour between grammar and logic.

4.2.1 Causae inventionis

Medieval grammarians asked similar questions as their antique predecessors concerning the ultimate nature and function of language: Why are there eight parts

of speech and what are they? What is there in the essential nature of language that causes words to fall into eight distinct classes? In what ways is the structure of language related to the structure of cognition and of the external world? What properties of words enable them to be put together to form syntactic structures?

While adhering closely to Priscian's views of the ordering and invention of the parts of speech, Peter clarifies Priscian's theory by assigning each part of speech its *causa inventionis* 'cause of invention', updating it with contemporary developments in logical semantics. As a result, Peter relates the *causae inventionis* of the noun and the verb to their functions as the subject (*suppositum*) and predicate (*appositum*) in a perfect sentence. In every perfect sentence, Peter explains, something is said of something. Nouns were invented to specify what the sentence is about, whereas the verb was invented to specify that which is said about the noun (*Summa* 189.101–104). From Priscian, Peter had adopted the idea that the parts of speech were invented for the significative function of language and with a view to their roles in sentence-construction. Indeed, according to Peter, the common *causa inventionis* of all the parts of speech was to enable people to express their will.[15]

4.2.2 Modi significandi

Another new term regularly employed in medieval theories of the parts of speech was *modus significandi* 'the mode of signifying'. According to Priscian, the *proprium* of the noun is to signify substance with quality, and that of the verb to signify action and undergoing of action, and it was by meaning that the parts of speech had been distinguished from each other in ancient syntactic theory. In medieval theory, a shift had taken place from *what* the parts of speech signify to *how* they signify, and signifying substance with quality came to be regarded as the *modus significandi* "mode of signifying" of the noun.[16] It was spelt out as follows: all nouns do not signify substance with quality, but they all signify *modo substantiae* "in the manner of substance", that is, they signify something without tense and with case inflection commonly or properly or as if commonly or properly.[17]

According to Priscian, verbs were first invented in order to signify actions and undergoings-of-action; that is, they were invented to signify what a substance

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15. "Illud quoque sciendum est, quod communis causa inventionis omnium dictionum est ut haberet homo quomodo propriam voluntatem alteri manifestaret" (*Summa* 177.51–53).

16. "[…] hec pars orationis distinguitur ab aliis secundum suum modum significandi. Hic enim modus significandi, qui est significare substantiam cum qualitate, facit quod nomen sit et dicatur una pars orationis" (*Summa* 181.39–182.43).

17. "Omne igitur nomen significat substantiam et qualitatem, non quod omne nomen significet id quod est substantia, sed quia omne nomen vel id quod est substantia significat vel aliquid modo substantie in natura communi vel propria" (*Summa* 196.36–39).

does or undergoes, as Peter explains. They were also invented in order to signify that which is said of another. Subsequently, people decided to extend the usage as they wanted to talk about things other than how substances act or are acted upon, and therefore verbs were invented which signify qualities and other accidents of substances.[18] These new verbs followed the imposition of the first verbs so that the verbs signify quality in the manner of action and undergoing of action, that is, with tense, having verbal endings, and signifying that which is said about another (*Summa* 195.25–35).

Peter raises several objections to the traditional semantics of the verb, the most important concerning the substantive verb *esse* 'to be', which appears to signify neither action nor undergoing of action. This topic was of particular interest for contemporary philosophers and grammarians (197–199). In brief, the verb *esse* does not signify action but mere substance, but in the manner of the verb, so that it is said of another, with tense and verbal endings. And since substance unites all other things – for it unites and joins together the accidents – therefore *sum* is a copula, because it signifies a substance which joins the others into it (201.43–49).

4.2.3 *Sentence (*oratio*) and construction (*constructio*)*

In his section on syntax, Peter spells out basic Priscianic doctrine and organizes it into a more manageable form. He starts his exposition by reporting the views of the "ancients", [that is, of the previous generations of grammarians], about the terms *oratio* and *constructio*, of which only the former appears in Priscian's definition of the sentence: *Oratio est congrua dictionum ordinatio perfectam sententiam significans*. Many people think, Peter explains, that *oratio* is intended only to describe a perfect sentence (*oratio perfecta*), such as *homo currit* 'A man is running' whereas others hold a wider interpretation of this term. They explain that the sentence *lego* '(I) am reading' is *oratio* according to meaning but not quantity, that is, it has an implicit rather than explicit subject pronoun. By contrast, *homo currit* 'a man is running' is *oratio* according to both meaning and quantity, and is called *oratio constructa*, that is, it includes both an overt subject noun and a predicate. They also say that any combination of words, such as *in domo* 'in the house' cannot be called *oratio*, but only that which involves some kind of inherence, that is a combination of things, such as *homo albus* 'a white man'. It signifies a combination of substance and accidents and is therefore called an imperfect *oratio* (*Summa* 177.38–48). Peter concludes this discussion by saying that Priscian's definition is generic, pertaining

18. "Similiter omne verbum significat actionem vel passionem, non quod omne verbum significet id quod est actio vel passio, sed quia omne verbum vel id quod est actio vel passio significat vel aliquid aliud modo actionis vel passionis, id est, cum tempore in terminatione verbali et ut de altero dicitur" (*Summa* 196,39–42).

to a perfect sentence such as *homo currit*, but since *oratio* is a genus, it can be divided into species, which include, for instance, an imperfect *oratio* (178.66–179.84).

4.2.4 *Government (*regimen*)*

A systematic theory of government was developed by the grammarians of the 12th century (Kneepkens, 1978, p. 122), largely but not completely replacing Priscian's expressions, whereby a word is said to 'demand' (*exigit*) or 'need' (*requirit*) another word. Peter starts by noting a terminological difference. According to Priscian, a word demands (*exigit*) another word to form a construction, whereas Peter's contemporaries tend to say that a word governs another; the term government (*regimen*) has to be understood metaphorically here, as Peter points out (cf. Kneepkens, 1978, 123). Peter uses the terms *exigit* and *regit* synonymously throughout his exposition. Some of his contemporaries define government as taking place when a word causes another word to take on (*assumit*) a particular case form in a construction in order to determine its own meaning (*ad determinationem sue significationis*).[19] This definition is at once morphological and semantic. Thus, the verb is said to govern the nominative because every verb needs to be associated with a nominative case in a construction in order to determine its own meaning. When I say, for instance, *currit* "is running", the action of running cannot exist unless there is some entity in which the action of running inheres. Therefore the signification of that verb cannot be determined unless it is made explicit of whom one is speaking. According to this verb-centered view, the verb governs a nominative case in order to determine its meaning, e.g. 'Socrates is running', and the nominative is said to be governed by the verb (*Summa* 1049.86–1050,101). Peter's position differed from William of Conches's in that, according to William, the nominative enters into the construction in its own right (Kneepkens, 1987, p. 132). He was probably inspired by Priscian's statement that the nominative case is absolute (*Inst.Gram.* XVIII.2; *GL* III: 210.11–13).

Peter agrees with his contemporaries in that a verb governs the nominative in a nuclear clause but not in order to determine its signification but in order to complete its construction. He draws a terminological distinction between morphological government and the semantic relation of determination; the latter is present in a construction such as *homo albus* 'a white man'; here *homo* does not govern *albus*, but rather determines or modifies its meaning.[20] *Determinatio* is a concept based on Boethius's *De divisione* where it is explained that its function is to remove

19. "Dictionem regere dictionem non est aliud quam unam dictionem assumere aliam in constructione ad determinationem sue significationis" (*Summa* 1050.93–95).

20. "Nimis vaga esset locutio, ideoque ad determinationem significationis necesse est addere ipsi substantivo adiectivum".

the doubt that exists in the mind of the hearer as to the meaning of a word (*PL* 64 889A-B; Kneepkens, 1978, p. 127). According to a medieval definition, it means *dictionem modificare et quodam modo restringere* 'to modify a word or somehow to restrict it' (Robert Blund, quoted by Kneepkens, 1987, p. 139).

Peter prefers to define government as follows: a word governs another word by drawing it into a construction with itself in order to complete the construction rather than in order to determine its signification.[21] When I say *lego* 'I am reading', I indicate, firstly, that an act of reading inheres in someone and, secondly, that I am speaking of someone. Therefore the verb draws with it the nominative into a construction (which is implicit in *lego*), because otherwise there cannot be a perfect construction (*Summa* 1051,24–32), for the noun signifies its meaning (*significat rem suam*) by being the subject of something.[22] Both interpretations are verb-centered: it is the verb that draws the noun into a construction.

As regards the second actant, Peter explains that the verb governs oblique cases in order to perfect the construction. He notices that *legit* '(he) is reading' is already perfect, without an object, but means that one practices reading (*exercet lectionem*).

4.2.4.1 *Government of nouns*

In noun phrases, the nominative governs the oblique cases, and the constructions are transitive, as they involve or appear to involve two "persons" or "referents". Each noun phrase is also given a semantic description. For instance, in *Filius Herculis* 'the son of Hercules', the genitive is governed by the nominative; the nominative signifies possession and the genitive denotes the possessor (*Summa* 1018.77–80, 1017.53–60). Interestingly, Peter resorts to the presence of implicit elements here. In accordance with Priscian, he maintains that when the nominative requires (*exigit*) the genitive case, it is necessary to understand an implicit substantive verb or its participle in the construction, as in *Filius Herculis* (*sum* or *ens*) '(I am) the son of Hercules' (1018.77–80, 1025.44–50).

In the noun phrase *magne virtutis vir* 'a very virtuous man', which we today describe as the genitive of quality, the genitive is governed by the nominative *vir*, because the nominative signifying possessor demands a genitive signifying that which inheres in it for the sake of praise or blame rather than possession (*Summa* 1021, 36–47). That all such nominatives signify possession can be shown by resolving

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21. "Dictionem regere aliam dictionem nichil aliud est quam trahere secum eam in constructione ad constructionis perfectionem, non autem dico ad significationis determinationem" (*Summa* 1051.24–26).

22. "Nomen enim significat rem suam supponendo eam alicui, et ita non significat rem, ut supponitur rei significate per verbum, quamvis significet rem de qua dicitur res verbi, sed non ad hoc significat rem eam" (*Summa* 1052.54–56).

(*resolvere*) these expressions into the verb 'to have' [and an object]: *vir magne virtutis* amounts to *vir habens* or *possidens magnam virtutem* (1021.52–1022.56). Priscian also frequently resorted to paraphrases in describing such constructions (e.g. *Inst.Gram*. XVIII.13; *GL* III: 214.5–12). In Latin, this construction can also have the ablative instead of the genitive: *vir magna virtute* (59).

4.2.4.2 *Government of verbs*

Peter starts his account of the construction of the verb with different cases by drawing a distinction between two ways in which the verb can govern an oblique case, namely according to verbal voice (*genus verbi*) and according to the nature of the verb (*natura verbi*), which is its signification (*Summa* 1042.10–12). He first introduces the constructions as based on verbal voice, starting with the active: "Every active verb which can be turned into the passive and signifies action directed towards human beings demands the accusative case, as in *oro te*" (1042.10–18). Similarly all neuter or deponent verbs signifying transitive action demand the accusative case, such as *ardeo uxorem* 'I love my wife passionately', *loquor fabulam* 'I tell a tale'. Some neuter verbs signifying transitive action, however, demand the dative case, such as *noceo tibi* 'I harm you', *invideo tibi* 'I envy you', *benedico tibi* 'I bless you' (1042.19–30). Passive verbs and verbs of passive signification take the ablative together with the preposition or the dative, as in *doceor a te*, *doceor tibi* 'I am taught by you'. Similarly neuter verbs with a passive signification require the ablative case with a preposition or dative used instead of the ablative, as in *veneo tibi*, *exulo a te* and *exulo tibi* 'I am banished by you' (1043.34–47).

The nature of a word is its signification and the signification of a word can sometime depend on a thing signified by any of the oblique cases. For instance, *dignor te* 'I value you' amounts to saying *iudico te dignum*, 'I regard you as worthy', but in each case the meaning of the expression is incomplete. Therefore a question arises, namely "worthy of what?" Thus, the meaning of *dignor* depends on a thing signified by an ablative case by the force of its nature, as in *dignor te illa re*. This emerges from the fact that the ablative case is also demanded by the adverb *digne*, and the adjective *dignus*, as in *dignus est morte* 'he is worthy of death' (1045.82–95). "Signification" here comes close to the idea of lexical meaning.

4.2.5 *Transitivity*

Peter starts his discussion on transitivity by presenting Priscian's theory of transitivity in its authentic form. An intransitive construction is at issue in *Priscianus legit* 'Priscian is reading', in which there is no transition from one person to another; both *Priscianus* and *legit* pertain to the same person. A transitive construction involving transference of action is present in *Socrates legit Virgilium* 'Socrates reads Vergil', where an action inhering in Socrates is transferred to Vergil. A transference

of *passio* is involved in a passive sentence *Socrates videtur a Platone* 'Socrates is seen by Plato' (*Summa* 898.24–34).

Peter then turns to discussing constructions, which were not part of Priscian's theory of transitivity, such as *Socrates est pater Platonis* 'Socrates is Plato's father', in which *pater Platonis* is a transitive construction, because it involves a change of person and a change of case form, although there is no transition of action between the two persons (898.35–39). Yet another novel type of transitive construction is then introduced, namely one involving prepositional phrases, as in *Socrates sedet ad portam* 'Socrates is sitting at the gate'. This sentence does not exhibit a proper transition because 'Socrates is sitting' is an intransitive construction, but is nevertheless somehow (*quodammodo*) transitive because *sedet* is associated with an oblique case associated with a preposition (*ad portam* 'at the gate'). It somehow involves a transition from one person to another, because *porta* is a person according to a wide interpretation of this term. Peter concludes, however, that this sentence is improperly (*inproprie*) called transitive (898.39–48).

Finally, the question is raised, whether the construction *Socrates legit Virgilium* 'Socrates is reading Vergil' is intransitive or transitive. It appears, on the one hand, that it is intransitive, as Peter explains, because *Socrates* is joined to *legit* intransitively. On the other hand, *legit Virgilium* is a transitive construction, which is why the 'ancients' (*antiqui*) thought that this is a mixed construction, partly intransitive and partly transitive. But they were mistaken about the term *constructio*, Peter argues, because construction can be understood in different ways. Firstly, construction is understood passively, when we say that *Socrates legit* is an intransitive construction and that *legit Platonem* is a transitive construction; and secondly, when we say that *Socrates legit Platonem* is a transitive construction, we are talking about a construction which is a perfect sentence (*oratio constructa*) (900.73–90).

In his *Summa*, Peter presents and discusses recent developments in Priscian's theory of transitivity, drawing careful distinctions between proper and improper applications of terms and introducing new terminology for the novel distinctions, for instance that between intransitive and transitive constructions in a passive sense (*passive*) and active sense (*active*). To what extent he is reporting the views of his predecessors – William of Conches and the anonymous Priscian commentaries – is not our concern here.

5. The speculative grammar of the late Middle Ages

In the late Middle Ages, the interaction between grammar and philosophy culminated in the speculative grammars of the *Modistae*, whereby Priscian's grammatical doctrine came to be adapted to the tenets of an Aristotelian science (*scientia*).

Modism arose out of speculative grammar in the mid-13th century, as the concept of *modus significandi* assumed an increasingly prominent role in the analysis of language, including syntactic theory. The period until about 1260 used to be called an initial 'pre-modistic' period, and the first generation of *Modistae* proper was taken to begin with Martin of Dacia in the 1270s. However, our knowledge of the development of the interaction between grammar and philosophy before the late 1270s has improved radically over the last couple of decades, and it is now customary to identify Robert Kilwardby and Roger Bacon, two English masters teaching in the faculty of arts in Paris in the 1240s, as the representatives of the first period of speculative grammar (Rosier-Catach, 2010, p. 203).[23] In this article, however, I will focus on the works of two Danish scholars, Martin and Boethius of Dacia. Martin's *Modi significandi* became a standard textbook immediately, being replaced by the *Novi modi significandi* of Thomas of Erfurt, whose theory will conclude my overview of syntactic relations in medieval speculative grammar.

The scientific study of language proceeded from an identification and classification of its component parts, which were the traditional parts of speech. Modistic theory primarily focused on what is essential and universal in language and supposedly the same for all, whereas such arbitrary, language-specific morphological features as gender, tense and number, played a minor role (see, for instance, Covington, 1984, p. 26; Rosier-Catach, 2010, p. 205). That Modistic theory was ultimately syntactically oriented emerges from the following definition by Boethius of Dacia:

> A scientific theory of grammar teaches the congruous combination of words through their modes of signifying as expressed in speech via *voces*; these combinations reflect the ordering of intelligibles in the intellect through their modes of understanding (*modi intelligendi*) (*Quaestio* 6, p. 37)

This definition spells out the Modistic tenet to ground the study of grammar on epistemology, psychology, and ontology.

5.1 Modes of signifying

The Modists based their theory on a sophisticated division between essential meaning (*significatum*) and grammatical meaning, and correspondingly between essential and accidental modes of signifying. The latter include the traditional

23. Other important early representatives of speculative grammar include Magister Jordanus (c. 1230/50, pseudo-Kilwardby (c. 1250), Goswin of Marbais (c. 1260) and Simon Dacus Domifex (c. 1260), Simon Dacus, Iohannes Dacus (1280), Michel of Marbais, Siger de Courtrai and Radulphus Brito. For editions, see the Appendix in Rosier-Catach, 2010, p. 215–216. See also the monographs on speculative grammar (Rosier-Catach, 1983; Marmo, 1994; Kelly, 2002).

accidence of words, such as gender, number, case, person, voice, mood, tense, and the derivational categories of words, and came to be known as *consignificata* 'the consignifying elements'[24] (Covington, 1984, p. 29). On the basis of the modes of signifying, it was possible to draw a clear distinction between, for instance, *currere* 'to run', a verb which signifies running as an act in progress (*per modum fluxus et fieri*) and *cursus* 'running', a noun signifying an enduring entity (*per modum habitus et permanentiae*); these terms were adopted from Aristotle's *Physics*.

In order to become a meaningful word (*dictio*), a *uox* must have undergone not only an imposition of the function of signifying something, but even another imposition, whereby it receives its mode(s) of signifying, which places it in one of the grammatical categories of a particular language. A part of speech, then, comprises a certain *vox*, a *significatum* and a group of modes of signifying. Its specific essential mode of signifying – like the *causa inventionis* of the earlier centuries – distinguishes it from all the other parts of speech. Some of the modes of signifying were respective – that is, they can be principles (*principium*) of construction with the other parts – whereas the absolute modes cannot (p. 99).

The *significatum* of a noun consists of several elements. The noun signifies its object through the mode of stasis, or the mode of permanence – that is, the *significatum* of a noun in itself (*per se*) is substance (Boethius of Dacia, *Quaestiones*, pp. 105–107). The specific essential mode of signifying of the substantival noun is the basis of construction, that is, it can *per se* be construed in the function of a subject (*suppositum*) (*Quaestio* 37, p. 76). Case (*casus*) is a principle of construction because it designates a property in its object through which one constructible determines the dependence of another (p. 149). The nominative is the mode which designates its object as something about which something else is predicable. The accusative designates its object in the capacity of the *terminus* of an act.

The essential mode of signifying of the verb is the mode of becoming. The mode of signifying its object through the mode of predicability of another is the essential specific mode of signifying of the verb, which is the same as the mode of signifying through the mode of separation (*Quaestio* 78. p. 155–156). Verbal voice is discussed as an accidental mode of signifying of the verb: an active verb requires extrinsic matter to which it passes over, as for example in 'I strike Socrates', and the active genus is derived from a property of passing over into another. And because the property of passing over into another requires something to be constituted in the capacity of a *terminus* with respect to which (that act in question) passes over, the active genus, which is derived from the property of passing over into another, is the basis of construing a verb with the accusative *post se* (*Quaestio* 79, p. 158).

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24. This term, meaning to "signify along with the lexical *significata*", is indebted not only to Priscian but also to Aristotle, as interpreted and transmitted by Boethius.

5.2 Transitivity

In Modistic theory, the sentence is analysed into a set of constructions, each of which consists of two words. The primary distinction between constructions is that between transitive or intransitive, both of which are further subdivided into *transitio personarum* and *transitio actuum* (cf. Hugh of St. Victor). The medieval analysis, which split the transitive sentence into two constructions, one intransitive and the other transitive, was not completely satisfactory for the Modists. It was pointed out by Martin of Dacia, for example, that it seemed to ignore the fact that the action of the verb is at least as inherent in the object as in the subject (*Modi significandi*, pp. 89–90). Therefore, it is not quite clear, which of the two constructions is the transitive one, *Socrates percutit* or *percutit Platonem* in the sentence *Socrates percutit Platonem* ('Socrates is beating Plato'). The solution to this problem adopted by Martin and several others was to analyse transitive and intransitive constructions in terms of two additional grammatical relations, *primum – secundum* and *dependens – terminans.*

5.3 New dependency relations

In the fully developed Modistic theory, each construction was analysed in terms of two grammatical relations, that of *primum* to *secundum* and that of *dependens* to *terminans*. The first of them, the *primum – secundum* relation, lends itself to being compared with modern theories of dependency: the *secundum* presupposes the presence of the *primum*. It also comes close to the modern concepts of head and modifier, the *primum* being the head and the *secundum* the modifier, but is not quite the same. As regards the relation *dependens* to *terminans*, it practically replaced the theory of *regimen* developed in the previous centuries (Covington, 1984, p. 47–48). Therefore, few Modistic scholars define or discuss the concept of *regimen*, which however everybody was obviously familiar with from their school grammar.

5.3.1 Dependens – terminans

Thomas of Erfurt is one of the few scholars who define the concept of *dependens* and *terminans*. He starts by drawing a parallel with the Aristotelian distinctions between matter and form as well as between actual and potential (*Grammatica speculativa*, p. 280):

> Just as a composite entity in nature consists of matter and form, of which one is actual and the other is potential, in the same way construction in language comes about through the exerting and fulfilling of dependencies. The dependent constructible is the one that by virtue of some mode of signifying seeks or requires a terminus to fulfill its dependency; the terminant is the constructible that by virtue of some mode of signifying gives or supplies that terminus.

The verb, which stands for a property or relation, depends on its subject and object to single out the entities that the property or relation pertains to; it is the verb (as *dependens*) that requires the subject and object to fulfil its dependency. Thus, *legit* is the *dependens* in both *Socrates legit*, which is an intransitive construction, and in *legit Vergilium*, which is a transitive construction. It is the noun – the referential item – that terminates the dependency of the verb in each case. So far the theory looks verb-centered and is in accordance with Peter Helias's theory of government, whereby the verb governs both the nominative and the oblique case but in different ways (p. 20).

In the following presentation of intransitive and transitive constructions (Covington, 1984, p. 59), which is based on Thomas of Erfurt, the arrows point from *dependens* to *terminans*.

Intransitive constructions:

[1]Socrates ← [2]legit	Socrates is reading
[2]a →[1]Socrate	from Socrates
[1]Socrates ← [2]albus	white Socrates
[1]currit ←[2]bene	runs well
[1]est ←[2]albus	is white
[1]Socrates ← [2]et →Plato	Socrates and Plato

Transitive constructions:

[1]legit →[2]Vergilium	reads Virgil
[1]filius →[2]Socratis	son of Socrates
[1]similis →[2]Socrati	similar to Socrates

Although the grammatical relation of *dependens/terminans* seems to build largely on the earlier theories of government, it is different in that it also comprises constructions that are not necessarily regarded as involving *regimen*. *Socrates albus*, for example, was a relation of determination according to Peter Helias.

5.3.2 Primum/secundum

As regards the *dependens/terminans* relation, the theory looks verb-centered. However, another grammatical relation is needed to save the noun-centered view. Martin arrives at the noun-centered view by maintaining that there is only one *primum constructibile* in the whole sentence – the subject and all the other words are *posteriora constructibilia* (the *primum* and the *secundum* are annotated onto the constructions in →5.3.1.)

> There are two kinds of dependent mode of signifying: either a mode of signification, by which something depends on the *primum constructibile* (or on something that ultimately depends on the *primum*), or a mode of signifying on the part of a *dependens* whereby there is a constructible that does not depend on the *primum* either mediately or immediately. The first of these two modes is the defining principle only of intransitive construction, and the second of transitive construction – immediately as in *homo albus* or *homo currit*, mediate as in *homo albus currit bene* – the dependencies are fulfilled by the *primum constructibile,* that is why we say that *homo albus currit bene* is intransitive as a whole. The mode whereby something depends on something other than the *primum*, while the dependency does not go back to the *primum* either mediately or immediately, and the mode whereby a dependency is terminated in something other than the *primum* – these are the modes that define a transitive construction. A construction can depend on the *primum* mediately, as in *homo currit bene*; here *bene* depends on *currit* as the thing that it modifies (*Modi significandi*, pp. 91–92)

5.4 Grammaticality and well-formedness

In fully-fledged Modistic theory grammaticality is achieved through three successive stages (*passiones sermonis*), the first of which is construction:

- *constructio*, the establishment of constructions between pairs of words;
- *congruitas*, the application of well-formedness criteria to the two-word linkages by means of the modes of signifying;
- *perfectio*, the final checking of the well-formedness conditions with a view to the formation of a complete sentence.

The following definition of construction is attributed to the Modistae: "Construction is the union of the constructibilia from their modes of signifying, caused to express a concept of the mind" (Robert Kilwardby & Roger Bacon, quoted by Rosier-Catach, 2010, p. 209).

Conditions of grammaticality or well-formedness regularly take the form of statements about the requirements imposed on the *terminans* by the *dependens*. This may be because this theory was built on earlier views on *regimen* and *exigentia*. This means that in a construction between a noun and an adjective, such as *homo albus*, the adjective *albus* is the *dependens* which is required to be joined to the noun. The fact that the adjective shows agreement with the noun is understood to mean that the adjective takes on the various morphological features of the noun that it modifies. This takes place so that the respective modes of signifying in the adjective exert a requirement that the corresponding modes of signifying in the noun be the same, as presented below:

Socrates	←	*albus*
modus per se stantis	←	modus adiacentis
masculine gender	←	masculine gender
nominative case	←	nominative case
singular number	←	singular number

This is the way in which concord or agreement is articulated in Modistic theory. The final phase, *perfectio* "completeness", involves only perfect statements, that is, sentences which consist of a subject and a predicate. Medieval grammarians generally adhered to the view that subjects and predicates are individual words. Thomas of Erfurt makes it explicit that "whatever is found in a complete sentence is either the subject, or the predicate, or something depending on one or the other, or a modifier of one of these three" (*Grammatica speculativa*, p. 292). A special case of perfection is a sentence in which the subject is an implicit definite pronoun, as in *lego* 'I read', which is classified as *perfectio secundum intellectum* 'completeness by virtue of understanding' (Covington, 1984, p. 70).

Finally, it is worth asking whether incompatible meanings are a source of ungrammaticality in medieval theories. Peter Helias thought that semantic anomalies interfere with correct constructions, but in the fully developed Modistic theory, incompatible meanings do not make a construction unacceptable. According to Thomas Erfurt, these anomalies belong to the province of logic rather than grammar.

6. Conclusions

Medieval grammarians described syntactic relations as linkages between two words. They thus share the approach of modern dependency grammarians, who treat grammatical relations as linking individual words and not phrases. Such linkages, for instance *homo albus* 'white man' and *percutit Platonem* 'hits Plato', do not enter into new grammatical relations as a unit, as in Modistic grammar there was no constituent structure.

Throughout Antiquity and the Middle Ages, the foundation of syntactic study was provided by a minimal statement, a practice that had its origin in Stoic logic. From the 12th century onwards, sentences were regularly analysed in terms of the subject-predicate distinction, adopted from Aristotelian logic. In their pursuit of the science of grammar, the speculative grammarians frequently found parallels and support for grammatical phenomena in Aristotle's *Physics* and *Metaphysics*, but the principal tools of syntactic analysis were offered by Priscian's *Institutiones grammaticae*: transitivity, concord and the theory of *exigentia*, from which the medieval theory of government developed.

There was a constant tension between a verb- and a noun-centered view of sentence construction in medieval theories. Is it the verb *currit* that draws the noun *Socrates* to the construction *Socrates currit*? Or is the noun *Socrates* the point of departure for construing the sentence? The Stoic theory was clearly verb-centered: it was the verb that drew both the nominative and the oblique case into a construction in order to make perfect sense. However, when the subject-predicate distinction was applied to sentence-construction, the subject was regarded as prior to the predicate. The noun-centered view was confirmed by the definition of the principal parts of speech in terms of Aristotelian categories, the noun signifying substance (and/with quality) and the verb the accidents. The noun was regarded as prior to the verb because a substance can subsist on its own whereas the verb signifies accidents which cannot exist without a substance. Moreover, according to Priscian, the nominative was an absolute case, the absolute being here the Latin equivalent to *autoteles* "self-sufficient". This passage was interpreted at least by William of Conches so that the nominative enters into a construction as an independent entity, not being governed by any other part.

The verb-centered position was the standard view in the discussions on government: both the nominative and the oblique are governed by the verb in a basic clause. The same result was given by the new grammatical relation established in the full Modistic theory, namely the *dependens – terminans*, which replaced the theory of government. The noun-centered position was rescued by establishing yet another grammatical relation, that between the *primum* and the *secundum*, which permitted all the constructions ultimately to go back to the subject, since – at least in Martin of Dacia's view – there is only one *primum constructibile* in the whole sentence, namely the subject. All other relations ultimately go back to the subject (see the diagram).

Among the tools of syntactic analysis offered by Priscian, concord and transitivity rely on extralinguistic entities – referents, which are generally human beings (*persona*), and concord is associated with coreferentiality. A nominative is joined intransitively to the verb in *Socrates currit*, and the two constituents show agreement because they point to the same referent. When a new referent is introduced, e.g. by *Platonem* in *Socrates percutit Platonem*, it is expressed by an oblique case which agrees neither with the verb nor the first actant, and the sentence is transitive. In Priscian's theory, the action and transition takes place between the two referents, and Priscian never splits the transitive clause into two constructions, one intransitive and the other transitive. The association between concord and coreferentiality seems to be lost in the full Modistic theory, but concord established itself as an important tool of description in the less theoretical grammars of the late Middle Ages, which often cast their doctrine in the form of rules of concord (*regule congruitatum*) (Colombat, this volume, Chapter 2).

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CHAPTER 2

The notion of dependency in Latin grammar in the Renaissance and the 17th century

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This article examines the links of dependency that are woven between words or phrases in Latin syntax according to Latin grammarians between 1500 and 1650. They establish a distinction between 'convenience' or 'concord' (agreement) and 'rectio' or 'regime' (government) depending on whether an element controls another element or not. In fact, even in the case of agreement, one element is mostly dependent on the other. We consider the following topics from the perspective of the concept of dependency: the definition and division of syntax; the rules of agreement and exceptions to them; the evolution of the treatment of verbal government; certain particular constructions in relation to the preposition, such as the locative and the ablative which are claimed to be absolute cases; the syntax of the relative pronoun; the syntax of the conjunction.

During the Renaissance and the Classical Age (17th century), Latin syntax is essentially organized around the notions of "concord" (agreement) and "rection" (government). In the former, two elements enter into egalitarian relations, such as the noun and the verb, the noun and the adjective, and so on. In the latter, one element exerts an action on another. The details are in fact more complicated, and the question is to determine at what level these relations can be established. This can be at the level of functional groups (e.g. subject/predicate, *suppositum*/*appositum*), of word classes (noun, verb, adjective, preposition, etc.), of functional markers (e.g. case markers). The fact that these levels are not always explicit and that grammarians have changed models makes the analysis complex and sometimes confusing for a modern linguist. In all cases, the elements can nonetheless be considered to be in a relationship of dependency or interdependency, which is not surprising in an inflectional language with many morphological markers like Latin.

We will consider the notion of dependency in relation to the general organization of syntax (→1), with the notions of agreement (or interdependence of two elements) and of government (dependency of an item to another). Firstly, the rules of agreement and the exceptions to them (→2) will be examined. Subsequently,

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the treatment of verbal rection (→3) and its evolution (→4) will receive in-depth discussion. Finally, the article deals, still from the point of view of the notion of dependency, with some particular constructions. These include the preposition in relation to the locative and the ablative, which are claimed to be absolute cases (→5.1); the syntax of the relative pronoun (→5.2); the syntax of the conjunction (can a conjunction govern? →5.3).

1. The definition and division of syntax in the first humanist Latin grammar

Humanistic grammarians give syntax or constructions a definition very close to the Priscianic definition of the sentence (see Luhtala's contribution in this book, Chapter 1): *Oratio est ordinatio dictionum congrua, sententiam perfectam demonstrans.* "The sentence is a coherent word combination which expresses a complete meaning" (GL 2, 453.28–29). For some medieval grammarians, this definition is slightly modified to the following: *ordinatio dictionum congruam sententiam perfectamque demonstrans* 'a combination of words that expresses a coherent and complete meaning'. Sulpitius (1445/50–1513) uses Priscian's definition for *constructio,* whereas Perotti (1429–1480) and Aldus Manutius (1450–1515) use a slightly different one:

> Quid est constructio? [Est] debita dispositio partium orationis in ipsa oratione. 'What is construction? It is the required disposition of the parts of the sentence in the sentence itself.' (Perotti, 1475, f. [36]r; Aldus Manutius 1508, f. k [i]r)

This definition is associated with a separation between agreement and government, found in almost all the works in the corpus used here.[1] It should nevertheless be noted that in the earliest texts we have at our disposal, this opposition is not systematically found. The first Humanists begin by dealing with agreement using the terms *concordare* (Guarinus, 1374–1460) *conuenire* (Perotti), *concordare*, *conuenire* or *accomodari* (Sulpitius, ca. 1485, f. ii r-v), before dealing with the question of the case that the verb "wants", "requires", "asks" before or after it, with variation in the terms used. Under these conditions, some overlap is possible between agreement and government. There is no explicit allusion to traditional sentence types (intransitive, transitive and with a copula).

The opposition between concord and government is explicitly formalized by Aldus Manutius and Despauterius (ca. 1480–1520) in the form of a construction with a double 'accident':

1. The titles of the cited texts are given in the primary sources of the bibliography. They are the subject of a notice in the *Corpus de textes linguistiques fondamentaux* (available online at <http://ctlf.ens-lyon.fr>).

> Constructioni quot accidunt? duo. concordantia & regimen. 'How many accidents does the construction have? Two, agreement and government.'
>
> (Aldus Manutius, 1508, f. k[i]r)

> Syntaxi siue constructioni quot accidunt? Duo, concordantia & regimen. 'How many accidents pertain to syntax or the construction? Two, agreement and government.' (Despauterius, 1537, p. 186)

As a result, for Despauterius, each of the parts of the construction is given its own definition:

> Concordantia quid est? Debita partium orationis conuenientia in genere, numero, casu uel persona. […]. Regimen quid est? Certi casus exigentia de casus natura nihil amittentis. 'What is concord? The required agreement of the parts of speech in gender, number, case or person […] What is government? The requirement of a specific case that does not lose anything of its nature as a case.'
>
> (Despauterius, 1537, p. 186)

The final restriction serves to exclude cases used adverbially without a preposition, as in *uado Romam* 'I am going to Rome'.

In the sixteenth century, the opposition between concord and government became widespread. We find it in Ramus's work (1515–1572):

> Conuenientia est, quando uoces communibus proprietatibus conueniunt […]. 'Agreement is when words agree by means of common properties.'
>
> (Ramus, 1564, f. 42r)

> Rectio, quando uox uocem certo fine flexionis regit […]. 'Government <is> when a word governs another word according to a certain inflectional end.'
>
> (Ramus, 1564, f. 46v-47r)

In 1560, Ramus's books on syntax were organized around types of words (book III: *noun and verb*, book IV: *syntax of 'words without number'*), whereas in 1564 they were reorganized around only two notions (book III: *convenience*, book IV: *government*).

We also find this opposition in Sanctius (1523–1601), who uses the term *concordia* to designate agreement:

> Concordia est mutua complexio nominis & uerbi, quando nomen in debitam uerbi personam, seu domicilium recipitur, quae coniunctio ostendit uerbum esse personale. Rectio est quum uerbum ostendit uires et effectum in rem aliquam. 'Agreement is the mutual relation of the noun and the verb, when the noun is received in the person imposed by the verb, as if it were its abode, and this connection manifests that the verb is personal. Government is when a verb manifests its strengths and effect on something.' (Sanctius, 1587, f. 84r)

Because the definitions are given in a chapter dealing with the construction of verbs, they are limited to the relationship between the noun and the verb. In the *Minerva*, Sanctius does not give a more general definition, although at the beginning of book II, he claims: "We said that the construction was divided into agreement and government" (44v, my translation).

Other major grammarians also discuss the opposition:

> Scioppius (1576–1649): *Quid est Concordia?* Est partium orationis, siuè eiusdem, siuè diuersi generis inter ipsas conuenientia […]. *Quid est Rectio?* Est certi casus adsciscendi potestas. 'What is concord? It is the agreement between them of the parts of speech, whether they are of the same kind or of different species […]. What is government? It is the power to claim a specific case.' (Scioppius, 1664, p. 27)

> Vossius (1577–1649): Tam analoga, quàm anomala structura est duplex, concordia, & rectio. Illa est duarum, uel plurium uocum conuenientia. Haec est ius siue potestas iustum casum exigendi. 'Whether regular or anomalous, the structure is double, concord and government. The first is the agreement of two or more words. The second is the right or the power to demand the right case.'
>
> (Vossius 1695, p. 367a)

> The *Nouvelle Méthode latine* (*NML*) and the *Grammaire générale et raisonnée* (*GGR*) de Port-Royal: La Syntaxe de Convenance est, lors que les parties conviennent entr'elles en quelque chose […]. La Syntaxe de Regime est, lors qu'une partie en gouverne une autre dans le discours. 'Syntax of Concord is, when the parts agree among themselves in something […]. Syntax of government is when one part governs another in speech.' (Lancelot [1616–1695], NML3, 1653, p. 425)

> La Construction des mots se distingue generalement, en celle de Convenance, quand les mots doivent convenir ensemble; & en celle de regime, quand l'un des deux cause une variation dans l'autre. 'The construction of words is generally divided into agreement, when the words must agree together; and government, when one of them causes a variation in the other.'
>
> (Arnauld [1612–1694] & Lancelot, GGR, 1676, p. 153)

The formulation of these definitions suggests that for concord, the two elements are on the same plane, whereas for government, one is subordinate to the other. In fact, the situation is considerably more complicated.

2. Agreement/concord

2.1 How does agreement differ from government?

Almost all Humanist Latin grammars[2] recognize at least three concord (*concordantia*) rules according to which the nominative must agree (*concordare*, *conuenire*) with the verb, the adjective with the substantive, the relative with the antecedent. In the very elementary work of Guarinus, these rules are stated very early on, right after the distinction between adjective and substantive, but in later works, which more clearly separate morphology and syntax, these rules appear at the beginning of the section on syntax. This is often the place they still occupy today in Latin grammar books.

But a problem arises from the outset with regard to the nature of agreement. Specifically, if one element has to agree with another, as the formulation suggests, the relation is not perfectly equivalent. The two elements are not equal, one in fact being subjected to the other, under the dependency of the other. Guarinus's text (composed ca. 1418), taken as a starting point, says this very clearly:

> Nominatiuus cum uerbo tenetur concordare in duobus, in persona et numero, ut *praeceptor docet*. Relatiuum cum antecedente tenetur in tribus, scilicet in genere, in numero et in persona, ut *uideo Petrum qui legit*. Adiectiuum cum substantiuo tenetur in quattuor, in genere, numero, persona et casu, ut *uir facetus*. 'Nominative is required to agree with the verb in two things: person and number, e.g. *praeceptor* [3rd pers., sing.] *docet* [3rd pers., sing.] (the master teaches). The relative is required to agree with the antecedent in three things: gender, number and person, e.g. *uideo Petrum* [masc., sing., 3rd pers.] *qui* [masc., sing., 3rd pers.] *legit* (I see Pierre who is reading). The adjective is required to agree with the noun in four things: gender, number, person and case, e.g. *uir* [masc., sing., 3rd pers., nominative] *facetus* [masc., sing., 3rd pers., nominative] (a spiritual man).' (Guarinus, 1497, f. a ii r)

In this text, the important and recurrent term is *tenetur*: the nominative, the relative, the adjective 'are required' to agree with the verb, the antecedent and the substantive, respectively this means that it is actually government rather than agreement. In the first case, it is very clear why: Percival (1981, p. 248) has shown that in the pre-Humanist Francesco da Buti the rule of verb concord in number and in person with a nominative subject is parallel to the government of a 'subject' (*suppositum*) 'through a nominative' (*per nominatiuum*):

2. Eg. Perotti, 1475, f. [36]r; Sulpitius ca 1485, f. f ii r-v; Aldus Manutius, 1508, f. k [i]r-k iii r.

> Et nota quod uerbum personale semper uult suppositum per nominatiuum […] Et secum debet in duobus accidentibus concordare, scilicet in numero et in persona. 'And notice that the personal verb always wants a subject by the nominative […] And they must agree in two accidents, namely in number and in person.'
> (quoted by Percival, 1981, p. 248)

The essential difference of the texts we are examining here is that they no longer mention a *suppositum*: the agreement directly and only calls for the nominative. By contrast, the two versions of Remigius that I have consulted maintain the principle of an agreement between a *suppositum* and an *appositum*.

> Secunda regula congruitatum grammaticalium est ista, quod suppositum & appositum debent conuenire in numero, persona & rectitudine casus. 'The second rule of grammatical agreements is as follows: a subject and an adject must agree in number, person and correction of case.' (Remigius, Münster, 1486, f. [33]v)

> Secunda regula grammaticalis est ista, quod suppositum & appositum uolunt conuenire in tribus accidentibus grammaticalibus, scilicet in numero, in persona & in rectitudine casuali. 'The second grammatical rule is as follows: subject and adject want to agree in three grammatical accidents; i.e. in number, person and correction of case.' (Remigius 1486/1982, p. 36)

Depending on whether the grammarian starts from the function (*suppositum*) involving accidents or from one of these accidents, such as the nominative, the rule is formulated differently. The Italian Humanists, who are wary of functional indicators inherited from the Middle Ages and prefer to base their analysis on morphological elements, have obviously favored the latter situation, omitting the specification *qui supponit uerbo* still found in the *Catholicon* of Giovanni Balbi (d. 1298?):

> Scias quod nominatiuus qui supponit uerbo tenetur concordare cum eo in duobus accidentibus, scilicet in numero et in persona. "Know that the nominative which is support of the verb is obliged to agree with it in two accidents, namely in number and in person." (Catholicon, Chapter 101, De nominatiuo, 1460 [1286], f. 52r)

These rules of agreement are not without problems. I will only mention two found in Guarinus.

– The wording is incoherent: strictly speaking, to say that "the nominative must agree with the verb in person and in number" means absolutely nothing: case being a category, it is not likely to receive morphological categories. We must instead read: "the <noun put in> nominative must agree […]", but this suggests that the noun is subordinated to the verb, despite the fact that these two major word classes cannot enter a hierarchical relationship.

– It is surprising to see an agreement in person of the adjective and substantive, as the two classes are not likely to receive person as an accident. Agreement in person probably refers to formulas of the type *ô docte domine* ('o master scholar!' [vocative]), as opposed to *dominus doctus* [nominative], with the vocative transferring the second person from the verb to the two elements (substantive and adjective). But all the following grammarians abandon the notion of person agreement, keeping only agreement in the other categories (gender, number, case).

2.2 Complex agreements: How to deal with the interdependency of heterogeneous elements

What Priscian called *consequentia* in Classical Latin grammar is the origin for the later rules of agreement. In Example (1), Priscian (GL 3, 201.22–24) notes that there is a *uariatio* (gr. *alloiotes*), which can be thought of as discordance, between the singular *pars* and the plural *secant*: despite this, the sentence is intelligible, and therefore acceptable.

(1) *Pars* *in* *frusta* *secant.*
part.NOM.SG into pieces.ACC.PL divide.3PL
'A part <of them> cut the <preys> into pieces.' (Virgil, Aen. 1, 212)

It is precisely to answer this type of problem that the Middle Ages, and then Humanism, developed an arsenal of construction figures. Virtually all of them concern agreement: this is unsurprising, as the founding text on this question is from Priscian (GL 3, 183 sq.). In other words, before the rule for agreement even existed, grammarians had rules to describe exceptions to this agreement. In the first Humanist grammars, the two developments (rules for agreement and exceptions to this rule) coexisted separately (often at opposite ends of the syntax part of the grammar, with agreement rules at the beginning, and construction figures in the appendix). Despauterius (1537, p. 239–255) was the first to discuss figures directly after the rules of agreement, something that his successors did not understand (why mix simple with complex, fundamental with marginal?), even though this arrangement helped to integrate figures into the structure of the grammar. This integration was also facilitated by the *NML* of Port-Royal: on the one hand, in the first edition (1644), Lancelot kept only the most basic rules from Despauterius, presenting only a summary of marginal agreements without recourse to the complex arsenal of figures; on the other hand, by using French as a metalanguage, he helped to describe Latin phenomena through the structures of the vernacular language.

In this process, a number of changes occurred, showing how the notion of agreement evolved. Let us consider the following two examples, the second of which is commonly given as an illustration of the normal agreement of the verb with two subjects by current Latin grammars (Ernout & Thomas, 1964, § 149, p. 129; Lavency, 1985, § 195, p. 138):

(2) *Si tu et Tullia […] ualetis, ego et suauissimus Cicero ualemus.*
if you and Tullia are.fine I and most.delightful Cicero are.fine
'If you and Tullia are all right, my lovely Cicero and I are all right.'
(Cicero, Fam. 14, 5, 1)

(3) *Pater mihi et mater mortui <sunt>.*
Father me.DAT and mother are.dead
'My father and mother are dead.' (cf. Terentius, Eun. 518)

These two texts, already used by the Humanists, were judged by most of them as examples of syllepsis, because of discrepancies of person in (2) and of gender in (3). Their standardization took place progressively: on the one hand, already in Despauterius (1537, pp. 245–248), syllepsis (*conceptio*) is more a means of dealing with complex agreement than it is a real figure. On the other hand, Examples (2) and (3) are not readily explained by the figure: (2) is considered to be syllepsis by Linacre (ca 1460–1524) (1524, f. 47r) and some grammarians of the 17th century, an 'anomaly' (*anomalia*) by Ramus, and normal agreement by Álvares (1526–1583) (1596, p. 261); (3), initially treated as syllepsis, then, in the grammar of Sanctius, as the ellipsis of *hi* or *illi duo* when anteposed to *pater* and *mater*, is eventually integrated by Lancelot into the standard rule of agreement, by virtue of "le Masculin est plus noble que les deux autres Genres" ['Masculine is more noble than the other two genders'] (NML3, 1653, pp. 434–435).

The following additional example differs from the two previous ones because the agreement of the past participle is with only one of the two terms:

(4) *sociis et rege recepto*
companions.ABL.PL and king.ABL.SG received.ABL.SG
'our companions and our king having been received' [*recepto* agrees only with the singular *rege*] (Virgil, Aen. 1, 553)

Classical grammars analyse this as syllepsis (or discordance by number), whereas Humanist grammars call it zeugma (or agreement with the nearest; group agreement is now part of syllepsis). Sanctius keeps the term syllepsis, but states that it simply designates a variety of ellipsis. Finally, current Latin scholars consider (4) to be an example of proximity agreement.

To sum up the development described above, in almost all cases, the figure played a vital role in the explanation of agreement. In the entire period under

discussion, it was used to account for facts that were judged to be unusual: this is the case for (1), which even today is explained by syllepsis or agreement *ad sensum*. But the role of the figure had changed: in Antiquity, it was difficult to establish an exact typology of facts that came under *alloiotes* or *syllepsis*, generic figures covering all kinds of discordances. In the Humanist system, which attempts to combine meticulous observation of Latin with a unified explanation of phenomena, the figure is used less as a means of explaining discordances than as a means of codifying some complex agreement types. At the same time, reference to a foreign language, in this case Greek, makes it possible to discount facts that are considered too marginal. In sum, the figure is partly diluted in an implicitly trans-linguistic description. If we consider Examples (2) and (3) to be normal types of agreement, it is because modern languages have generalized agreement with all arguments, even though we might say that (4) can be considered proximity agreement. It is always a relative description, even if less explicitly so than that of Linacre, Sanctius or Lancelot resorting to Hellenism.

Summing up the function of the eight figures of construction of the first Humanists:

– *Syllepsis* is used to describe the hierarchy of accidents (*dignitas accidentium*) that occur when combinations of items lead to discrepancies: number (precedence of plural over singular); person (precedence of the first person over the second and of the second over the third); gender (precedence of masculine over feminine and of feminine over neuter). There are more or less complex cases: if (2) and (3) are considered to be simple types of syllepsis, then (5) is a more complex type of syllepsis since the first person plural of the verb is imposed by *ego* contained in *mecum* and which, even though it is part of a prepositional phrase, is implicitly promoted to the same rank as the nominative subjects *Iphitus et Pelias*.

(5) *Diuellimur inde / Iphitus et Pelias mecum.*
pull.out.1PL from.there Iphitus and Pelias with.me
'We pull out of there, Iphitus and Pelias with me.' (Virg. Aen. 2, 434–435)

– *Prolepsis* deals with complex constructions with a collective plural subject which is broken down into singular subjects. The question is to determine how to resolve the following sentence: *Aquilae, haec deuolauit ab oriente, illa ab occidente* ('The eagles, one rose from the east, the other from the west'), where *Aquilae* (pl.) does not agree with *deuolauit* (sing.). Should it be *Aquilae deuolauerunt, haec ab oriente, illa ab occidente* ('The eagles rose, one from the east, the other from the west') or *Aquilarum, haec deuolauit ab oriente, illa ab occidente* ('Of the two eagles, one rose from the east, the other from the west').

- *Zeugma* designates proximity agreement, in other words, agreement with the closest element, cf. (4).
- *Antiptosis* applies to the problematic use of case, as in *Vrbem quam statuo uestra est* 'The city I'm building is yours' (Virg. Aen. 1, 573), which is resolved as *Vrbs quam statuo uestra est* or *Quam urbem statuo uestra est*.
- *Synthesis* deals with semantic discordance (which corresponds to the current grammatical use of syllepsis), cf. (1).
- Evocation refers to the situation in the sentence *ego Priscianus lego* ('I, Priscian, I am reading'), where the 3rd person *Priscianus* is attracted to the 1st person by the pronoun *ego*.
- *Apposition* deals with cases of juxtaposition of elements whose accidents are heterogeneous (*urbs* [sing.] *Athenae* [pl.] 'the city of Athens').
- (Grammatical) *synecdoche* signals the agreement of an adjective with a substantive when the adjective actually only applies to part of the whole, as in *Aethiops albus dentes*, 'a white Ethiopian as far as his teeth are concerned' = 'an Ethiopian with white teeth'.

I shall not go into details about the evolution of these mechanisms, which have been studied elsewhere (Colombat, 1993). In essence, figures are an integral part of the syntactic system and serve to codify the problems of discordance, and therefore of dependency, between associated elements.

3. The government of the verb

In the first Latin Humanist grammar, syntax is very clearly a dependency model built around the verb, which governs the case markers of the nouns associated with it according to a fixed order of constructibles (→2.1). Within the five *genera verborum,* the categories inherited from Classical Latin, namely active, passive, neutral, common, deponent, grammarians distinguish subcategories. If we take the example of 'neutral' verbs in Guarinus, this category of verbs is particularly interesting because the neutral verbs are precisely those which are neither active nor passive, and are therefore largely intransitive, since the absence of direct government does not allow passive transformation. But we notice that they enter, in the same way as active verbs, into a network of complex and codified dependencies (Guarinus, 1475, working ed. Percival; with a slightly different wording in 1497 ed., f. [7]r-v):

1. Note that the neutral verb [*uerbum neutrum*] is the one that ends in *-o* and does not form a passive in *-or*.

2. Note that the copulative neutral verb of similar elements [*uerbum neutrum similium copulatiuum*] is the one that wants the same case before it and after it, e.g. *ego sum bonus* 'I am good'.
3. Note that the possessive neutral verb [*uerbum neutrum possessiuum*] is the one that wants before it the nominative of the person undergoing and after it the genitive or the ablative of the person acting, ex. *ego egeo denariorum* or *denariis* 'I need money' …[3]
4. Note that the acquisitive neutral verb [*uerbum neutrum acquisitiuum*] is the one that wants before it the nominative of the person acting [*nominatiuum personae agentis*] and after it the dative of the person undergoing [*datiuum personae patientis*], ex. *ego seruio tibi* 'I am at your service'.
5. Note that the transitive neutral verb [*uerbum neutrum transitiuum*] is the one that wants before it the nominative of the person acting and after it the accusative of the person undergoing [*accusatiuum personae patientis*], e.g. *ego aro terram* 'I cultivate the earth', and it forms its passive in the third persons [i.e. in the 3rd pers. of the sing. and plur.], e.g. *terra aratur a me* 'the earth is cultivated by me' […]
6. Note that the effective neutral verb [*uerbum neutrum effectiuum*] is the one that wants before it the nominative of the person undergoing and after it the ablative without preposition of the person acting, ex. *ego gaudeo bonis nouis* 'I am delighted at good news' […]
7. Note that the absolute neutral verb [*uerbum neutrum absolutum*] is the one that wants before it the nominative of the person acting and that governs after it any case except with the help of a preposition expressed or implied, e.g. *ego uado ad scholas* 'I go to schools' […]
8. Note that the passive neutral verb [*uerbum neutrum passiuum*] is the one that wants before it the nominative of the person undergoing and after it an ablative of the person acting with the mediation of *a* or *ab*, e.g. *ego uapulo* [*active in Latin*] *a magistro* 'I am beaten by the master' […]

After a general definition of morphological type [1], all neutral verbs are presented as imposing (i.e. 'wanting') a case positioned before it (nominative) and one or more cases positioned after it: in [2], this case can also be a nominative for the 'copulative neutral verb of similar elements', which is Priscian's substantive verb (the verb *to be*), or an oblique case representing an 'acting or undergoing person'. The latter term has completely lost its original semantics, since in the case of the possessive neutral verb in [3], the genitive or ablative applies to money.

3. Here, as in the rest of the quote, the deleted passages correspond to mnemonic verses.

Of particular interest is the category of the 'transitive neutral verb' [5], an expression which seems contradictory to a modern reader, but which is explained by the fact that transitive verbs for 'cultivating', for example, apply to an object, which in the passive transformation, can only function as a third person, because 'the earth' can hardly be subject of 1st or 2nd person (**aror* '*I am cultivated', **araris* '*you are cultivated'). But the phrase 'accusative of the person undergoing the action' is still used, and it is only paradoxical if we take 'person' literally. The origin of this category goes back to Priscian and, beyond, to Apollonius Dyscolus, who were faced with the issue that, when setting up verb categories on the basis of a transition from one person to another person, an inanimate object could not testify that it was undergoing action.

The preposition enters into the definition of the following categories: 1. it is explicitly stated that it should not be expressed in the case of the "effective neutral verb" [6]; 2. its presence is suggested by the "absolute neutral verb" [7], making it possible to interpret *uado Romam* 'I'm going to Rome', even though *Romam* is not really the complement of *vado* but an element within an autonomous prepositional group: 3. it is presented as an intermediate element (*'a' uel 'ab' mediante*) for the "passive neutral verb" [8], which is an active verb with passive meaning and a passive construction.

4. The evolution of the system

4.1 The model built around transitivity

As mentioned, transitivity, originally an eminently semantic concept, is built on the notion of a transfer from one person to another. As this transition materializes in the verb, the verb is the pivot of the articulation, according to a perspective which obviously resembles Tesnière's valence theory. But it should also be noted that, particularly in pedagogical texts, the term "person" has lost its initial semantics to designate only construction types, according to different systems. Take the case of the presentation of "transitive" verbs in Remigius.

In a purely medieval perspective, "transitive" verbs are presented in the following way in both editions:

1. "Transitive <verb> is triple, namely of strong transition, very strong transition and of weak transition [Est triplex transitiuum, scilicet uehementis transitionis, uehementissime et debilis transitionis]. Strong transition verb is one that claims [*requirit*] that one adds after it an accusative. Very strong verb of transition is the one that calls for two accusatives: the first one is that of the subject

undergoing, the second one is that of the object ending, e.g. *doceo te logicam* 'I teach you logic'. As for weak transition verb, it governs nothing but an oblique case different from the accusative, e.g. *ego misereor tui* 'I have pity on you'." (Remigius Münster, 1486, f. 33r)

2. "Transitive verb is the one that governs [*regit*] after it an oblique case, and as such, it is triple. Weak transition verb is one whose dependency [*condependentia*] can only be specified by an accusative of its own meaning, e.g. *curro uiam* 'I run the road', *sto stationem* 'I hold the position'. Strong transition verb is one whose dependency is sufficiently specifiable by a single accusative, e.g. *amo deum* 'I love God', *diligo katerinam* 'I cherish Catherine', *lego librum* 'I read the book'. Very strong transition verb of is one for which a single accusative is not sufficient to specify dependency, that is to say that it needs at least two accusatives, e.g. *doceo te grammaticam* 'I teach you the grammar', *induo te tunicam* 'I put you on your tunic', *calceo te calceos* 'I put on your shoes'." (Remigius Schleswig, 1486/1982, f. xviii r/p. 43)

In both texts, transitive verbs are subdivided according to the nature of the transition, which can be "strong", "very strong" or "weak", but the interpretation is different, even contradictory, between the two editions.

- In the Münster edition, following a purely syntactic perspective, the transition is "strong" when a verb is constructed with an accusative, "very strong" when a verb is constructed with two accusatives, "weak" when a verb is constructed with a case other than the accusative.
- In the Schleswig edition, following a more semantic perspective, the transition is weak when the verb is built with what is now called an accusative of internal object, strong when the verb is built with an accusative that could be called "ordinary", very strong when it is built with two accusatives.

The two presentations are therefore of a rather different nature since, in the first case, we still have to deal with the broad conception of transitivity which involves all cases, even though they are in a hierarchy (the accusative on the one hand, the other oblique cases on the other); in the second case, transitivity is narrowly conceived of as centered on the accusative alone, the "weak" transitivity designating the accusative used with absolutes.

Linacre (1524) discusses his analysis of the construction of the verb, not following the old system completely but retaining the notion of *genera verborum*, a difficult concept which he shows combines morphological, semantic and syntactic criteria (1524, f. 9r). Taking the concept of person transition to be a virtually universal while also purely syntactic tool, he dedicates the beginning of Book IV to the construction of verbs (1524, f. 77v-109v). We find a classification into "genders"

(= types): active, passive, neutral, which are the three main types, to which he adds common and deponent, the latter being based more on form than on meaning (1524, f.°77v).

Active verbs[4] include all verbs built with an accusative, whether it is those calling for an accusative that can be described as "ordinary", those calling for an accusative that only undergoes a passive transformation in the 3rd person (Italian Humanists' "transitive neutrals"), or those which "pass" into something of known meaning expressed in the accusative.

The neutrals include: (i) the absolutes, which can receive the accusative of a thing which is of known meaning (*curro cursum*); in these constructions, 'they can certainly be considered as "active" (1524, f. 81v); (ii) verbs that "pass" into the dative; (iii) verbs that 'pass' into the ablative.

Linacre systematized his presentation according to a model somewhat different from that of the Italian Humanists.

1. "Active" always suggests "accusative", whatever its nature: there is no reason not to consider an absolute neutral as an active verb if it is built with an accusative.
2. While the term *transitiuus* is not used, the notion of "transition" is everywhere: it concerns all verbs that are not absolute; it no longer suggests "accusative", but rather "passage" into any case (thus the neutrals that are "carried" [*feruntur*] to the dative or that "pass" [*transeunt*] in the ablative), and the term *transire* is even used in the definition of the passive;[5] this is Priscian's presentation, but in appearance only, because what matters is not the passage from one person to another (the *persona constructionis* is only an abstract syntactic concept) but the change in case.
3. Linacre draws a clear distinction between verb complements that could be considered essential and more peripheral complements which he shows can be attached to any type of verb (dative, instrumental ablative, ablative of price, ablative of measure, prepositional phrase, which correspond to the Tesnière's *circonstants*).

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4. "Omne […] actiuum uerbum, quia utique est actiuum, in accusatiuum patientis personae transit, ut *Doceo puerum, aro campum, uiuo uitam*." ['Any active verb, because anyway it is active, passes into the accusative of the person undergoing, for example I educate the child, I cultivate the field, I live my life.'] (1524, f. 78v) The transition *in actionem* allows to add the verbs that are built with an infinitive. *Patientis personae* must be taken as a completely desemantized syntactic concept.

5. "Passiua omnia cuiuscumque sint generis, in ablatiuum agentis personae cum *a* uel *ab* praepositione transeunt." (1524, f. 79v)

Álvares' perspective can be understood only in relation to Linacre's approach. Álvares, who reuses Linacre's notion of transition in a very restrictive sense of passing from one case to another, lays out his theory very clearly, at the cost of an inversion of perspective (1596, p. 294). The first division which he establishes "as regards the construction" is no longer a division into 'genders', but an opposition between intransitive verbs (which according to him have no case, or a case identical to the preceding case) and transitive verbs (which pass into a case different from the preceding case), the latter being subdivided into: (1) active verb "which calls for an accusative following it, whatever its position in the sentence", and which can also be called "accusative verb"; (2) passive verb "which passes into the ablative, with the preposition *a* or *ab*"; (3) neutral verb "which passes into a genitive, dative or ablative".

This presentation, which is very clear, reinforces the equivalence, established by Linacre, between the concept of active verb and a verb accompanied by the accusative, but above all it establishes the separation of intransitives and neutrals, which until then had more or less been implicitly confused: just like the active verb, the neutral is a transitive, but it is used with a case other than the accusative.

4.2 Sanctius: Towards a model with simplified dependency rules

In Sanctius (1587) dependency relations are considerably modified, compared with preceding models, because a rigid structure, involving a few simple rules, is posited. In his *Minerva* (1587, book III, Chapters 1–5), the Spanish grammarian states that every active verb is constructed with an accusative, expressed or implied; in other words, every verb (except the copula) is active or passive, i.e. what we call transitive, but without, to our knowledge, using the term (because it is not needed). The reason given is that the verb expresses a movement (*motus*) and this movement supposes a term, a goal in which it must be resolved. The consequences are as follows.

1. There is no neutral verb; any verb, even one that seems to be self-sufficient, can take an accusative.
2. It is useless to resort to "species" and "orders" established within "genders" (= types) by the Italian grammarians (1587, f. 91r-v).
3. "The passive verb is satisfied with a subject alone" (*Verbum […] passiuum solo supposito contentum est*, 1587, f. 129r) and it is useless to set up a construction involving an ablative preceded by *ab* or an accusative preceded by *per*.
4. Constructions involving active verbs with cases other than the accusative are not in fact adverbal constructions: the dative is not governed and has a "natural" meaning; the adverbal (but only in appearance) genitive is governed by an implied (but not expressed) accusative between the genitive and the verb;

the ablative is always governed by an expressed or implied preposition and the group (preposition + ablative) is an independent group which does not depend on the verb. Conversely, a verb does not govern two accusatives, and Sanctius mocks grammarians who use the term *uehemens* to describe the so-called energy of this construction (1587, f. 53v, see the texts of the Remigius, →4.1): a verb always governs an accusative, whether it is expressed or implied; the genitive is always dependent on a noun (and therefore cannot depend directly on a verb); the dative is never syntactically dependent, and the ablative is always dependent on a preposition. The role of the preposition (which is permanently detached from the preverb to which it was attached in Classical analyses) thus becomes more central.

5. Particular syntactic structures and dependency

The systematization of the opposition between concord and government leads to a specific treatment of certain constructions.

5.1 Ablative absolute, locative and preposition

The first question is the status of unrelated, independent elements that seem to escape the dependency rules. This is the case of the locative. We know that this case, present in Indo-European, but reduced (only for 1st and 2nd declension singular nouns), through case syncretism to forms assimilated to the genitive in Latin, has been analysed as "genitive of places".

Perotti, following Priscian (GL 3, 66.4–67.6), presents locatives this way:

> The names of cities are genitive instead of adverbs *in loco* [indicating the place where we are], if they are of the first or second declination, for example *sum hic* ('I am here'), *fui illic* ('I was there'), *sum Romae* ('I am in Rome'), *fui* Romae ('I was in Rome'), *sum Tarenti* ('I am in Tarento'): but if they only decline in the plural, they are in the ablative, for example *sum Baiis* ('I am in Baïes'), *fui Thebis* ('I was in Thebes'). As for the names of the third declension, they are in the ablative, for example *fui Carthagine* ('I was in Carthage'), *Tibure* ('in Tibur'), *Neapoli* ('in Naples'). (1475, f. [67]r-v)

In the passage of his *Doctrinale* devoted to the genitive, Alexandre of Villedieu (ca. 1170–ca. 1250) dealt only with the genitive of place, and he did so in very different terms from the above. He notably highlighted the absolute use of the genitive, because the latter does not depend on any term that can govern it (*rector*), and its use with verbs marking stability:

> And the genitive of place [*genitiuus localis*] is often devoid of a term which governs it, when you do not designate any movement, provided that the name is of the number which precedes [= singular], and of the first or the second <declension>: *Rotomagi studeas, et Romae deinde moreris* "You must study in Rouen, and then linger in Rome". (Doctrinale, lines 1202–1206)

While Alexandre insists on the absolute nature, with no government, of the genitive of place, sixteenth century grammarians on the contrary try to integrate these constructions into prepositional phrases.

Julius Caesar Scaliger (1484–1558), who deals with the topic not in discussions of place, but in relation to apposition (1540, p. 335), considers that one can use the genitive construction as well as an appositive construction; in the former, the designated reality, although unique, is conceived in a sense as double, and "it is as if the proper noun was the possessor of the appellative" (*quasi proprium possideat appellatiuum*). For this, he uses two examples attested in classical texts: *Urbs Patauii* 'the city of Padua' (Urbem Pataui, Virg. Aen. 1, 247), *in oppido Antiochiae* 'in the citadel of Antioch' (Cic. At. 5, 18,1), which will become emblematic of the approach and will be constantly reused.

In his *Minerva*, Sanctius tackles the question of place complements through the study of cases and ellipsis. As cases have a single value (see →4.2), it is out of the question for Sanctius to allow an aberrant use of these. The genitive used for place names, as in *natus Romae*, *Aegypti educatus*, is explained by the ellipsis of the nouns *urbs*, *oppidum*, *prouincia*, *insula*, *locus*; there is no need to make an exception for names of provinces and islands. In passing, Sanctius, using Scaliger, addresses the question of determination: if we can say *urbs Spartana* (the Spartan city), we should also be able to say *urbs Spartae*, 'the city of Sparta' (1587, f. 48r, 204r-v). Similarly, *Carthagini*, *ruri* cannot be analysed as datives: it would be inconsistent with the semantic value of this case; it is therefore ablative (1587, f. 51r, 59r). Sanctius does not go into detail, sticking to main principles, but on the basis of his writing, Lancelot builds a much more complex theory which deals in detail with certain constructions. We will not study them thoroughly here (see Colombat, 1999, pp. 449–452). The essential idea is that it is useless to develop a set of specific rules for city names. If we accept this, the grammar gains in clarity, in generality (having no exceptions), and does away with a distinction which is not grammatical but geographical. But how can he explain these seemingly aberrant uses of these genitive forms of the first and second declensions? The answer is the following: "On sous-entend toujoûrs le Nom general à l'Ablatif avec sa Preposition" ['We always imply the general name in the ablative with its preposition'] (1653, p. 483): *est Romae = est <in urbe> Romae*.

Another problem is the ablative "absolute", which combines a noun or a pronoun with a participle in the ablative. The qualifier "absolute" seems to exclude the

phenomenon of dependency. The absolute ablative is one of the great questions of Latin grammar, which is of particular importance in the history of theories for the following reasons.

1. The ablative absolute affects both simple sentences and complex sentences; and if the problem of subordination takes a while to be posited as we know it today, grammarians were nonetheless aware quite early of the fact that certain constructions behaved like sentences.
2. The ablative absolute requires that one of the elements it contains not be included in the rest of the sentence.
3. The ablative absolute can be substituted for other constructions, with which it also competes.
4. Lastly, the very name "absolute" raises problems insofar as it is partially inaccurate (in a sentence, nothing is strictly speaking absolute, a fact that some grammarians have chosen to mention) and also because grammarians sometimes do not know what to attribute this characteristic to: simple independence from the rest of the sentence, or *stricto sensu* consideration of non-coreference?

We will not go into the details of these debates here (cf. Colombat, 1999, pp. 533–554) and will cite only a few emblematic texts on the question of whether the ablative absolute is really independent of the rest of the sentence.

Despauterius, in the *Regula ultima* on the government of the ablative (1537, p. 348), posits the relationship of cause and consequence (*sequela* replaces *consequentia*, a term used by Priscian [*GL* 3, 214.21] which, presenting a cretic, cannot enter the hexameter): "Absque regente duo sextos bene pone sequelae; | *Discunt discipuli me praeceptore docente*.", which Behourt (d. 1620) translates as follows:

> Mettez bien deux ablatifs de conséquence d'oraison [trad. de *sequelae*] sans diction qui les gouverne; *les disciples apprennent, moy leur maistre les enseignant*, où *me praeceptore docente* est mis sans régime. ['Put well two ablatives of consequence of sentence without a word that governs them; *the disciples learn, me, their teacher, teaching*, where *me praeceptore docente* is placed without government.']
>
> (ed. 1651, p. 469)

He also posits the notion of absolute, indicated by *abs regente* and by the expression, taken from his commentary, of *ablatiuus positus absolute*.

Sanctius and his successors question the supposedly absolute nature of the ablative in the expression 'ablative absolute'. Already in the first version of the *Minerva* (1975/1562, pp. 83–85), Sanctius affirms in a title of chapter: "Quod nullus sit ablatiuus absolutus, and recte dici, *Se consule orabat Cicero*" ('There is no ablative absolute and it is possible to say *Himself being consul, Cicero gave a speech*'). His argument is about the meaning of *absolutus*. Given the two similar expressions *hora*

prima ueni and *legente ueni*, what justifies that one of the ablatives applies to the time, while the other is absolute? "Either both are absolute, or both are 'of time'." Sanctius then comes up with the objection that one could mean only time, while the other could mean action in time. This is an inaccurate formulation for Sanctius, since *hora prima ueni* also supposes a verb marking the action, as the gloss shows: *cum esset prima hora*. Sanctius takes up the traditional explanations of resolution into a subordinate clause, which does not apply only to ablatives absolute but also to any adverbial clause.

This explanation is omitted in the 1587 *Minerva*, as G. Clerico notes (1982, p. 181, note 2). In other words, Sanctius, in 1587, chooses to consider the ablative absolute as an ordinary phrase, while also establishing ellipsis of an implied participle, as in *existente* in *Caesare duce*. Sanctius also refers to Priscian (see GL 3, 215.1–16) (1587, f. 179v) to remind readers that *rege Latino* can be used instead of *regnante Latino.* It is also possible to imply the participle of the substantive verb. In other words, it is possible to have a double ellipsis, as in: *rege Latino = [sub] Latino [ente] rege*.

According to Sanctius, there is no longer an ablative absolute. The *Nouvelle Méthode latine* of Port-Royal will change its original position: despite having promoted the point of view of Despauterius in large type[6] verse, Lancelot does not substitute, but rather adds to the text. The Despauterius-influenced definition, given in the *Exemples*: "L'Ablatif Absolu est celuy qui n'est gouverné de rien." ['An ablative absolute has no governor'] (1644, [3], p. 216) is modified to: "On appelle *Ablatif Absolu*, celuy qui est indépendant du reste du discours" (1650, p. 332) and the *Advertissement* more accurately says: "Cét Ablatif mesme qu'on appelle Absolu, est toûjours gouverné de la Preposition sous-entenduë." ['This very ablative called absolute, is always governed by the implied preposition'] (ibid.) *Me uiuo* is glossed as *cum me uiuo*, *te duce*, as *sub te duce*. As in Sanctius, this is the ellipsis of the verb 'to be': the *Remarques sur les Figures* (NML2, 1650, p. 388) tells us that *Anna, soror* "is only an Ellipsis for *Anna ens*, or (because this Participle is not in use) *quae es soror*." We can thus suppose that *Caesare duce* is the equivalent of <*sub*> *Caesare* <*ente*> *duce*, through the union of syntactic problems: the ablative construction and the appositive construction, solved through ellipsis.

Both the treatment of the locative and that of the ablative absolute manifest the increasing importance of the preposition in the explanation. These seemingly unrelated elements are in fact dependent on a preposition, without the status of the latter or the status of the prepositional phrase being specified.

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6. First edition, rule 38 of Syntaxis, 1644, [3], p. 216: "*Quand deux Noms ou plusieurs joints se rencontreront, / Et de Nom ou de Verbe ne despendront, / Mets les à l'Ablatif: C'est ainsi qu'on dira:* / Me uiuô, Te duce, Regínâ ventúrâ." This rule becomes the 33rd in the 2nd edition (1650, p. 331).

5.2 The syntax of relative pronouns

Relative pronouns raise interesting questions pertaining to the syntax of agreement. Let us begin with Perotti's formulation:

> In how many accidents does the relative <pronoun> have to agree with the antecedent? In gender, in number, in person, and sometimes in case.
>
> (Perotti, 1475, f. [36]r)

Agreement for relative pronouns is based on gender, number 'and sometimes case'. Perotti's formula is relatively awkward: either there is agreement, or there is none. And indeed the case of the relative pronoun is controlled not by that of its antecedent, but by the position the relative pronoun occupies within the relative clause. But grammarians at the time do not have a clear conception of subordination, and are, on the contrary, sensitive to other exceptions. For example, Perotti (1475, f. [62]v) points out a gender discordance in: "Est locus [masc.] in carcere quod [neuter] Tullianum [neuter] appellatur" ('There is in the prison a place called *Tullianum*,' Sal Cat. 55, 2), where the discordance is explained by the attraction of the relative pronoun *quod* to the case of the predicate contained in the subordinate (*Tullianum*), while its antecedent (*locus*) is masculine. For modern readers, the two phenomena are not on the same level: agreement is normally based on gender, and not on case.

The solution proposed by Linacre is the sequence *antecedent + relative pronoun + repetition of the antecedent*. Let us take as an example the sentence *Vergilius est, qui enarratur* ('it is Virgil who is commented on'), its complete form is: *Vergilius est qui Vergilius enarratur* (1524, f. XLIIIv), with a zeugma, that is to say the ellipsis of an element already present in the sentence which must be reestablished in an identical form. The first verse of the *Aeneid*, *Arma uirumque cano Troiae, qui primus ab oris* … ('I sing the arms and the man who first, from the shores of Troy …'), is a case of syllepsis, because *uirum* should be repeated in a different case (the nominative: *vir*) in the second phrase (*clausula*) (1524, f. XLVIIv). For Linacre, the anaphoric relative pronoun does not replace the antecedent, but precedes a new occurrence of itself. In all cases where the repeated antecedent is unexpressed (the majority of cases), we have a figure, and the figure is not the same depending on whether the antecedent is in the same case or a different case. Linacre has many examples to show that this repetition of the antecedent is often expressed, as Latin often repeats antecedents after relative pronouns. This formula is usually explained away as a stylistic variant or a way to avoid ambiguity, but Linacre considers it to be perfectly normal, even though Jerome does not agree (Ruf. 2, 6), having criticised Rufinus for the unnecessary *iudicium, in quo iudicio* … (lit. 'judgment in which judgment').

Sanctius takes the reoccurrence of the antecedent to be a basic principle:

> We said that the relative is between two cases of a single noun, as *uidi hominem qui homo disputabat* [lit. 'I saw a man, which man was discussing']. Saint Jerome contests this way of talking at Rufinus. But there are many texts that testify our rule. (Sanctius, 1587, f. 61r)

We can therefore establish a canonical construction (henceforth "C.C.") according to which, in a sentence, the appearance of the relative noun (and not pronoun, because this category is not recognized by Sanctius) is conditioned by the presence of the following elements:

1. antecedent in case *x*
2. relative in case *y*
3. reoccurrence of the antecedent in case *y*

[1] and [3] are occurrences of the same substantive (we must obviously specify: referring to the same object); [1], [2], [3] share the same gender and number; case *x* is the case required in the main clause; the case *y* is the case in the subordinate clause. The example given above is *ad hoc*, but Sanctius finds many such examples of recovery of the antecedent after the relative noun, drawing from Linacre's corpus which that he augments. From this basic schema, ellipsis allows us to account for 3 derivative constructions (henceforth "D.C."):

– D.C. 1. No antecedent; allows to account, in an economic way, for the phrases in which, according to the modern description, the antecedent is "included" in the relative clause and 'attracted' to the case of relative, and allows Sanctius to avoid two explanations of which he mocks: the antiptosis (a case for another) and the attraction, according to which "if the relative precedes, it attracts (*trahit*) to him the antecedent". Ex. *Populo ut placerent quas fecisset fabulas.* <Make sure> the public likes the fables he has composed' (Ter. Andr. 3).
– D.C. 2. No reoccurrence; considered by other grammarians as ordinary construction (e.g. *uidi hominem qui dormiebat* 'I saw a man who was sleeping'); Sanctius therefore considers it useless to multiply the examples.
– D.C 3. Double ellipse, antecedent and its reoccurrence. Ex. *Sunt quos curriculo puluerem Olympicum / collegisse iuuati.* 'There are men whose pleasure it is to have amassed the Olympic dust in the chariot race.' (Hor. O. 1, 1, 3–4).

The difference with respect to Linacre is that the principle of an agreement in case is no longer posited: the relative noun and its reoccurrence are in the case resulting from their function in the subordinate clause, but without Sanctius explicitly needing to say so. The presentation is taken up by Scioppius and Vossius who also

use the principle of the double ellipsis. Lancelot does this as well, correcting his first version, inspired by Despauterius, in following editions. Rule II of the section on syntax in the first edition, inspired by Despauterius:

> Qui, quae, quod; Relatif **s'accorde incessamment,** | En mesme Genre et Nombre avec l'Antecedent. ['The relative *Qui, quae, quod* **constantly** agrees in same gender and number with the antecedent.'] (NML1, 1644, [3], p. 176)

is modified as follows:

> Qui, Quae, Quod *Relatif,* ***se joint communément*** | *En mesme Genre & Nombre, avec l'Antecedent*. ['The relative *Qui, quae, quod* is **usually** joined in same gender and number with the antecedent.'] (NML3, 1653, p. 428)

This is because agreement is considered to be, no longer with the antecedent, but with the following reoccurrence, and the author adds: "Le relatif *Qui, Quae, Quod* doit ordinairement[7] estre consideré comme entre deux Cas d'un mesme Substantif exprimez ou sous-entendu" ['The relative *Qui, Quae, Quod* must ordinarily be considered as between two cases of the same expressed or implied Substantive'] (ibid.).

This amounts to inserting the relative pronoun into a network of relations which also extends to the conjunction *quod.* The latter (which modern grammarians consider to be a conjunction) does not lose its nature as a relative pronoun and is framed in an environment of the same type as the relative pronoun. Thus *Equidem scio iam, filius quod amet meus* … 'Surely, I already know, that my son loves [this courtesan] …' (Pl. As. 52.) is glossed by Lancelot:

> It is obvious that *Quod* then relates to the thing we know and the word *scio*; and that it is the same thing as if one said: *Hoc* or *illud scio, nempe quod, &c.* where the *quod* would visibly relate to that of *Hoc*, sup. *negotium* ['thing'], as in its Antecedent. (1653, p. 593)

5.3 Can the conjunction govern? The notion of "improper concord"

Beyond the problem posed by *quod*, which Sanctius refuses to consider a conjunction, another important question will arise: that of the dependency relations between the conjunction and other words in the sentence. The situation is complicated by the fact that the distinction between coordinating conjunctions and subordinating conjunctions is not yet made. Despauterius sets up a rule for the case/mode identity of two elements related through conjunction or questions. If this rule is not explicitly considered as one of the three concord rules, it nevertheless comes under

7. Variant NML2, 1650, p. 262: "doit tousjours".

agreement: it follows the rules concerning the agreement of the relative pronoun and its antecedent. This concerns the coordinating conjunction of coordination but raises the issue of whether the subordinating conjunction can govern a verb in one mode or another. This question will be addressed by 16th and 17th century grammarians, and we will take this text from Vossius as a starting point.

> Improper concord is used when there is no third party, by which the parties can agree. This concord takes place in the particles. Eg. *Vt*, put for *postquam* ['after that'], or *ex quo* [as a result of which], does not claim subjunctive, but indicative mood. Ovid, *Tristes*, 5, 10, 1: *Vt sumus in Ponto, ter frigore constitit Ister* ['Since we have been in the Pont, the Ister froze three times under the action of the cold']. It cannot be said that *ut* and *sumus* agree in a third element, e.g. indicative: indeed the particles are devoid of mood. There is therefore no proper agreement. And we cannot talk about government either. Indeed, how could there be in a particle the capacity to prescribe a mood to a verb, when the verb has a dignity such that it is not even governed by a noun, and, *a fortiori*, by a particle? However the text would be discordant, if we said: *Vt fuissemus in Ponto*, [roughly equivalent to '*Since we were being on the Black Sea']. It is correct, if we say *Vt sumus in Ponto* 'Since we are on the Black Sea', or still, *ut fuimus* ['since we were […]']. That is why we can speak here also of agreement, but in a less clean way than when it comes to the agreement of two declinable parts. (Vossius, Aristarchus, VII, 1, 1695, p. 367a)

The notion of improper concord seems particularly interesting to grammarians when the weight of tradition forbids the subordination of a major element within the sentence to one considered minor. Grammarians feel it is necessary to study the modes of association between certain conjunctions and certain moods, and the notion of 'improper concord' makes this possible without endangering the primacy of the verb.

6. Conclusion

Dependency relations are everywhere in the analysis proposed by Humanists for the syntax of classical Latin. One can even paradoxically say that the apparent non-dependency of two associated elements poses a problem in and of itself: thus apposition, which is simply the juxtaposition of two independent elements, is defined as a figure by the fact that the associated elements are not homogeneous from the point of view of their features. For the ablative to be "absolute", none of the elements it contains can be included in the rest of the sentence. This apparent "non-dependency" is in fact the result of a greater, but hidden, constraint, hence, in fact, a stronger dependency. The grammars of the period tend to deny

this independence, reducing the ablative absolute to a prepositional phrase without particular constraints on its structure.

Government suggests a hierarchy of linguistic elements. In this respect, the verb occupies a crucial place since it exerts an action on all the elements which surround it: not only those which follow it, but also the noun placed before it, even though grammarians do not say that the verb governs a noun, which is an element of the same status. They prefer to speak of *suppositum* or nominative. On the whole, the syntactic model built around the verb, which was very complex in the first Humanist grammar, with various categories and subcategories, tends to be drastically simplified to a few simple construction rules. For Sanctius, the active verb does not even need to be described as "transitive", since it still governs an accusative (expressed or implied), and nothing but an accusative. As a result, the role of the preposition is reinforced, but the question is unresolved as to what element governs the preposition. It is not clear whether the prepositional phrase is a verb complement or a sentence complement.

The analysis of the relative pronoun is inserted into a network of elements (antecedent and reoccurrence of the antecedent) which help grammarians elucidate a certain number of problems (such as the absence of case agreement) but do make it possible to identify its essential function. Port-Royal's *GGR* highlights the relative pronoun's ability to include an affirmation in another affirmation.

Moreover, a conjunction, placed lower than the verb in the hierarchy of the parts of speech, can theoretically not impose anything on it. Yet conjunctions seem to be able to require that this verb be in a specific mode: in such a case, we speak of "improper concord", but it is always in an interdependency.

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CHAPTER 3

How dependency syntax appeared in the French *Encyclopedia*

From Buffier (1709) to Beauzée (1765)

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In the French *Encyclopedia* (1765, Volume 14), Beauzée made a clear distinction between the notion of government (Fr. *rection*) (one word imposes a special form on another) and the notion of *complement*. Except for the subject, Beauzée's complementation corresponds to the modern notion of *dependency* and is illustrated by complete dependency trees, but by means of verbal description and not diagrams. Starting from the seminal work of Port-Royal (1660), which redefined the aim of syntax, we show how Beauzée's clear vision of syntactic structure developed in the previous century. Three other authors are discussed: Buffier (1709), though unfortunately using an awkward terminology, was probably the first to propose a detailed dependency-based analysis of sentences and a dependency-based definition of parts of speech; Girard (1747), preferring a more constituency-based analysis, proposed a definition of the notions of government and syntactic functions and a remarkable formalization of word order rules; Du Marsais (1754), in his contribution to the first articles of the Encyclopedia, synthesized the main ideas of his predecessors on the notions of complement, heralding Beauzée's clear-cut formalization.

1. Introduction

From 1660, the date of the publication of the Port-Royal Grammar, to 1765, when the articles by Beauzée were published in the *Encyclopedia* of Diderot and d'Alembert, grammar and, in particular, syntax went through a remarkable century of development in France, well documented by the seminal work of Jean-Claude Chevalier (1968). I will focus here on one particular aspect, the description of the syntactic properties of a sentence via a formal syntactic structure, i.e. a precise description of the whole set of relations that link the words of the sentence

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together.[1] Syntactic diagrams representing syntactic structures did not appear until the 1830s (Mazziotta & Kahane, 2017), but in the *Encyclopedia* we can find a syntactic description, which, although expressed in words, is strictly equivalent to a dependency tree, as well as considerations on the distinction between the syntactic hierarchy and the surface linear order and a sketch of the property of projectivity.

The chapter is divided in two parts. Section →2 presents the most complete description of dependency structure proposed during the 18th century. This structure was described in the article *Régime* of the *Encyclopedia*, written by Nicolas Beauzée and published in 1765. Section →3 takes us back one century before Beauzée's article, to the *Port-Royal Grammar*, published in 1660, in order to try to understand how such a successfully complete syntactic analysis was achieved in the *Encyclopedia*. To that end, I will follow the thread that led from the foundational work of Port-Royal to Beauzée's contribution by successively presenting Arnaud and Lancelot (1660), Buffier (1709), Girard (1747) and the article *Construction* by Du Marsais published in the *Encyclopedia* in 1754.[2]

2. Dependency syntax in Beauzée

Nicolas Beauzée (1717–1789) was the second writer for the articles on grammar in the *Encyclopedia*, starting at the letter G, when the first writer, Du Marsais, died in 1756. Beauzée published his *General grammar*, in two volumes of 618 and 664 pages, in 1767 and was elected to the *Académie* in 1772. I will focus on the article *Régime*, which was published in volume 14 of the *Encyclopedia* in 1765. On other contributions by Beauzée, cf. Auroux (1992) for Beauzée's role in the emergence of the category of *determiner*, or Rey (2011) for phonetics, Swiggers (1983b, 1984a, 1989) for mood, parts of speech, and complementation, and Pavy-Guilbert (2014) for a biographical sketch.

This section presents four contributions by Beauzée: the distinction between dependent and complement (→2.1), the dependency tree and another equivalent syntactic structure (→2.2), the notions of analytical order (→2.3), heavy shift and projectivity (→2.4).

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1. Although this paper is written for a volume dedicated to the history of dependency syntax, I am interested by all kinds of syntactic structures considered during the period studied.

2. Other grammars of the same period were consulted (see Chevalier, 1968; Bouard, 2007) but are not discussed here as they do not deal to any significant extent with syntactic structure. For the same reason, the present study stops with Beauzée, who, it is argued, gave the most complete version of syntactic structure, which was not outshone in the French school until Tesnière (1934).

2.1 Regime vs. complement

As we will see in →3, the Fr. terms *régime* and *rection,* from Lat. *rex, regis* 'king' and Fr. *régir* 'to govern', shifted in meaning from a morphological sense inherited from Latin grammar to a syntactic sense (which it still has today), without a clear frontier being marked out between the two senses. Beauzée started the article *Régime* by separating the two concepts and recalling that *regime* should only designate:[3]

> [L]a forme particuliere que doit prendre un *complément* grammatical d'un mot, en conséquence du rapport particulier sous lequel il est alors envisagé. […] Voilà l'effet du *régime*; c'est de déterminer les différentes terminaisons d'un mot qui exprime une certaine idée principale, selon la diversité des fonctions dont ce mot est chargé dans la phrase. ['The particular form that a grammatical *complement* of a word must take, as a consequence of the particular relationship in which it is then envisaged. […] This is the effect of the *regime*: to determine the different endings of a word that expresses the main idea, according to the diverse functions that this word fulfils in the sentence.'] (p. 8)

As a result, Beauzée created a sub-entry *Complément* 'Complement', which had been absent from the *Encyclopedia*. This article was announced in 1757 in the entry *Gouverner* 'to Govern', which was one of the first written by Beauzée:

> On pouvoit cependant éviter l'emploi abusif du mot dont il est ici question, ainsi que des mots *régie* & *régime*, destinés au même usage. Il étoit plus simple de donner le nom de *complément* à ce que l'on appelle *régime*, parce qu'il sert en effet à rendre complet le sens qu'on se propose d'exprimer; & alors on auroit dit tout simplement: *le* complément *de telles prépositions doit être à tel cas*; *le* complément objectif *du verbe actif doit être à l'accusatif*, &c. M. Dumarsais a fait usage de ce mot en bien des occurrences, sans en faire en son lieu un article exprès: nous développerons nos vûes sur cet objet au mot Régime, en y exposant les principes de Grammaire qui peuvent y avoir rapport. On y verra que l'on peut quelquefois à peu de frais répandre la lumiere sur les élémens des Sciences & des Arts. ['However, the misuse of the word in question and of the words *régie* and *régime*, intended for the same use, could be avoided. It would be simpler to give the name *complement* to what we call *régime*, because it serves indeed to make the meaning that we wish to express complete; and then we would have simply said: *the* complement *of such prepositions must be in such and such a case; the* objective complement *of the active verb must be in the accusative*, etc. Mr. Dumarsais made use of this word in many occurrences, without dedicating a specific article to it: We will develop our views on this topic

3. The translations from French given in this paper remain quite close to the terminology of the original authors, and favor similar English terms. The French word *régime* will be systematically translated by *regime* and we will see that its meaning evolved during the 18th century.

> with *the word* Régime, by presenting there the principles of Grammar which can be related to it. We will see that we can sometimes, at little cost, shed light on the elements of Science and Arts.']
>
> (Beauzée, entry "Gouverner", in *Encyclopedia*, 1757, Volume 7, p. 792)

Even if the definition of the notion of *complement* is given in rather semantic terms, it is, without any doubt, a syntactic notion that Beauzée introduces, as shown by the following examples:

> On doit regarder comme *complément* d'un mot, ce qu'on ajoute à ce mot pour en déterminer la signification, de quelque manière que ce puisse être. […] *Livre* est un nom appellatif; la signification générale en est restrainte quand on dit, *un livre nouveau, le livre de Pierre* (*liber Petri*), *un livre de grammaire, un livre qui peut être utile*; & dans ces phrases, *nouveau, de Pierre* (*Petri*), *de grammaire, qui peut être utile*, sont autant de *complémens* du nom *livre*. *Savant* est un adjectif; la signification générale en est restrainte quand on dit, par exemple, qu'un homme est *peu savant,* qu'il est *fort savant*, qu'il est *plus savant que sage*, […] qu'il est *savant en droit*, &c. dans toutes ces phrases, les différens *complémens* de l'adjectif *savant* sont *peu, fort, plus que sage,* […] *en droit*. C'est la même chose, par exemple, du verbe *aimer*; […] on *aime beaucoup*, on *aime ardemment*, on *aime plus sincérement*, on *aime en apparence*, on *aime avec une constance que rien ne peut altérer*; voilà autant de manieres de déterminer le degré de la signification du verbe *aimer*, & conséquemment autant de *complémens* de ce verbe. L'adverbe *sagement* peut recevoir aussi divers complémens; on peut dire, *peu sagement, fort sagement, plus sagement que jamais, aussi sagement qu'heureusement, sagement sans affectation*, &c. ['We must see, as the *complement* of a word, what is added to that word to determine its meaning, in whatever way it may be. […] The general meaning [of the noun *book*] is restricted when we say *a new book, Peter's book* (*liber Petri*), *a grammar book, a book that can be useful*; and in these phrases, *new, Peter's* (*Petri*), *grammar* or *that can be useful* are all *complements* of *book*. *Learned* is an adjective; the general meaning is limited when one says, for example, that a man is *not very learned*, that he is *very learned*, that he is *more learned than wise*, […] that he is *learned in law*, &c. in all these phrases, the different *complements* of the adjective *learned* are *not very, very, more than wise,* […] *in law*. It is the same thing, for example, of the verb *to love*; […] we *love a lot*, we *love ardently*, we *love more sincerely*, we *love in appearance*, we *love with a constancy that nothing can alter*; these are all ways to determine the degree of meaning of the verb *to love*, & consequently the *complements* of this verb. The adverb *wisely* can also take various complements; one can say *not very wisely, very wisely, more wisely than ever, as wisely as fortunately, wisely without affectation*, etc.']
>
> (Beauzée, entry "Régime", in *Encyclopedia*, 1765, Volume 14, p. 5)

Beauzée notes that complementation is a recursive process and that one complement can be embedded in another one:

> Par exemple, dans cette phrase, *nous avons à vivre avec des hommes semblables à nous*: ce dernier *nous* est le *complément* de la préposition *à*; *à nous* est celui de l'adjectif *semblables*; *semblables à nous* est le *complément* total du nom appellatif *les hommes*. ['For example, in this sentence, *we have to live with men similar to us*: *us* is the *complement* of the preposition *to*; *to us* is the *complement* of the adjective *similar*; *similar to us* is the total *complement* of the appellative noun *men*.']
>
> (ibid., p. 5)

The only relation that is not analysed in terms of complementation is the subject relation:[4] in the previous example, the verb *have* with its whole complement is "the total attribute, the subject of which is *we*." (Articles are not analyzed either in terms of complementation and are not separated from the noun.)

Beauzée considered in fact two kinds of complements, which more or less correspond to Tesnière's (1959) notions of actant and circumstant or the notions of argument and modifier. The definition of the modifier is based on the notion of determination introduced in the *Logic* of Port-Royal (→3.1) (Auroux, 1981). The following quotation is taken from Beauzée's *Grammar*, published two years after his article *Régime,* which it reiterates with only minor modifications and a few additions:

> Il y a, en général, deux sortes de mots susceptibles de Complément: 1°. ceux qui ont une signification générale, qui peut, en conséquence, recevoir différents degrés de détermination; 2°. ceux qui ont par eux mêmes une signification relative, & qui exigent l'expression d'un terme conséquent du rapport qu'ils expriment. L'addition sert à changer la signification des mots de la première espèce; elle complette la signification des mots de la seconde. ['There are, in general, two kinds of words likely to be a *Complement*: 1°. those which have a general meaning, which can consequently receive different degrees of determination; 2°. those which have by themselves a relative meaning, and which require the expression of a consequent term of the relationship which they express. The addition serves to change the meaning of the words of the first species; it completes the meaning of the words of the second species.']
>
> (Beauzée, 1767, p. 45)

Beauzée was probably the first author to remark that arguments could not be defined in terms of determination. Words that govern an argument are called *relative words*, because they define a relationship between their governor (including the subject for verbs), called the *antecedent* of the relationship, and their argument, called the *consequent*.

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4. The term *complément* is used by Beauzée (and Du Marsais) to denote both arguments and modifiers. It still has this meaning in French, where *complément circonstanciel* is a very common term for denoting adjunct phrases modifying a verb.

> Exemples de noms relatifs: *le fondateur de Rome*, […] *le pere de Cicéron* […] Exemples d'adjectifs relatifs: *nécessaire à la vie*, […] *facile à concevoir*, &c. Exemples de verbes relatifs*: aimer Dieu, craindre sa justice, aller à la ville, revenir de l'armée, passer par le jardin*; *ressembler à quelqu'un, se repentir de sa faute, commencer à boire, desirer d'être riche*, &c. quand on dit, *donner quelque chose à quelqu'un, recevoir un présent de son ami*, les verbes *donner* & *recevoir* ont chacun deux *complémens* qui tombent sur l'idée de la relation qu'ils expriment. […] Quant aux prépositions, il est de leur essence d'exiger un complément, qui est un nom, un pronom ou un infinitive. ['Examples of relative nouns: *the founder of Rome*, […] *the father of Cicero* […] Examples of relative adjectives: *necessary for life*, […] *easy to conceive*, &c. Examples of relative verbs: *to love God, to fear his justice, to go to the city, to return from the army, to pass through the garden; to resemble someone, to repent of one's errors, to begin to drink, to desire to be rich*, &c. When one says, *to give something to someone, to receive a present from one's friend*, the verbs *give* and *receive* each have two *complements* that fall on the idea of the relationship that they express. […] As for prepositions, by their very nature they require a *complement*, which is a noun, a pronoun or an infinitive.']
>
> (Beauzée, entry "Régime", in *Encyclopedia*, 1765, Volume 14, p. 5)

Beauzée introduced the concept of *head word* of a complement (see Sweet, 1891, Section 40–41; Bloomfield, 1933), pointing out that one word of the complement is more important than the others, which is called "the first word in the analytical order" (on analytical order, see →2.3). The concept of head word of a complement entails the concept of *dependent*, which Beauzée called the *initial complement*. Beauzée also remarked that when the initial complement is an inflected word, it can be characterized in morphosyntactic terms. Such a *morphosyntactic head* of a complement (Zwicky, 1985) is called a *grammatical complement* by Beauzée:

> Si le premier mot est un adjectif, ou un nom, ou l'équivalent d'un nom, on peut le regarder comme le *Complément grammatical*; parce que c'est le seul qui soit assujetti par les lois de la syntaxe des langues qui admettent la déclinaison, à prendre telle ou telle forme, en qualité de *Complément*: si le premier est au contraire un adverbe ou une préposition, comme ces mots sont indéclinables & ne changent pas de forme, on regardera seulement le premier mot comme *complément initial*. ['If the first word is an adjective, or a noun, or the equivalent of a noun, it can be regarded as the *grammatical complement* because it is the only one which is subject to the laws of syntax of the languages which admit declension, to take such or such a form, as a *complement*: however, if the first word is an adverb or a preposition, as these words are indeclinable and do not change form, we will only consider the first word as an *initial complement*.'] (ibid., p. 5)

2.2 Beauzée's syntactic structures

We come now to Beauzée's main contribution to dependency syntax. Beauzée introduced two complementary structural notions: the complement as a phrase, which he proposed to call the *logical* or the *total complement*, and the complement as a word, the *initial* or the *grammatical complement*, which is the head word of the former. This is all the more remarkable as even Tesnière (1959), almost two centuries later, confused the two notions, using the term *node* (Fr. *nœud*) for both of them (Kahane & Osborne, 2015). Tesnière (1959/2015) first wrote: "we define a *node* as a set consisting of a governor and all of the subordinates that are directly or indirectly dependent on the governor and that the governor in a sense links together into a bundle" (Chapter 3, § 3), but later in the book he used the term *node* to mean just 'vertex' ("The *node* is nothing more than a geometric point." Chapter 22, § 12) and vertices are labeled by words in his stemma.

The relations between the two notions of complement introduced by Beauzée were not formally stated until the French mathematician Yves Lecerf (1960) showed the equivalence between dependency trees and (headed) phrase structure trees by introducing the notion of *projection* (see also Kahane, 1997, Kahane & Mazziotta, 2015). Without introducing the latter notion explicitly, Beauzée clearly explains how the dependency relation applied recursively gives the projection of a word:

> Un mot qui sert de complément à un autre, peut lui-même en exiger un second, qui, par la même raison, peut encore être suivi d'un troisieme, auquel un quatrieme sera pareillement subordonné, & ainsi de suite; de sorte que chaque complément étant nécessaire à la plénitude du sens du mot qu'il modifie, les deux derniers constituent le complément total de l'antépénultieme; les trois derniers font la totalité du complément de celui qui précede l'antépénultieme; & ainsi de suite jusqu'au premier complément, qui ne remplit toute sa destination, qu'autant qu'il est accompagné de tous ceux qui lui sont subordonnés. ['A word which serves as a *complement* to another, may itself require a second word, which, for the same reason, may be followed by a third, to which a fourth will also be subordinated, and so on; so that each *complement* being necessary to the fullness of the meaning of the word it modifies, the last two constitute the total *complement* of the preceding one; the last three make the total *complement* of the one that precedes the latter; and so on until the first *complement*, which does fulfils all its destination [= position], only as long as it is accompanied by all those that are subordinate to it.'] (ibid., p. 5)

I will now analyse the main example in Beauzée's article, where he described simultaneously a dependency tree and another structure presented below:

> Par exemple, dans cette phrase, *avec les soins requis dans les circonstances de cette nature;* le mot *nature* est le *complément* grammatical de la préposition *de: cette nature* en est le *complément* logique: la préposition *de* est le *complément* initial du nom appellatif *les circonstances;* et *de cette nature* en est le *complément* total: *les*

> *circonstances*, voilà le *complément* grammatical de la préposition *dans;* et *les circonstances de cette nature* en est le *complément* logique: *dans* est le *complément* initial du participe *requis*; & *dans les circonstances de cette nature* en est le *complément* total: le participe *requis* est le *complément* grammatical du nom appellatif *les soins*; *requis dans les circonstances de cette nature*, en est le *complément* logique: *les soins*, c'est le *complément* grammatical de la préposition *avec*; & *les soins requis dans les circonstances de cette nature*, en est le *complément* logique. ['For instance, in the sentence *with the care required in circumstances of this nature*; the word *nature* is the grammatical *complement* of the preposition *of*; *this nature* is its logical *complement*; the preposition *of* is the initial *complement* of the appellative noun *circumstances*; and *of this nature* is its total *complement*; *circumstances* is the grammatical *complement* of the preposition *with*; and *circumstances of this nature* is its logical *complement*; *in* is the initial *complement* of the participle *required* and *in circumstances of this nature* is its total *complement*; the participle *required* is the grammatical *complement* of the appellative noun *the care* and *required in circumstances of this nature* is its logical *complement*; *the care* is the grammatical *complement* of the preposition *with* and *the care required in circumstances of this nature* is its logical *complement*.']
> (ibid., p. 5)

While Beauzée does not propose a graphical representation, his description contains all the elements necessary to do so, and is depicted in Figure 1: on the left are shown the relations between each word and its initial complement, that is, its dependent, and on the right the relations between each word and its total complement.

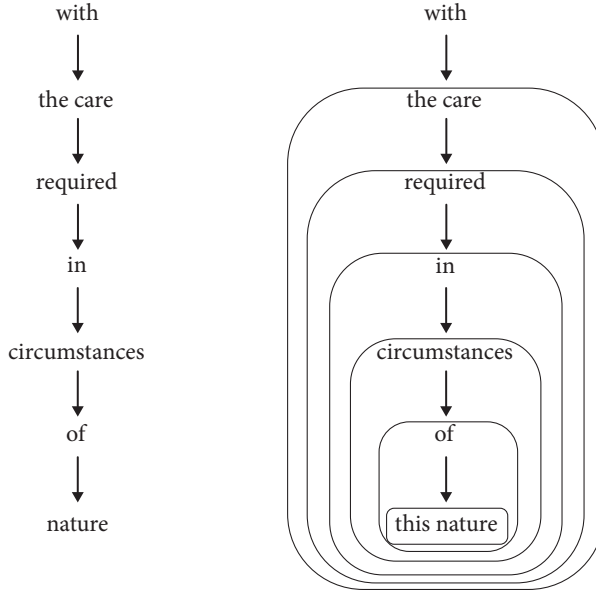

Figure 1. Beauzée's grammatical/initial complements and logical/total complements

As we can see, the structure on the left of Figure 1 is a dependency tree. A structure such as the one on the right of Figure 1 was proposed by the Russian mathematician Aleksej Gladkij (1968) as an alternative to dependency trees. In Kahane (1997), I proposed to call such structures *Gladkij trees*, but it is now clear that they must be called *Beauzée-Gladkij trees*. The two structures are equivalent since the initial complement is the *head word* of the total complement and the total complement is the *projection* of the initial complement. The Beauzée-Gladkij tree contains constituents, but unlike a phrase structure tree, the structure is not described in terms of part-whole relations between constituents, but in terms of dependency relations between a constituent and its governor.

2.3 Analytical order

Since Port-Royal, there had been a lively debate to decide whether word order in French (and similar languages such as English) was the "natural order of thought" (Ricken, 1978, p. 131). Beauzée took part in this debate by defining a linear order he called the *analytical order*. The analytical order is directly related to the dependency structure, because the head word of each complement is "the word that is the first in the analytical order" [*le mot qui y est le premier selon l'ordre analytique*] (Beauzée, 1765, p. 5). In other words, the analytical order is a projective head-initial dependency tree, as remarked by Dominicy (1982).[5]

If the analytical order is understood not as a linear order but as a structural order equivalent to its underlying dependency structure, most of the remarks that Beauzée made about the analytical order, such as the following one at the very beginning of the chapter on syntax in his grammar, where structural relationships are evoked in order-based terms, are valuable:

> L'objet du langage est l'énonciation de la pensée. Or, en quelque langue que ce puisse, les mots ne peuvent exciter dans l'esprit aucun sens parfait, s'il ne sont assortis d'une matière qui rende sensibles leurs rapports mutuels, qui sont l'image des relations qui se trouvent dans les idées mêmes que les mots expriment. Car, quoique la pensée soit indivisible, la Logique vient à bout de l'analyser en quelques sons, en considérant séparément les idées différentes qui en sont comme la matière; & les relations qui les unissent dans l'esprit. Toute relation suppose un premier terme, puis un second; & telle idée qui est le second terme d'un rapport, est en même temps le premier terme d'un autre rapport. ['The object of language is the utterance

5. In fact, Dominicy (1982) discussed the structure considered by Condillac (1775), but I think that this grammar does not contain anything new concerning our purpose compared to Beauzée (1767).

> of the thought. In whatever language, words cannot excite any perfect meaning in the mind unless they are accompanied by a matter that captures their mutual relations, relations which are the image of the relationships that are found in the very ideas that words express. For, even though thought is indivisible, Logic analyses it in some sounds, considering separately the different ideas that are its matter; and the relationships that unite them in the mind. Every relationship presupposes a first term, then a second; any idea which is the second term of a relationship is at the same time the first term of another relationship.'] (Beauzée, 1767, p. 1)

This excerpt evokes linguistic models such as Meaning-Text Theory (Mel'čuk, 1988), where every language is modeled as a correspondence between abstract semantic representations and phonetic representations of texts.[6] According to Meaning-Text Theory, the choice of a lexical unit expressing a given meaning is directly constrained by the syntactic position that this unit occupies in the dependency tree, as noticed by Beauzée:

> [L]es formes accidentelles des mots ne se décident qu'à raison du rang qu'occupent dans l'ordre analytique les idées dont ils sont les signes. ['The accidental forms of words are decided only because of the rank occupied in the analytical order by the ideas of which they are the signs. '] (Beauzée, 1767, p. 3)

Of course, Beauzée's analytical order must also be understood as a linear order and, following Girard (1747), languages are classified into analogous languages, the order of which is "analogous to the order of thought",[7] and transpositive languages, which have a flexible word order, such as Latin or Ancient Greek. Consequently,

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6. The semantic representation of Meaning-Text Theory is not only not linearized but also not hierarchized. A Meaning-Text model proceeds from the meaning to the text, first hierarchizing the information and producing a dependency tree and then linearizing it to produce a (phonetic) text.

7. Following his predecessors, Beauzée tried to defend the assumption that head-initial order is the order of thought: "C'est en effet l'ordre analytique de la pensée qui fixe la succession des mots dans toutes les langues analogues […] C'est l'ordinaire dans toutes ces langues que le sujet précede le verbe, parce qu'il est dans l'ordre que l'esprit voye d'abord un être avant qu'il en observe la maniere d'être; que le verbe soit suivi de son complément, parce toute action doit commencer avant que d'arriver à son terme; que la préposition ait de même son complément après elle, parce qu'elle exprime de même un sens commencé que le complément acheve." ['It is in fact the analytical order of thought that determines the succession of words in all analogous languages […] It is usual in all these languages for the subject to precede the verb, because it is the natural order for the mind to first see a being before observing its way of being; for the verb to be followed by its complement, because any action must begin before reaching completion; and for the preposition to have its complement after it, because it expresses a meaning begun that the complement completes.'] (entry "Inversion", in *Encyclopedia*, 1765, Volume 8, p. 853)

every surface order that does not follow the analytical order is considered as an *inversion*, as developed in the entry *Inversion* of the *Encyclopedia*:[8]

> [L]es langues transpositives n'ont pu se procurer la liberté de ne pas suivre scrupuleusement [l'ordre analytique] qu'en donnant à leurs mots des inflexions qui y fussent relatives; de maniere qu'à parler exactement, elles ne l'ont abandonné que dans la forme, & y sont restées assujetties dans le fait; cette influence nécessaire de l'ordre analytique a non-seulement reglé la syntaxe de toutes les langues; elle a encore déterminé le langage des Grammairiens de tous les tems: c'est uniquement à cet ordre qu'ils ont rapporté leurs observations, lorsqu'ils ont envisagé la parole simplement comme énonciative de la pensée, c'est-à-dire, lorsqu'ils n'ont eu en vûe que le grammatical de l'élocution; l'ordre analytique est donc, par rapport à la Grammaire, l'ordre naturel; & c'est par rapport à cet ordre que les langues ont admis ou proscrit l'inversion. ['Transpositive languages were only able to obtain the freedom not to follow [the analytical order] scrupulously by giving their words inflections which were relative to it; so that to be precise, they have abandoned it only in form, and have remained subject to it in fact; this necessary influence of the analytical order has not only regulated the syntax of all languages; it has also determined the language of Grammarians of all times: all their observations were related to this order alone when they considered speech simply as the enunciation of thought, that is, when they had in mind only the grammaticality of elocution; the analytical order is therefore, in relation to Grammar, the natural order.']
>
> (entry "Inversion", in *Encyclopedia*, 1765, Volume 8, p. 857)

2.4 Syntactic constraints on word order

As mentioned above, Beauzée was particularly interested in the relation between syntactic structure and word order:

> Il n'y a peut-être pas un point de syntaxe plus important, surtout pour bien fixer l'ordre analytique, qui est la boussole de[s langues] qui comme la nôtre, n'ont pas admis de déclinaison: il n'y a pas, dis-je, un point plus important que celui qui concerne l'arrangement des divers *Compléments* d'un même mot. ['Perhaps there is no more important point in syntax, especially to determine the analytical order, which is the compass of [languages] such as ours which have not admitted declension: there is, I say, no more important point than that concerning the arrangement of the various *Complements* of the same word.'] (Beauzée, 1767, p. 77)

8. This point of view is strongly reminiscent of Chomsky's (1965) generative-transformational grammar, where the deep structure is ordered and every surface construction that does not conform to the deep linear order is considered as a movement. Interestingly, Chomsky (1965, p. 7) discussed Diderot (1751), who was a defender of the natural order of thought. Note that some contemporaries of Diderot and Beauzée had a highly nuanced position (see Du Marsais's astute position in Section →3.4 and D'Alembert, 1767). But it was probably not until Tesnière (1959) that a theory was first proposed to explain the fact that the structural order need not be linearly ordered.

Beauzée actually made two important remarks about the relative order of codependents. The first concerns heavy shift (→2.4.1), and the second projectivity (→2.4.2).

2.4.1 *Heavy shift*

The first one concerns the so-called *heavy shift* (Ross, 1967), which was introduced by Buffier (1709) (→3.2), for which Beauzée gives a rational explanation:[9]

> De plusieurs *complémens* qui tombent sur le même mot, il faut mettre le plus court le premier après le mot completé; ensuite le plus court de ceux qui restent, & ainsi de suite jusqu'au plus long de tous qui doit être le dernier. […] il importe à la netteté de l'expression, *cujus summa laus perspicuitas*, de n'éloigner d'un mot, que le moins qu'il est possible, ce qui lui sert de *complément*. Cependant quand plusieurs *complémens* concourent à la détermination d'un même terme, ils ne peuvent pas tous le suivre immédiatement; & il ne reste plus qu'à en rapprocher le plus qu'il est possible celui qu'on est forcé d'en tenir éloigné: c'est ce que l'on fait en mettant d'abord le premier celui qui a le plus de briéveté, & réservant pour la fin celui qui a le plus d'étendue. ['When several *complements* fall on the same word, it is necessary to put the shortest one first after the completed word; then the shortest of those that remain and so on until the longest of all, which must be the last. It is important for the clarity of the expression, *cujus summa laus perspicuitas*, to move what serves as the *complement* as little as possible away from a word. However, when several *complements* contribute to the determination of the same term, they cannot all follow it immediately; and all that remains is to bring the one that we are forced to keep away from it as close as possible to it: this is what we do by putting first the one which is the shortest, and keeping the longest for the end.']
>
> (Beauzée, entry "Régime", in *Encyclopedia*, Volume 14, p. 7, 1765)

2.4.2 *Projectivity*

The second remark concerns *projectivity* (Lecerf, 1960) and the fact that discontinuous complements must be avoided:

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9. See Weil (1844, pp. 97–102) for a criticism of Beauzée's explanation and the following remarkable reformulation: "When several complements fall on the same word, give the most concise form to the one immediately following the complete word and, as you go along, give the complements a more developed and extensive expression." [De plusieurs compléments qui tombent sur le même mot, donnez la forme la plus concise à celui qui suit immédiatement le mot completé et, à mesure que vous avancez, donnez aux compléments une expression plus développée et plus étendue.] In other words, it is not because a complement is heavy that is must be placed far from its governor, but it is because it far from its governor that it must be heavy. Weil concludes with: "Speech is subservient to thought, not thought to speech." [La parole est au service de la pensée, et non pas la pensée au service de la parole.], which is an indirect reference to the *Port-Royal Grammar* (→3.1).

> Ajoutons encore une autre remarque non moins importante à celles qui précedent: c'est qu'il ne faut jamais rompre l'unité d'un *complément* total, pour jetter entre ses parties un autre *complément* du même mot. La raison de cette regle est évidente: la parole doit être une image fidele de la pensée; & il faudroit, s'il étoit possible, exprimer chaque pensée, ou du moins chaque idée, par un seul mot, afin d'en peindre mieux l'indivisibilité; mais comme il n'est pas toujours possible de réduire l'expression à cette simplicité, il est du-moins nécessaire de rendre inséparables les parties d'une image dont l'objet original est indivisible, afin que l'image ne soit point en contradiction avec l'original, & qu'il y ait harmonie entre les mots & les idées. […] Les règles que je viens d'assigner sur l'arrangement de divers complémens, ne peuvent concerner que l'ordre analytique qu'il faut suivre quand on fait la construction d'une phrase, ou l'ordre usuel des langues analogues comme la nôtre. Car pour les langues transpositives, où la terminaison des mots sert à caractériser l'espèce de rapport auquel ils sont employés, la nécessité de marquer ce rapport par la place des mots n'existe plus au même degré. ['Let us add yet another, equally important, remark: it is that we must never break the unity of a total *complement*, by inserting another *complement* of the same word between its parts. The reason for this rule is obvious: speech must be a faithful image of thought; and each thought, or at least each idea, should, if possible, be expressed by a single word, in order to better depict its indivisibility; but as it is not always possible to reduce the expression to this simplicity, it is at least necessary not to separate the parts of an image whose original object is indivisible, so that the image is not in contradiction with the original, and that there is harmony between words and ideas.'](ibid., p. 8)

Beauzée continues by remarking that the rules he had "just assigned to the arrangement of various *complements* can only concern the analytical order to be followed when constructing a sentence" in languages that are analogous to French, because in Latin and similar languages, "where the ending of words serves to characterize the type of relationship in which they are used, the need to mark this relationship by word order no longer exists to the same degree."

3. From Buffier to Beauzée

I hope that I have convinced the reader that, even if he never drew any syntactic structures, Beauzée had a very clear perception of syntax and what a dependency tree is. We will now go back one century earlier to see how such an insight developed.

3.1 Port-Royal (1660, 1662)

The publication in 1660 of the *General and Rational Grammar* by Antoine Arnault (1612–1694) and Claude Lancelot (1615–1695), also called the *Port-Royal Grammar*, marks an epistemological break (Chevalier, 1968; Dominicy, 1984).[10] It was followed two years later by *Logic or the Art of Thinking*, written by Antoine Arnault and Pierre Nicole (1625–1695). I will discuss two important contributions of the Port-Royal Grammar, the new definition of grammar (→3.1.1) and the distinction between two functions of the verb (→3.1.2), before seeing how it redefined the aim of syntax (→3.1.3). Section →3.1.4 looks at a contribution of the *Port-Royal Logic*, which played a major role in characterizing the notions of complement and dependent.

3.1.1 *The foundations of grammar*

While previous grammars were organized as lists of grammatical prescriptions (cf. in particular the famous *Remarques* of Vaugelas (1647)), the aim of the *Port-Royal Grammar* was to understand how language works. This new grammar approached the topic on the semantic level as it presented grammar as "the Art of speaking" and defined it in terms that prefigure Saussure's (1916) theory of signs:

> La Grammaire est l'Art de parler. Parler est expliquer les pensées par des signes, que les hommes ont inventés à ce dessein. […] L'on peut considérer deux choses dans ces signes. La première; ce qu'ils font par leur nature, c'est à dire en tant que sons & caractères. La seconde; leur signification; c'est à dire la manière dont les hommes s'en servent pour signifier leurs pensées. ['Grammar is the art of speaking. To speak is to explain thoughts by signs, which men have invented for this purpose. […] Two things can be considered in these signs. The first is what they do by their nature, i.e. as sounds and characters. The second is their meaning, that is, how men use them to make their thoughts known.'] (Arnault & Lancelot, 1660, p. 5)

10. Beauzée gave credit to four of his predecessors: Wallis, Buffier, Girard and Du Marsais. While the latter three are French grammarians, heirs of Port-Royal, John Wallis was an English grammarian and mathematician who published his grammar of English in 1753. Although the book does not contain a definition of syntax and syntactic structure, Wallis used a conceptual apparatus which appears to be largely dependency-based: " Adjectives are linked to their substantives without showing any indication of case, gender, or even number, in precisely the same way as adverbs are linked to verbs and other parts of speech. They are mostly put immediately before the substantive, if they are alone, and not accompanied by subordinate qualifiers which they govern." (Wallis, 1653, Chapter 5, translated from Latin by Kemp, 1972)

For instance, to understand why there are diverse parts of speech in languages, and in particular nouns and verbs, we need to start from the meaning we want to express:

> [L]a connoissance de qui se passe dans notre esprit est necessaire pour comprendre les fondemens de la Grammaire; & sur c'est de là que dépend la diversité des mots qui composent le discours. ['The knowledge of what happens in our mind is necessary to understand the foundations of Grammar; and on it depends the diversity of the words that make up the discourse.'] (ibid., p. 17)

3.1.2 *The functions of the verb and the subject-attribute relation*

Arnault and Lancelot (1660) considered that the finite verb has two main functions. Although it is the second one, the relation of attribution, that is particularly relevant here, both will be presented, because they are often confused, and it is one of the great contributions of the *Port-Royal Grammar* to have separated them.

The first main function of the finite verb is to support the illocution and to mark the sentence as an assertion, called an *affirmation* in their terminology:

> Ainsi les hommes n'ont pas eü moins de besoin d'inventer des mots qui marquassent l'*affirmation*, qui est la principale manière de notre pensée, que d'en inventer qui marquassent les objets de notre pensée. ['Thus men did not have less need to invent words that mark *affirmation*, which is our main way of thinking, than to invent words that mark the objects of our thinking.'] (ibid., p. 89)

Even if the notions of *speech act* and *illocution* (Gardiner, 1932, Austin, 1962) are not explicitly mentioned, it is quite clear that their *affirmation* corresponds to assertion. In particular, it is contrasted with the other illocutionary values that a sentence can have:

> J'ai dit que le *principal* usage du Verbe est de signifier l'affirmation, parce que nous ferons voir plus bas que l'on s'en sert encore pour signifier d'autres mouvements de notre ame; comme de *desirer, prier, commander*, &c. ['I said that the main use of the Verb is to convey affirmation, because we will see below that it is also used to convey other movements of our soul; such as *to desire, to pray, to command*, etc.'] (ibid., p. 90)

And when the verb is not finite, it loses its illocutionary force:

> Et ainsi la raison essentielle pourquoy un Participe n'est pas un Verbe, c'est qu'il ne signifie point l'*affirmation*. ['And so the essential reason why a Participle is not a Verb, is that it does not convey *affirmation*.'] (ibid., p. 95)

The second main function of the finite verb is to support the predication and to form a *proposition* with its subject: [11]

> La connoissance de la nature du Verbe dépend de ce que nous avons dit au commencement de ce discours, que le jugement que nous faisons des choses (comme quand je dis, *la terre est ronde*) enferme necessairement deux termes; l'un appellé sujet, qui est ce dont on affirme, comme, *terre*; & l'autre appellé attribut, qui est ce qu'on affirme, comme *ronde:* Et de plus la liaison entre ces deux termes, qui est proprement l'action de notre esprit qui affirme l'attribut du sujet. ['The knowledge of the nature of the Verb depends on what we said at the beginning of this discourse, that the judgment we make about things (as when I say, *the earth is round*) necessarily includes two terms: one called subject, which is what we affirm about, such as *earth*; and the other called attribute, which is what is affirmed, such as *round*. And moreover the connection between these two terms, which is strictly the action of our mind that affirms the attribute about the subject.'] (ibid., p. 89)

The definition of subject and attribute given by Arnault and Nicole, in terms of affirmation (what we affirm about vs. what is affirmed), corresponds today to the notions of topic and comment (Weil, 1844, p. 25), which are now distinguished from subject and predicate. Arnault and Nicole do not apply their definition coherently, because they consider that the subject-attribute relation can occur without affirmation (see below).[12]

Arnault and Nicole explain that, while the two functions, assertion/affirmation and predication, are merged in most finite verbs, they are separated in a predicative construction, such as *the earth is round*, the copula being the support of the affirmation and the adjective, the support of the predication. The notions of *subject,*

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11. A parallel can be drawn between this quotation and the famous passage in Tesnière (1966/2015, Chapter 1): "a sentence of the type *Alfred speaks* is not composed of just the **two** elements, *Alfred* and *speaks*, but rather of **three** elements, the first being *Alfred*, the second *speaks*, and the third the connection that unites them – without which there would be no sentence." But contrary to Tesnière, Arnault and Nicole reified the connection by the copula and did not consider it as a purely structural object.

12. Henri Weil (1818–1909), already mentioned in Note 3, deserves a few words. He was a reader of Beauzée, whom he quotes several times, and he is likely to have influenced Tesnière (1959), who cited very few of his sources. His thesis on word order is very innovative. Comparing French, English, German, Turkish, Chinese, Latin and Ancient Greek, Weil showed that word order depends on three factors: the topic-comment organization, which he was maybe the first to define, the syntactic structure, which follows Beauzée's and is dependency-based, and intonation. He distinguished between languages with free and fixed order and among languages with fixed order, between languages with ascending (= head-final) order and descending (= head-initial) order, a new classification which was wrongly attributed to Tesnière (1959) in (Kahane & Osborne, 2015).

attribute, and *proposition* are more semantic than syntactic and apply also when the attribute is a syntactic dependent of the subject:

> Ces sortes de propositions dont le sujet ou l'attribut sont composés de plusieurs termes, enferment, au moins dans notre esprit, plusieurs jugement dont on peut faire autant de propositions. Comme quand je dis *Dieu invisible a créé le monde visible*, il se passe trois jugements dans mon esprit renfermé dans cette proposition. Car je juge premièrement que *Dieu est invisible*. 2. Qu'*il a créé le monde*. 3. Que *le monde est visible*. Et de ces trois propositions, la seconde est la principale et l'essentielle de la proposition. Mais la première et la troisième ne sont qu'incidentes, et ne font que partie de la principale, dont la première en compose le sujet, et la seconde l'attribut. ['These kinds of propositions, in which the subject or the predicate is composed of several terms, contain, at least in our mind, several judgments, of which one can make as many propositions. Thus, for example, when I say, *Invisible God created the visible world,* three judgments pass through my mind which are included in this proposition. For I judge: (1) that *God is invisible*; (2) that *he created the world*; (3) that *the world is visible*. And of these three propositions, the second is the principal and essential one of the original proposition. But the first and the third propositions are only incidental, and are only parts of the main proposition – the former composing the subject of the principal proposition, and the latter composing its attribute.'] (ibid., p. 68)

This very famous passage is sometimes understood as a discussion about subordination (cf. Rieux and Rollin (1975) who translate Fr. *incidente*, translated here by *incidental*, by *subordinate*), but a semantic interpretation may be more appropriate: while a sentence can contain several propositions, it contains only one affirmation and the main proposition is the one which realizes it. But of course, semantics and syntax are not perfectly separated and some remarks can be interpreted in both directions such as:

> [L]e Relatif a de plus que les autres pronoms qu'il joint la proposition dans laquelle il entre, à une autre proposition; je croy de mesme que l'Infinitif a pardessus l'affirmation du Verbe, ce pouvoir de joindre la proposition où il est à un autre. ['The Relative [pronoun] has something more than the other pronouns in that it joins the proposition in which it occurs to another proposition; likewise, I believe that the Infinitive has over the affirmation of the Verb this power to join the proposition in which it occurs to another.'] (ibid., p. 112)

(Like the participle, the infinitive has not the complete status of verb, because it cannot carry affirmation.)

3.1.3 *The syntactic program*

Arnault and Nicole (1660) were not really interested in describing the forms observed in languages. They acknowledged that the forms are partly arbitrary, as the comparison between Latin and French clearly shows, and they demonstrate that the forms are here on purpose, in order to express meanings. Cases or word order are means to express something and this is what must be discovered. Only a few pages are devoted to syntax, but they are enlightening:

> Il reste à dire un mot de la Syntaxe ou Construction des mots ensemble, dont il ne sera pas difficile de donner des notions generales, suivant les principes que nous avons établis. La construction des mots se distingue generalement, en celle de Convenance quand les mots doivent convenir ensemble, & en celle de regime, quand l'un des deux cause une variation dans l'autre. ['It remains to say a few words about the Syntax or Construction of words together, of which it will not be difficult to give general notions, according to the principles that we established. The construction of words can generally be separated into that of Convenience when the words must agree together, and that of regime,[13] when one of the two causes a variation in the other.'] (ibid., p. 140)

Each language has its own means of expression:

> La Syntaxe de regime au contraire, est presque toute arbitraire, & par cette raison se trouve tres differente dans toutes les Langues. Car les unes font les regimes par les cas; les autres au lieu de cas, ne se servent que de petites particules qui en tiennent lieu. ['Syntax of regime, on the contrary, is almost arbitrary, and for this reason is very different in all languages. For some make regimes by cases; others instead of cases merely use small particles in their place.'] (ibid., p. 142)

With the *Port-Royal Grammar*, the program of linguistics changes. It is no longer the task of linguists to list all the possible forms allowed in a particular language; rather, it is to understand what a language is used for and what it expresses, which will be the program of pragmatics and semantics, and how it expresses it, which will be the program of syntax. This new program for syntax is only sketched out by Arnault and Nicole, but it paves the way for their successors and it is what explains the incredible progress that was made in syntax during the following century.

3.1.4 *Determination*

In *Logic or the Art of Thinking*, Arnault and Nicole introduced the notion of *determination*, opposed to the notion of *explanation* and which had been of great use in syntax, in the definition of syntactic dependency (Auroux & Rosier, 1987; Bouard, 2007, p. 194):

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13. The term *regime* is used here in the sense acknowledged by Beauzée; →2.1.

> Ce qu'il y a de plus remarquable dans ces termes complexes, est que l'addition que l'on fait à un terme est de deux sortes: l'une qu'on peut appeler *explication*, et l'autre *détermination*. Cette addition peut s'appeler seulement *explication* quand elle ne fait que développer […]; comme si je dis: *L'homme, qui est un animal doué de raison*, ou *l'homme qui désire naturellement d'être heureux,* ou *l'homme, qui est mortel*. Ces additions ne sont que des explications, parce qu'elles ne changent point du tout l'idée du mot d'homme, et ne la restreignent point à ne signifier qu'une partie des hommes, mais marquent seulement ce qui convient à tous les hommes. […] L'autre sorte d'addition, qu'on peut appeler *détermination*, est quand ce qu'on ajoute à un mot général en restreint la signification, et fait qu'il ne se prend plus pour ce mot général dans toute son étendue, mais seulement pour une partie de cette étendue; comme si je dis: *Les corps transparents, les hommes savants, un animal raisonnable*. Ces additions ne sont point de simples explications , mais des déterminations, parce qu'elles restreignent l'étendue du premier terme, en faisant que le mot de *corps* ne signifie plus qu'une partie des corps, le mot d'*homme*, qu'une partie des hommes, le mot d'*animal*, qu'une partie des animaux. ['What is most remarkable about these complex terms is that the addition to a term is of two kinds: one that can be called *explanation*, and the other *determination*. This addition can be called *explanation* when it just develops […], for example if I say: *Man, who is an animal endowed with reason*, or *Man, who naturally desires to be happy*, or *Man, who is mortal*. These additions are only explanations, because they do not change the idea of the word *man* at all, and do not restrict it to mean only part of humanity, but mark only what concerns all men. […] The other kind of addition, which we can call *determination*, is when what we add to a general word restricts its meaning […], for example if I say: *transparent bodies, learned men, a reasonable animal*. These additions are not simple explanations, but determinations, because they restrict the scope of the first term, so that the word *body* means only some bodies, the word *man*, only some men, the word *animal*, only some animals.']
>
> (Arnault & Nicole 1662, Chapter 7)

3.2 Buffier (1709)

Claude Buffier (1661–1737) put the syntactic program of Arnault and Lancelot into action in his *French Grammar* of 1709. The legacy of Buffier to syntax is generally not recognized at its true value, including by direct heirs such as Beauzée. This misappreciation may be due to Buffier's awkward terminology, directly borrowed from morphology or semantics. From our perspective, Buffier (1709) made a fundamental contribution to dependency syntax. For a similar view, see Chevalier (1968, p. 610), who acknowledged his exceptional contribution to the construction of the notion of *complement*.

This section presents the dependency-oriented definition of syntax given by Buffier, (→3.2.1), his dependency-based definition of parts of speech (→3.2.2), an example of the dependency structure he proposed (→3.2.3), and some considerations about word order (→3.2.4).

3.2.1 *The definition of syntax*

Buffier (1709) viewed syntax in terms of relations between words:[14]

> La manière de construire un mot avec un autre mot, par rapport à ses diverses terminaisons selon les règles de la Grammaire, s'apelle *sintaxe*. ['The way of constructing one word with another word, in relation to its various endings according to the rules of Grammar, is called syntax.'] (Buffier, 1709, p. 47)

The chapter on syntax is called "About syntax or the way to join the parts of speech together, according to their various regimes" and it opens with the following metaphor:

> De la syntaxe ou de la manière de joindre ensemble les parties d'oraison, selon leurs divers régimes – Les diverses parties font, pour ainsi dire, par raport à une langue, ce que font les matériaux par rapport à un édifice. Quelque bien préparez qu'ils soient, ils ne feront jamais un palais, ou une maison, si on ne les place conformément aux régles de l'architecture. ['These various parts do, so to speak, in relation to a language, what materials do in relation to a building. No matter how well they are prepared, they will never make a palace, or a house, if they are not placed according to the rules of architecture.'] (ibid., p. 275)

In a section called "About words united together through syntax and style, to explore the nature of the one and the other" ['Des mots unis ensemble par le moyen de la syntaxe & du stile, pour explorer la nature de l'un & de l'autre.'] (*ibid.*, p. 86), Buffier quite explicitly distinguishes syntax proper, comparable to the *structural order* of Tesnière (1959), from *style*, which includes the *linear order* of Tesnière (1959). *Syntax* is defined as:

> la manière de joindre chaque mot d'une langue l'un avec l'autre, par raport aux diverses terminaisons que prescrit la Grammaire. La syntaxe donc regarde particulièrement la construction & la convenance naturéle de chaque mot avec un autre; pour les faire accorder en genre, en nombre, en persone, en mode & en cas. ['the way to join the words of a language with one another, in relation to the various endings prescribed by the Grammar. Syntax thus focuses particularly on the construction and the natural suitability of each word with others; to make them agree in gender, in number, person, mode and case.'] (ibid., p. 87)

14. This may be another reason why Buffier's contribution has been underestimated until now, since studies on the history of syntax began at the time when constituency-based syntax was predominant. Cf. Swiggers (1983a, 2006, p. 870), who denies Chevalier's claim that Buffier (1709) made a contribution to the theory of complementation.

While *style* is defined as:

> la manière dont les mots construits selon les loix de la Sintaxe, sont arangez entre eux dans le gout de la langue. On voit par cette définition, 1°. que le stile supose ou renferme la Sintaxe; car s'il n'y avoit aucune construction de Sintaxe, quel stile pouroit-il avoir? 2°. que la Sintaxe ne s'étend pas aussi loin que le stile; car la sintaxe peut se trouver très-juste dans un discours dont le stile sera très-mauvais. ['the way in which the words, constructed according to the laws of Syntax, are arranged according to the taste of the language. We see by this definition 1° that the style assumes or contains Syntax, for if there were no Syntactic construction, what style could it have? 2° that Syntax does not extend as far as style, for the syntax of a discourse can be perfectly correct while its style may be very bad.'] (ibid., p. 88)

Some examples follow, with the same words in different orders. They are contrasted with the following comment:

> Les régimes & les terminaisons de chaque mot se trouvent dans ces phrases entièrement conformes aux règles de la Sintaxe; il n'y a aucun faute de Sintaxe: cependant à l'arangement de ces mêmes mots pour parler dans le goût de la langue, & il y a quelque faute de stile. ['The regimes and endings of each word are, in these sentences, fully in conformity with the rules of Syntax; there is no error of Syntax. However considering the arrangement of these same words to speak in the taste of the language, there is some error of style.'] (ibid., p. 89)

The main notion of Buffier's grammar is the notion he calls *régime*, which is without any doubt our modern notion of *syntactic dependent*, even if it is defined using the notion of determination introduced by Arnault and Nicole (1662), called here *particularization*:

> Tous les noms ou même tous les mots qui servent ainsi à particulariser la signification d'un autre mot, sont le régime de ce mot: comme si je dis *un ami de plaisir*, la signification d'*un ami* est particularisée par le mot *de plaisir;* c'est pourquoi *de plaisir* est le régime d'*un ami*. ['All the nouns or even all the words, which thus serve to particularize the meaning of another word, are the regime of this word; as if I say *a friend of pleasure*, the meaning of *a friend* is particularized by the word *of pleasure*; that is why *of pleasure* is the regime of *a friend*.'] (*ibid.*, p. 57)

In the same way, every preposition has a syntactic dependent: in the sentence *Dieu agit avec justice* ['God acts with justice'],

> […] *Avec* est un mot qui n'a point de sens déterminé & complet par lui-même; mais par le mot *justice* dont il est ici suivi & qui en est le régime. ['*With* is a word which has no determined and complete meaning by itself, but by the word *justice* by which it is here followed and which is its regime.'] (p. 73)

More precisely the notion of *regime* corresponds to Beauzée's *initial complement* and is contrasted with the subject, called the *nominative* by Buffier, probably to avoid confusion with the semantic notion of *subject* considered by Arnault and Lancelot (1660):

> Si le nom est employé actuellement pour exprimer le sujet dont on afirme, alors il est appelé proprement le *nom* ou le *nominatif du verbe*: c'est la principale partie, & comme le fondement de tout ce qu'on énonce. Si le nom est seulement employé, pour exprimer l'objet qui particularise la signification du verbe alors le nom est apelé *régime du verbe*. Quand je dis *Le Pasteur connoît ses brebis*, le *Pasteur* est nominatif du verbe; parce qu'il est le sujet dont on afirme actuellement quelque chose: les *brebis* est le *régime du verbe*, parce que c'est l'objet qui particularise la signification du verbe *conoît*, marquant en particulier ce que le Pasteur conoît: de même si je dis, *Vous êtes savant; vous* sera le nominatif, & *savant* sera le régime: parce que *savant* particularise ici le verbe *êtes*, marquant en particulier ce que *vous êtes*. ['If the noun is currently used to express the subject about which one makes an affirmation, then it is properly called the *noun* or *nominative of the verb*: It is the main part and similar to the foundation of all that one utters. If the noun is only used to express the object that particularizes the meaning of the verb, then the noun is called the *regime of the verb*. When I say *The Shepherd knows his sheep*, the *Shepherd* is the nominative of the verb, because it is the subject about which something is actually being affirmed: the *sheep* is the *regime of the verb*, because it is the object that distinguishes the meaning of the verb *knows*, marking in particular what the Shepherd knows; likewise if I say *You are learned*: *you* will be the nominative, and *learned* will be the regime: because *learned* here particularizes the verb *are*, marking in particular what you are.'] (ibid., p. 57)

But even if the subject is assigned a special status and is not considered as a dependent, unlike the other elements in the sentence, Buffier recognizes a certain centrality of the verb, by defining the subject as "the nominative of the verb", while the verb was the "attribute of the subject" in Port-Royal.

3.2.2 *Parts of speech*

I will spend some time on the definition of parts of speech given by Buffier, because, maybe for the first time, their definition is truly syntactic and given in distributional terms. Buffier asserts that there are three main parts of speech, which he calls *noun, verb* and *modificative*, a tripartite classification (cf. for instance Croft (1991, 2003, p. 184) who advocates a universal tripartite classification based on "the propositional acts of reference, predication, and modification"):[15]

15. Even if it seems quite clear in Buffier's text that the term *modificative* corresponds to a part of speech, some authors have interpreted it as a relational term, like *modifier* (Roelandt & Swiggers, 1990; Bouard, 2007, p. 220).

> Le mot qui sert à exprimer le sujet dont on parle; je l'appelle *nom*; le mot qui sert à exprimer ce que l'on attribue au sujet, ou ce qu'on en afirme (car ces expressions ne signifient ici que la même chose) je l'apelle *verbe*. […] L'un & l'autre (c'est-à-dire le nom & le verbe) sont susceptibles de diverses circonstances ou modifications. Si je dis, *Le zele agit*, voilà un nom & un verbe sans aucune modification; mais si je dis, *Le zele sans prudence agit témérairement*. Voilà le nom & le verbe chacun avec une modification ou circonstance. Cette dernière sorte de mots, qui ne servent qu'à modifier le nom & le verbe, n'a point de nom général dans les grammaires ordinaires. On nous permettra de les apeler ici modificatifs: ils comprendront ce qu'on apelle communément dans les grammaires, *Adverbe, Préposition, Conjonction*; car ce ne sont que diverses sortes de modificatifs. ['I call *noun* the word that is used to express the subject we are talking about; the word that is used to express what we attribute to the subject, or what we say (because these expressions here only mean the same thing) is called the *verb*. Both (i.e. the noun and the verb) are subject to various circumstances or modifications. If I say *Zeal acts*, here is a noun and a verb without any modification; but if I say *Zeal without prudence acts recklessly*, here is a noun and a verb each with a modification or circumstance. The latter kind of word, which only serves to modify the noun and the verb, has no general name in ordinary grammars. We will call them *modificatives* here: they will comprise what is commonly called, in grammars, *Adverbs, Prepositions, Conjunctions*, because they are only various kinds of modificatives.']
> (ibid., p. 45)

It is interesting to note that it is the predication, now considered as a fundamental property of language after Port-Royal, that serves to define the notions of noun and verb. More generally, the parts of speech are characterized by their distributional properties. To characterize the modificative, Buffier lists the different categories of words it can depend on:

> Nous avons observé que les modificatifs se joignent avec les noms; nous pouvons ajouter qu'ils se joignent les uns aux autres, ou plutôt qu'ils se joignent avec diverses parties du langage, pour en exprimer les diverses modifications; par exemple: 1 *bien méchant*: 2 *aimer bien*: 3 *bien mal-à-propos;* voilà l'adverbe *bien* joint , 1 à un nom, 2 à un verbe, 3 à un autre adverbe: mais l'usage ne permet pas qu'il en soit ainsi de tous les modificatifs. ['We have observed that modificatives combine with nouns; we can add that they combine with each other, or rather that they combine with various parts of language, to express the various modifications. For example: 1° *bien méchant* 'very nasty', 2° *aimer bien* 'to like well', 3° *bien mal-à-propos* 'very inappropriately'; here is the adverb *bien* 'well, very' which combines with 1° an [adjectival] noun, 2° a verb, and 3° another adverb. But usage does not allow it to be so for all modificatives.']
> (ibid., p. 75)

And when Buffier wants to prove that infinitives are kinds of nouns, he justifies this by showing that they can occupy the same syntactic positions as nouns:

> Ce que les Grammaires appellent communément des verbes, comme *aimer, lire, dormir*, font de véritables noms substantifs; bien qu'ils ayent des propriétez particuliéres. Car enfin ils signifient un sujet dont on peut parler; ils sont souvent le *nominatif* des verbes & même leur *régime;* ils sont par conséquent de vrais noms. En éfet quand on dit, *Avouer sa faute est la réparer; avouer* est ici le sujet dont on parle, & se trouve le nominatif du verbe *est*. Et quand on dit *je veux avouer ma faute: avouer* est le véritable régime du verbe *je veux;* comme *ma faute* est le régime de *avouer*. ['What Grammars commonly call verbs, such as *to love, to read, to sleep*, make real nouns, although they have particular properties. Because in fact they mean a subject we can talk about, they are often the nominative of verbs and even their regime; they are therefore real nouns. When one says *To confess one's fault is to repair it*, *to confess* is here the subject one is talking about and is the nominative of the verb *is*. And when one says *I want to confess my fault*, *to confess* is the true regime of the verb *I want*, as *my fault* is the regime of *to confess*.'] (ibid., p. 59)

When he contrasts infinitives with other nouns, he also uses distributional criteria:

> L'infinitif exprime l'action même du verbe, & il en conserve le régime, mais sans marquer d'afirmation, ce qui selon nous est essentiel au verbe. Les infinitifs comme je l'ai déjà insinué, sont de vrais noms substantifs, ausquels l'usage n'a point voulu qu'on joignit d'articles définis, ni d'adjectifs, & ausquels il n'a point donné de pluriel. ['The infinitive expresses the very action of the verb and it retains its regime, but without marking any affirmation, which we believe is essential to the verb. Infinitives, as I have already suggested, are real nouns, to which usage did not want to attach definite articles, or adjectives, and to which it did not give a plural form.'] (ibid., p. 70)

And when he discusses the fact that there are two kinds of participles, he does not classify them in semantic terms (as is commonly done nowadays when we call them *present* vs. *past participles*), but in syntactic terms, according to their diathesis:

> Ce que les Grammairiens appellent communément participes des verbes sont de véritables noms adjectifs. […] Il y a deux sortes de participes, l'un nommé actif, parce qu'il exprime le sujet qui fait l'action du verbe; comme *enseignant, lisant;* l'autre nommé *passif*, parce qu'il exprime le sujet qui reçoit l'action du verbe, comme *enseigné, lu*. ['What Grammarians commonly call participles of verbs are veritable adjectives. […] There are two kinds of participles, one called active, because it expresses the subject that accomplishes the action of the verb; such as *teaching, reading*; the other called *passive*, because it expresses the subject that receives the action of the verb, such as *taught, read*.'] (ibid., p. 59 and 71)

Buffier explicitly notes that nouns (called *substantive nouns* by him) cannot be defined in semantic terms:

> Nous remarquerons ici en passant une méprise considérable de plusieurs Grammairiens. Ils disent communément, que le nom substantif est celui qui désigne une substance. Ils ont pris le change. C'est que voyant les substances s'exprimer par les noms substantif, ils ont apelé *substantifs* toutes sortes de noms: mais il ne s'ensuit nullement que tous les noms substantifs désignent des *substances:* témoins les noms, *accident, légéreté, &c.* qui ne signifient rien moins que des substances, & qui sont de vrais noms substantifs. Peut-être les Grammairiens n'ont-ils voulu dire ici par *substance*, que le sujet dont on parle; & si cela est, nous louons leur intention. ['We will mention here in passing a considerable misunderstanding by several Grammarians. They commonly say that the substantive noun is the one that designates a substance. They are mistaken. It is because, seeing substances being expressed by substantive nouns, they called all sorts of nouns *substantives*: but it by no means follows that all substantive nouns designate *substances*: witness the nouns *accident, lightness,* etc., which do not mean substances and which are nonetheless real substantive nouns. Perhaps the Grammarians meant here by *substance* only the subject we talk about; and if that is the case, we praise their intention.']
>
> (ibid., p. 52)

Buffier notes that there are three kinds of modificatives: 1° words, such as adjectives or adverbs, 2° prepositional phrases, and 3° subordinate clauses:

> Ces modificatifs s'expriment en trois manières plus remarquables, 1°. par une expression qui a elle-même un sens complet & sans aucun régime: 2°. par une expression qui n'a un sens complet qu'avec le secours d'un autre mot qui en est le régime: 3° par une expression qui sert à marquer le raport des mots ou des phrases, entre lesquelles elle forme & indique une sorte de jonction. Si je dis: 1°. *Dieu agit justement;* 2°. *Dieu agit* avec *justice;* 3° *Dieu agit de maniére qu'il fait justice;* dans ces trois phrases se trouvent les trois sortes d'expression que je veux expliquer ici. ['These modifications are expressed in three remarkable ways: 1° by an expression which itself has a complete meaning and without any regime; 2° by an expression which has a complete meaning only with the help of another word which is its regime; 3° by an expression which serves to mark the relationship of words or clauses, between which it forms and indicates a kind of junction. If I say: 1° *God acts justly*; 2° *God acts with justice*; 3° *God acts in such a way that He does justice*, in these three sentences are the three kinds of expression that I want to explain here.']
>
> (ibid., p. 73)

We have seen that Buffier considers the preposition as the head of the prepositional phrase. In the same way, he considers that the relative pronoun or the subordinating conjunction is the head of the subordinate clause:

> Le pronom *qui* ou *lequel* dans tous les cas n'est donc qu'un signe de la modification, qu'on va ajouter au nom ou à l'objet dont on parle. Il est en est de même à peu près du *que* après les verbes; comme *je veux que l'on soit équitable*, ou *vous aimez que l'on vous loue*. Le *que* dans ces phrases n'est qu'un signe de la modification qu'on va ajouter au verbe; je *veux* non pas en géneral, mais avec cette modification que l'*on soit équitable*, &c. […] Les pronoms *qui, que, lequel* ou *laquelle* dans tous les cas, ne sont que pour servir d'indice à la suite de ce pronom, & sans laquelle il ne feroit aucun sens. ['The pronoun *qui* 'that' or *lequel* 'which' in all cases is therefore only a sign of the modification that we will add to the noun or the object we are talking about. It is about the same as the *que* 'that' after verbs, as in *je veux que l'on soit équitable* 'I want us to be fair', lit. 'I want that we be fair' or *vous aimez que l'on vous loue* 'you like people to praise you', lit. 'you like that people praise you'. The *que* in these sentences is only a sign of the modification that we will add to the verb; I do not *want* in general, but with this modification *that we be fair*, etc. […] The pronouns *qui, que, lequel* or *laquelle* in all cases serve only as a clue to the rest following this pronoun and without which it would make no sense.']
>
> (ibid., pp. 78–79)

About the subcategorization of verbs, Buffier introduces two syntactic functions for what are now called *direct* and *indirect objects*:

> Un mot peut avoir deux régimes divers; ce qui arrive sur-tout aux verbes qui signifient quelque action; comme *Il faut sacrifier la vanité au repos*. De ces deux régimes nous appellerons l'un *régime absolu*, l'autre régime *respectif*: l'absolu est celui qui particularise l'action du verbe; le respectif est celui à l'égard duquel se fait l'action particularisée du verbe. Dans la phrase raportée, *la vanité* est le régime absolu, & *au repos* est le régime respectif; parce que c'est à l'égard du repos que se fait l'action particulière de *sacrifier la vanité*. ['A word can have two different regimes, which happens especially to verbs that signify some action, such as *We must sacrifice vanity to rest*. Of these two regimes we will call one *absolute regime*, the other *respective* regime: the absolute one is the one that particularizes the action of the verb; the respective one is the one with respect to which the particularized action of the verb is made. In the previous sentence, *vanity* is the absolute regime and *to rest* is the respective regime; because it is with respect to rest that the particular action of *sacrificing vanity* is made.'] (ibid., p. 58)

3.2.3 *Buffier's syntactic structure*

Let us move on to syntactic structure and dependency syntax. For Buffier, the sentence has a complete syntactic structure and every word is the dependent of another word except the main verb and its subject:

> On dira peut-être que s'il en est ainsi, tous les régimes des verbes, & même la plupart des mots seroient modificatifs: à quoi je réponds qu'on dira vrai. En effet toutes les parties d'oraison les unes à l'égard des autres, sont toutes des modificatifs, qui

> retombent ou sur le verbe ou sur le nominatif du verbe, les deux parties essentielles du langage. ['It may perhaps be said that, if it is so, all verb regimes and even most words are modificative, to which I answer that we would tell the truth. Indeed, all parts of speech, with respect to each other, are all modificative, falling either on the verb or on the noun of the verb, the two essential parts of language.'] (ibid., p. 79)

Then comes the most impressive part of Buffier's book, the following analysis of a sentence:

> *Un homme qui étourdit les gens qu'il rencontre avec de frivoles discours, a coutume de causer beaucoup d'ennui à tout le monde*. Je dis que dans ce discours, tous les mots sont pour modifier le nom *un homme*, & le verbe *a coutume*, & que c'est en cela que consiste tout le mistére & toute l'essence de la sintaxe des langues: 1° le nom *un homme*, est modifié d'abord par le *qui* déterminatif: car il ne s'agit pas ici d'un homme en général, mais d'*un homme* marqué & déterminé en particulier par l'action qu'il fait d'*étourdir*; de même il ne s'agit pas d'un homme *qui étourdit* en général, mais *qui étourdit* en particulier *les gens*, & non pas les gens en général, mais en particulier les gens *qu'il rencontre*. Or cet homme qui étourdit ceux qu'il rencontre, est encore particularisé par *avec des discours*, & discours est encore particularisé par *frivoles*. On peut voir le même dans la suite de la phrase: *a coutume* est particularisé par *de causer*, de causer est particularisé par ses deux régimes, par son régime absolu, savoir, *beaucoup d'ennui*, & par son régime respectif, *à tout le monde*. Voilà donc comment tous les mots d'une phrase quelque longue qu'elle soit, ne sont que pour modifier le nom & le verbe. ['*A man who overwhelms people he meets with frivolous talk is wont to cause a lot of trouble to everyone*. I say that in this discourse, all the words serve to modify the noun *a man* and the verb *is wont*, and that it is in this that all the mystery and all the essence of the syntax of languages consists: 1° the noun *a man* is modified first of all by the determinative *who*, because we are not considering a man in general, but *a man* marked and determined in particular by the action he makes *to overwhelm*; [2°] likewise he is not a man *who overwhelms* in general, but *who overwhelms* in particular *people*, and [3°] not people in general, but people *he meets*. [4°] Now this man who overwhelms those he meets, is in turn particularized by *with talk*, and [5°] *talk* is in turn particularized by *frivolous*. We can see the same in the following part of the sentence: [6°] *is wont* is particularized by *to cause*, [7°] to cause is particularized by its two regimes, by its absolute regime, namely, *a lot of trouble*, and [8°] by its respective regime, *to everyone*. This is how all the words in a sentence, no matter how long it is, serve only to modify the noun and the verb.'] (ibid., p. 79)

This analysis deserves to be studied in detail. Figure 2 proposes a graphical representation of the different relations considered by Buffier. The only relation which is unclear concerns the governor of *with talk* and is represented here by a dotted line. As we can see, the result is a dependency-based structure. The analysis is coarse-grained, favoring relations between chunks rather than words, but we know

from the rest of the book that Buffier also had a dependency analysis for each of these chunks, except the clause *he meets*, for which it is unlikely that he would have proposed a head.

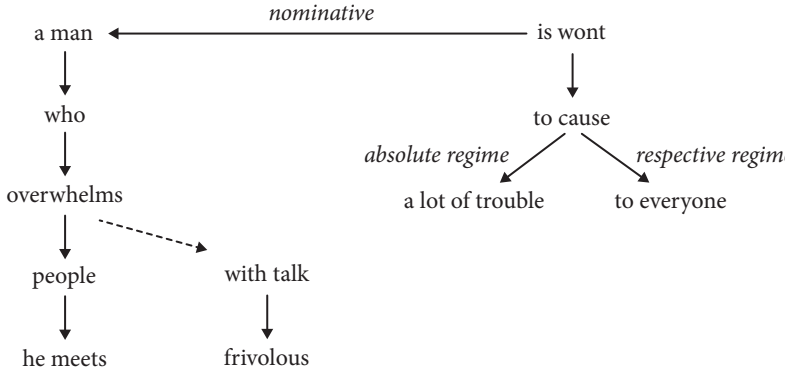

Figure 2. Buffier's relations of regime

3.2.4 *Word order*

Buffier's grammar also contains several interesting pages on word order. The section entitled "Ease of style" starts by:

> De la facilité du stile. – Cette qualité du stile supose la clarté; mais de plus elle consiste à aranger les mots, les uns après les autres, de la manière la plus propre pour se présenter naturellement à l'imagination. ['This quality of style presupposes clarity; but it also consists in arranging the words, one after the other, in the way the most likely to present them naturally to the imagination.'] (ibid., p. 311)

Buffier remarks that French is mainly head-initial:

> Les noms, les verbes & les modificatifs peuvent avoir chacun leur régime, & ces régimes doivent être immédiatement à la suite du mot dont ils sont régis: comme *la lecture de l'Evangile inspire la piété:* on voit que *de l'Evangile* suit ici immédiatement *la lecture*, parce qu'il est son régime; de même *la piété* suit immédiatement *inspire*, etc. ['Nouns, verbs, and modificatives can each have their own regime, and these regimes must immediately follow the word by which they are governed, as in *la lecture de l'Evangile inspire la piété* ['the reading of the Gospel inspires piety']: we see that *de l'Evangile* ['of the Gospel'] here immediately follows *la lecture* ['the reading'], because it is its regime; likewise *la piété* ['piety'] immediately follows *inspire* ['inspires'], etc.'] (ibid., p. 312)

He has a rather long passage on the place of heavy phrases, later summed up by Beauzée, as shown under →2.4.2:

> Les régimes doivent être le plus près qu'il se peut du mot régissant; ce qui feroit pas si l'on mettoit d'abord le plus long qui éloigneroit trop le plus court. ['The regimes must be as close as possible to the governing word, which would not be the case if one were to put the longest [regime] first, which would move the shortest one too far away.'] (ibid., p. 313)

He also remarks that some word orders cause syntactic ambiguity and should be avoided, for instance by placing the indirect object before the direct object as here:

> On diroit, *l'Evangile inspire aux personnes qui veulent être sincerement à Dieu, une piété qui n'a rien de suspect;* & cela afin d'éviter l'équivoque qui pourroit se trouver dans le mot *aux personnes*; car on ne verroit point si ce mot est régi par le verbe *inspire*, ou par l'adjectif *suspect*. ['We will say *l'Evangile inspire aux personnes qui veulent être sincerement à Dieu, une piété qui n'a rien de suspect* ['the Gospel inspires in people who want to be sincerely devoted to God, a piety that has nothing suspect about it'] in order to avoid the ambiguity that could arise in the word *aux personnes* ['in people'], because we would not know whether this word is governed by the verb *inspire* ['inspires'], or by the adjective *suspect*.'] (ibid., p. 314)

As we can see, the contribution of Claude Buffier to dependency syntax is enormous and most of Beauzée's article on *Complement* is a formalization of Buffier's (1709) ideas. There are nevertheless two other linguists who developed Buffier's ideas before Beauzée and contributed to Beauzée's clear view.

3.3 Girard (1747)

Gabriel Girard (1677–1748), who had already published a treatise on spelling in 1716 and one on synonyms in 1736, published his grammar in 1747. Buffier's grammar was not dependency-oriented, but there were three important advances in Girard, compared to Buffier, that deserve to be presented: first, the distinction between the complement and the regime imposed on it, even if Girard does not introduce a clear term to designate the complement (→3.3.1); second, the notion of syntactic function (→3.3.2), which will become central in dependency syntax; third, a sketch of formal grammar with a list of word order rules, which prefigures the separation between structural order and linear order made by Tesnière (1959) (→3.3.3).

3.3.1 *The notion of government*

While integrating the syntactic dimension promoted by Buffier, Girard (1747) changed the meaning of the term *regime*, of which he also made great use. The notion *regime* is defined in terms of:

> l'union grammaticale des mots. Cette sorte d'union établit entre eux un Régime […] consistant dans des raports de dépendance soumis aux regles pour la construction de la frase. ['the grammatical union of words. This kind of union establishes between them a Regime […] consisting in relationships of dependence subject to the rules for the construction of the sentence.'] (Girard, 1747, p. 48)

It is no longer a question of designating the dependent or the complement, but of designating the constraints imposed on this element. Semantic or lexical selection constraints are not considered. Girard is only interested in grammatical constraints of the kind that a researcher such as Igor Mel'čuk (1988) calls the surface syntax module, i.e. the choice of grammatical markers and word order:

> Le Régime considéré par raport aux moyens qu'il met en euvre, pour parvenir à la structure de la frase ou à l'énonciation a également deux objets. Car les mots étant les seuls & nécessaires moyens, il les doit employer d'une façon convenable à son projet. Cet emploi dépend de l'arrangement respectif dans lequel on peut les placer & de la diversité des formes qu'on peut leur donner; puisque c'est tout ce dont ils sont susceptibles. Ainsi doivent-ils dans le discours répondre, par le rang & par l'habillement, aux fonctions qui leur sont distribuées. Je nomme RÉGIME DISPOSITIF celui qui ordonne des places ou de l'arrangement, & RÉGIME DE CONCORDANCE celui qui décide de la parure ou de la forme. ['The Regime considered in relation to the means [the speaker] implements in order to achieve the structure of the sentence or his enunciation also has two purposes. Because words are the only and necessary means, he must use them in a way suitable to his purpose. This use depends on the respective arrangement in which one can place them and on the diversity of forms one can give them, since these are the only variations they can undergo. Thus in the discourse they must respond, by rank and by form, to the functions which are allocated to them. I name DISPOSITIVE REGIME the one which orders the places or the arrangement and CONCORDANCE REGIME the one which decides on the ornament or the form.'] (ibid., p. 68)

We are no longer in a dependency analysis like Buffier's, for at least two reasons. First, the elements that undergo constraints are not words but rather constituents, which Girard calls *members* (p. 55) or *constructive parts* (p. 58) of the sentence. As he says,

> [Le regime] dispose & unit tous ces mots de façon qu'ils ne concourent qu'à un seul point: le Subjectif ne renfermant qu'un sujet, l'Attributif qu'une attribution, & ainsi des autres membres. ['The regime arranges and unites all these words in such a way that they converge only to one point, the Subjective containing only a subject, the Attributive only an attribution, and so on of the other members.'] (ibid., p. 59)

The fact that relations must be considered between phrases is justified, as in the following analysis of an example that is, indeed, problematic for dependency grammar

(it is an answer to Buffier and his use of the term *nominative* to denote the head word of the subject):

> N'est-ce pas cet abus qui a fait voir à un de nos meilleurs esprits des chimères de difficultés dans nôtre Langue? Il n'a pas hésité à dire que dans cette frase, *une infinité de personne ont résolu de se liguer*, le régime étoit contraire à la regle ordinaire de la Grammaire, en ce que le verbe n'étoit pas régi par le nominatif *infinité* qui est au singulier mais par le génitif *personnes* qui est au pluriel. Le terme de *nominatif* lui a fait confondre ici l'idée d'un membre de frase avec l'idée d'un cas de déclinaison. Ce qu'il n'auroit pas fait si aulieu du terme de *nominatif* dans la structure de la frase celui de *subjectif* avoit été en usage. Il auroit vû, dans cet exemple, que ce membre ne consistoit pas seulement dans le mot *infinité* mais dans ces quatre ensemble *une infinité de personnes:* que par conséquent l'Attributif ou le verbe étoit & devoit, selon la syntaxe ordinaire, être régi par la collection de tous ces mots & non par un d'eux séparément des autres. ['Was it not this abuse that made one of our finest minds see illusory difficulties in our language? He did not hesitate to say that in this sentence, *an infinity of people have resolved to join together*, the regime was contrary to the ordinary rule of Grammar, in that the verb was not governed by the nominative *infinity* which is in the singular but by the genitive *people* which is in the plural. The term *nominative* made him confuse here the idea of sentence member with the idea of a declension case. He would not have made this mistake if, instead of the term *nominative*, the term *subjective* had been used in the structure of the sentence. He would have seen, in this example, that this member did not consist only in the word *infinity* but in these four words together *an infinity of people*; and that consequently the Attributive or the verb was and should, according to the ordinary syntax, be governed by the collection of all these words and not by one of them separately from the others.'] (ibid., p. 56)

Second, Girard does not seek to produce an analysis of a sentence in which all words are assigned a syntactic position. Only the construction of the verb is analyzed: Girard speaks of a *constructive regime* for the relations between the subject, the verb, and the complements. There is no internal analysis of these phrases: the elements that compose them form a whole and are said to be in an *enunciative regime*. Only embeddings of clauses are considered.

> Si l'on dit, par exemple, *une belle femme triomphe aisément de l'homme le plus sage*; alors les trois premiers mots [= *une belle femme*] & les six derniers [= *de l'homme le plus sage*] sont en régime constructif avec les deux autres; parcequ'ils concourent avec eux à former la frase comme étant deux de ses membres. Les trois premiers mots y figurent en qualité de Subjectif & les six derniers en qualité de Terminatif: mais les mots de chacun de ces membres sont entre eux en régime énonciatif; parcequ'ils concourent simplement à énoncer ensemble cette partie, qui, étant énoncée, concourt ensuite à la structure de la frase. ['If one says, for example, *a beautiful woman easily triumphs over the wisest man*, then the first three words [= *a beautiful woman*] and the last four [= *over the wisest man*] are in

> a constructive regime with the other two; because they contribute with them to form the sentence as being two of its members. The first three words appear there as Subjective and the last four as Terminative: but the words of each of these members are between them in an enunciative regime; because they simply contribute to enunciate together this part, which, being enunciated, then contributes to the structure of the sentence.'] (ibid., p. 68)

3.3.2 *The notion of function*

The second main contribution of Girard is a typology of the different types of *regimes* and thus the different types of dependencies. Girard considers seven functions that a phrase can fulfill:

> Puisque le Régime tend à former un sens en réunissant les mots par un concours réciproque de chacun d'eux, & que ce concours n'est que le raport mutuel de leurs fonctions particulieres; il faut bien connoitre le nombre & la qualité de ces différentes fonction. Elles constatent les parties qui peuvent être admises dans la structure de la frase, pour en faire le tableau de la pensée. Je trouve qu'il faut d'abord [1°] un sujet & [2°] une attribution; sans cela on ne dit rien. Je vois ensuite que l'attribution peut avoir, outre son sujet [3°] un objet, [4°] un terme, [5°] une circonstance modificative, [6°] une liaison avec une autre [attribution], & de plus [7°] un accompagnement étranger ajouté comme un hors d'euvre, simplement pour servir d'apui à quelquune de ces choses ou pour exprimer un mouvement de sensibilité occasionné dans l'ame de celui qui parle. Voilà donc sept parties constructives ou sept différentes fonctions que les mots doivent remplir dans l'harmonie de la frase. ['Since the Regime tends to form a meaning by bringing the words together through a mutual contribution of each of them and this contribution is only the mutual relation of their particular functions, it is necessary to know the number and the quality of these different functions. They certify the parts which can be admitted in the structure of the sentence to picture the thought. I think we first need [1°] a subject and [2°] an attribution; without that we say nothing. Then I see that attribution can have, besides its subject, [3°] an object, [4°] a term, [5°] a modificative circumstance, [6°] a link with another [attribution], and moreover [7°] a foreign accompaniment added as an hors d'œuvre, simply to support one of these things or to express a movement of sensitivity caused in the soul of the speaker. So here are seven constructive parts or seven different functions that words must fulfill in the harmony of the sentence.'] (ibid., p. 49)

The seventh kind of function that Girard introduces is particularly original and interesting. He names them *adjunctives* and he claims that they are in a *free regime* and contrasts them with the other regimes, which fall more clearly within the domain of government and dependency:

> Le Régime n'est autre chose que le concours des mots pour l'expression d'un sens ou d'une pensée. Dans ce concours de mots il y en a qui tiennent le haut bout; ils en régissent d'autres, c'est-à-dire qu'ils les assujettissent à certaines loix: il y en a

> qui se présentent d'un air soumis; ils sont régis ou tenus de se conformer à l'état & aux loix des autres; & il y en a qui sans être assujettis ni assujettir d'autres, n'ont de lois à observer que celle de la place dans l'arrangement général. Ce qui fait que quoique tous les mots de la phrase soient en régime, concourant tous à l'expression du sens, ils ne le sont pas néanmoins de la même maniere, les uns étant en régime dominant, les autres en régime assujetti, & des troisiemes en régime libre, selon la fonction qu'ils y font. ['The Regime is nothing other than the contribution of words to express a meaning or a thought. In this contribution, there are some words which have the upper hand; they govern others, that is, they subject them to certain laws: there are some which present themselves with a submissive air; they are governed or required to conform to the state and laws of others; and there are some which, without being subjected or subjecting others, have no other laws to observe than their position in the general arrangement. This means that, even though all the words in the sentence are in regime, all contributing to the expression of meaning, they are nevertheless not doing it in the same way, some being in a dominant regime, others in a subjected regime, and yet others in a free regime, depending on the function they fill in it.'] (ibid., p. 49)

The introduction of the notion of *free regime* was not at all to Beauzée's taste: he considered the term an oxymoron, since we cannot be simultaneously free and within "relations of dependence". However, we find here the first signs of the fundamental distinction that will later be made between "microsyntax" and "macrosyntax" through studies of the syntax of spoken French (Blanche-Benveniste, 1990; Berrendonner, 1990): microsyntax corresponds to the syntax of government (Fr. *rection*; the term is explicitly taken up by these authors), i.e. constructions where the form or place of one element is imposed by another element; macrosyntax refers to elements that are more floating and without government markers, such as detached constituents, sentence adverbs, or discourse markers, and that are attached to the rest of the sentence by being part of a single speech act (Deulofeu et al., 2010).

Girard illustrates the seven functions he introduced by the following example:

> Cette période est composée de deux phrases, dans chacune desquelles se trouvent les sept membres mentionnés. Il est maintenant question de montrer par quel mot chacun y figure. ['Monsieur, quoique le mérite ait ordinairement un avantage solide sur la fortune; cependant, chose étrange! nous donnons toujours la préférence à celle-ci. ['Sir, although merit usually has a solid advantage over fortune; however, strangely! we always give preference to the latter.' This period is composed of two sentences, each of which contains the seven members mentioned. It is now a question of showing by which word each member is expressed.']
>
> (Girard, 1747, p. 52, italics are ours)

The analysis proposed by Girard is given in words, like those of Buffier and Beauzée. Figure 3 proposes a diagram summarizing it. The function that each constituent of the sentence fills is a function in the whole construction rather than vis-à-vis a

governor and it is not very clear whether there are dependencies between constituents. As Girard says, the Subjective "represents a subject" to which the Attributive "attributes an action", while the Attributive "follows the regime to which it is subjected" by the Subjective. The Objective is expressed by words that "fix the attribution to a given object among all those it might have" and the Terminative "must represent the term where the attribution is made, either general or specified by some object". In other words, Girard rather seems to consider that the verb depends on its subject, while the object and the oblique complements depend on the verb. The Circumstantial "states a circumstance which modifies the attribution". The Conjunctives *quoique* 'although' and *cependant* 'however' "link the two meanings expressed by the two sentences; so that one relates to the other and, from that, a complete meaning results, which is that of the period." The Adjunctives "are not essential to the proposal, they are there only as a form of accompaniment: one [*monsieur* 'sir'] to support an apostrophe, the other [*chose étrange !* 'strangely!'] to add surprise and blame to the expression of the thought ."[16]

Sentence 1

Adjunctive	Conjunctive	Subjective	Attributive	Circumstantial	Objective	Terminative
Monsieur	*quoique*	*le mérite*	*ait*	*ordinairement*	*un avantage solide*	*sur la fortune*
Sir	although	merit	has	usually	a solid advantage	over fortune

Sentence 2

Conjunctive	Adjunctive	Subjective	Attributive	Circumstantial	Objective	Terminative
cependant	*chose étrange!*	*nous*	*donnons*	*toujours*	*la préférence*	*à celle-ci*
however	strangely!	we	give	always	preference	to the latter

Figure 3. Girard's functions

16. Le Subjectif […] représente un sujet à qui [l'Attributif] attribue une action. […] L'Attributif [suit] le régime auquel l'assujettit son Subjectif. L'Objectif est exprimé dans l'une de ces frases par ces mots *un avantage solide*, & dans l'autre par ceuxci *la préférence:* car ils y fixent l'attribution à un objet déterminé entre tous ceux qu'elle pourroit avoir […]. Le Terminatif [doit] représenter le terme où se porte l'attribution, soit générale soit spécifiée par quelque objet. […] Le[s] Circonstanciel[s] n'ont là d'autre service que d'énoncer une circonstance qui modifie l'attribution en forme d'habitude. Le[s] Conjonctif[s] y lient les deux sens exprimés par les deux frases; de manière qu' l'un a raport à l'autre, & qu'il en résulte un sens complet, qui fait celui de la période. L[es] Adjonctif[s] [sont] peu essenciels à la proposition, ils ne sont là que par forme d'accompagnement: l'un pour apuyer un tour d'apostrophe: l'autre pour joindre à l'expression de la pensée celle d'un mouvement de surprise & de blâme.] (ibid., p. 52)

3.3.3 *Girard's rules of grammar*

The third step forward is that Girard is not so much interested in describing the syntactic structure as in describing the rules that constrain that structure. What was Buffier's *style* becomes Girard's *art of construction*:

> [L]'art de la Construction consiste à savoir quel arrangement & quelle forme il faut donner tant aux membres qui forment la structure de la frase qu'aux mots qui servent à énoncer ces membres. ['The art of Construction consists in knowing what arrangement and form to give both to the members that form the structure of the sentence and to the words that serve to enunciate those members.'] (ibid., p. 70)

Girard notes that there are two types of languages: those which are *analogous* to French and where the order is determined by the functions, and those, such as Latin or Ancient Greek, which he called *transpositive languages*, where the order is determined by what we today call *prominence* (Li & Thompson, 1976):

> Dans les Langues Transpositives l'arrangement des membres de la frase semble presqu'arbitraire: il suit la force de l'imagination. On y fait ordinairement précéder ce dont on est le plus frapé, & dont par conséquent on veut dabord porter l'image dans l'esprit de l'auditeur. […] Dans les Langues analogues, telle qu'est la nôtre, la terminaison ne sert point à distinguer les membres de frase: elle reste la même pour un Objectif comme pour un Subjectif ou un Terminatif. Ainsi le régime constructif n'a guère recours à celui de concordance n'y ayant point de différentes formes à donner, sinon dans l'Attributif & uniquement au verbe qui sert à cette fonction. ['In Transpositive Languages, the arrangement of the members of the sentence seems almost arbitrary: it follows the force of imagination. What we usually put first is what we are most impressed with and therefore what we first want to imprint in the listener's mind. […] In analogous Languages, such as ours, the ending is not used to distinguish sentence members: it remains the same for an Objective as for a Subjective or a Terminative. Thus the constructive regime has little recourse to the concordance regime, having no different forms to give [to the words], except in the Attributive and only to the verb used for this function.'] (Girard, 1747, p. 72 and 74)

He then gives ten word order rules for French, which are remarkably formalized. For instance:

> First Rule. – In the expositive form [= declarative construction], the Subjective usually stands before the Attributive; the latter in turn precedes the Objective & the Terminative, when they are stated by formal expressions and not simply designated by personal or relative pronouns. [Premiere Regle. – Dans la forme expositive le Subjectif marche ordinairement devant l'Attributif: celuici y précede à son tour l'Objectif & le terminatif, lorsqu'ils sont énoncés par des expressions formelles & non simplement désignés par des pronoms personnels ou relatifs.](ibid., p. 75)

The following rules indicate that the subjective comes after the attributive in quotation inserts (Rule II), the subjective may come after the attributive in the absence of an objective or when the objective is a pronoun (Rule III), etc.

Buffier (1709) and Girard (1747) propose two different views of syntactic structure: the term *regime* can designate the dependent or the constraints on it, the dependent can be a word or a whole phrase, and the function can come from a governor or from the whole construction. One is clearly dependency-oriented and the other is much more constituency-oriented.

3.4 Du Marsais (1754)

César Chesneau Du Marsais (1676–1756) published a rational method for learning Latin in 1722 and a treatise on rhetoric in 1730, *Des Tropes,* as well as clandestine tracts in favour of free thought. He was already 75 years old when he was entrusted with the articles on grammar in the *Encyclopedia*. He wrote about 150 articles until his death.

In this section, the main focus will be on the entry *Construction*, a very long article published in volume 4 in 1754. I will discuss four contributions made by this article: first, a distinction between construction and syntax, which is a new step in the distinction between Tesnière's linear and structural order (→3.4.1); second, the two notions of complements, in terms of word or phrases (→3.4.2); third, a hybrid syntactic structure combining dependency and constituency (→3.4.3); fourth, the distinction between government and complement (→3.4.4).

3.4.1 *Construction vs. syntax*

Du Marsais's article starts by making a clear distinction between *construction* and *syntax*, which clarifies Buffier's distinction between *style* and *syntax*:

> Je crois qu'on ne doit pas confondre *construction* avec *syntaxe*. Construction ne présente que l'idée de combinaison & d'arrangement. Cicéron a dit selon trois combinaisons différentes, *accepi litteras tuas, tuas accepi litteras*, & *litteras accepi tuas*: il y a là trois *constructions*, puisqu'il y a trois différens arrangemens de mots; cependant il n'y a qu'une syntaxe; car dans chacune de ces constructions il y a les mêmes signes des rapports que les mots ont entr'eux, ainsi ces rapports sont les mêmes dans chacune de ces phrases. ['I do not think we should confuse *construction* with *syntax*. Construction presents only the idea of combination and arrangement. Cicero said in three different combinations: *accepi litteras tuas*, *tuas accepi litteras*, and *litteras accepi tuas*. There are three *constructions* here, since there are three different word arrangements; however there is only one syntax; because in each of these constructions there are the same signs of the relationships that the words have between one another, so these relationships are the same in each of these sentences.']
>
> (Du Marsais, entry "Construction", in *Encyclopedia*, 1754, Volume 4, p. 72)

Du Marsais's syntax is mainly dependency-based. The dependency relation is called *determination* or *modification* and, like his predecessors, he defines it in rather semantic terms:

> Ainsi je trouve que dans toutes les langues du monde, il n'y a qu'une même maniere nécessaire pour former un sens avec les mots: c'est l'ordre successif des relations qui se trouvent entre les mots, dont les uns sont énoncés comme devant être modifiés ou déterminés, & les autres comme modifiant ou déterminant: les premiers excitent l'attention & la curiosité, ceux qui suivent la satisfont successivement. ['Thus I find that in all the languages of the world, there is only one way necessary to form a meaning with words: it is the successive order of the relationships that are found between the words, some of which are uttered as requiring modification or determination, and others as modifiers or determiners; the former excite attention and curiosity, the latter successively satisfy it.'] (ibid., p. 74)

In the article *Construction*, Du Marsais even wonders how syntax is acquired and why different languages can have different word orders and different ways to mark the relations between words:

> A mesure que nous avancions en âge, & que l'expérience nous apprenoit le sens & l'usage des prépositions, des adverbes, des conjonctions, & surtout des différentes terminaisons des verbes destinées à marquer le nombre, les personnes, & les tems, nous devenions plus habiles à démêler les rapports des mots & à en appercevoir l'ordre successif, qui forme le sens total des phrases, & qu'on avoit grande attention de suivre en nous parlant. Cette maniere d'énoncer les mots successivement selon l'ordre de la modification ou détermination que le mot qui suit donne à celui qui le précede, a fait regle dans notre esprit. ['As we got older and as experience taught us the meaning and use of prepositions, adverbs, conjunctions, and especially the different endings of verbs to mark number, person, and tense, we became more adept at disentangling the relationships of words and seeing the successive order, which forms the total meaning of sentences and which others were very careful to follow by talking to us. This way of uttering the words successively according to the order of the modification or determination that the following word gives to the one that precedes it, established a rule in our mind.'] (ibid., p. 74)

He continues by giving a clever answer to the debate about the "natural order of thought" (see our discussion on Beauzée's analytical order under →2.3):

> La construction simple est aussi appellée construction naturelle, parce que c'est celle que nous avons apprise sans maître, par la seule constitution méchanique de nos organes, par notre attention & notre penchant à l'imitation. […] Telle est la relation établie entre la pensée & les mots, c'est-à-dire, entre la chose & les signes qui la font connoître: connoissance acquise dès les premieres années de la vie, par des actes si souvent répétés, qu'il en résulte une habitude que nous regardons comme un effet naturel. ['Simple construction [= the basic order of French] is also

> called natural construction, because it is the one we have learned without a master, by the mere mechanical constitution of our organs, by our attention and inclination to imitation. […] Such is the relationship established between thought and words, that is, between the thing and the signs that make it known: knowledge acquired from the first years of life, by acts so often repeated that it becomes a habit that we regard as a natural effect.'] (ibid., p. 74)

In a previous article, *Concordance* (cf. Buffier's *concordance regime*, →3.2.1), Dumarsais also introduced the idea, taken up by Tesnière at the very beginning of his *Elements*, that "the mind perceives connections between a word and its neighbors", showing that syntax and construction are above all ways of expressing meaning:

> Il faut d'abord établir comme un principe certain, que les mots n'ont entre eux de rapport grammatical, que pour concourir à former un sens dans la même proposition, et selon la construction pleine; car enfin les terminaisons des mots et les autres signes que la Grammaire a trouvés établis en chaque langue, ne sont que des signes du rapport que l'esprit conçoit entre les mots, selon le sens particulier qu'on veut lui faire exprimer. Or dès que l'ensemble des mots énonce un sens, il fait une proposition ou une énonciation. Ainsi celui qui veut faire entendre la raison grammaticale de quelque phrase, doit commencer par ranger les mots selon l'ordre successif de leurs rapports, par lesquels seuls on aperçoit, après que la phrase est finie, comment chaque mot concourt à former le sens total. ['It must first be established as a certain principle, that words only have a grammatical relationship between one another in order to contribute to form a meaning in the same proposition, and according to the full construction; because finally the endings of the words and the other signs that the Grammar has found established in each language are only signs of the relationship that the mind conceives between the words, according to the particular meaning that one wants it to express. But as soon as all the words express a meaning, they form a proposition or an enunciation. So whoever wants to make the grammatical reason of any sentence be heard, must begin by arranging the words according to the successive order of their relationships, as this is the only way in which one perceives, once the sentence is finished, how each word contributes to form the total meaning.']
>
> (Du Marsais, entry "Concordance", in *Encyclopédie*, 1753, Volume 3, p. 821)

3.4.2 *The two notions of complements*

Du Marsais synthesizes the ideas of Buffier and Girard and contrasts two notions of *complement*, which were summed up by Beauzée, as seen in Section →2.2. For Du Marsais, the relations in the sentence can be considered both in terms of words and in terms of phrases, the former being more syntactic and the latter more semantic:

> On peut considérer une proposition ou grammaticalement ou logiquement: quand on considere une proposition grammaticalement, on n'a égard qu'aux rapports réciproques qui sont entre les mots; au lieu que dans la proposition logique, on n'a égard qu'au sens total qui résulte de l'assemblage des mots. ['We can consider a proposition either grammatically or logically: when we consider a proposition grammatically, we consider only the reciprocal relationships between words; whereas in the logical proposal, we consider only the total meaning that results from the assembly of words.']
>
> (Du Marsais, entry "Construction", in *Encyclopédie*, 1754, Volume 4, p. 84)

The link between the relationships involving words and the relationships involving phrases is explained. In the following extract concerning the subject, Du Marsais gives in fact an interesting (and colourful) definition of the concept of *head*:

> Un sujet est complexe, lorsqu'il est accompagné de quelque adjectif ou de quelqu'autre modificatif: *Alexandre vainquit Darius*, *Alexandre* est un sujet simple; mais si je dis *Alexandre fils de Philippe*, ou *Alexandre roi de Macédoine*, voilà un sujet complexe. Il faut bien distinguer, dans le sujet complexe, le sujet personnel ou individuel, & les mots qui le rendent sujet complexe. Dans l'exemple ci-dessus, *Alexandre* est le sujet personnel; *fils de Philippe* ou *roi de Macedoine*, ce sont les mots qui n'étant point séparés d'*Alexandre*, rendent ce mot sujet complexe. On peut comparer le sujet complexe à une personne habillée. Le mot qui énonce le sujet est pour ainsi dire la personne, & les mots qui rendent le sujet complexe, ce sont comme les habits de la personne. ['A subject is complex, when accompanied by some adjective or another modifier: *Alexander defeated Darius*, *Alexander* is a simple subject; but if I say *Alexander son of Philip* or *Alexander king of Macedonia*, here is a complex subject. It is necessary to distinguish, in the complex subject, the personal or individual subject, and the words which make it a complex subject. In the example above, *Alexander* is the personal subject; *son of Philip* or *king of Macedonia* are words that, not being separated from *Alexander*, make this word a complex subject. The complex subject can be compared to a person with his clothes on: the word that states the subject is, so to speak, the person, and the words that make the subject complex are like the person's clothes.']
>
> (ibid., p. 82)

3.4.3 *Du Marsais's syntactic structure*

Du Marsais gives a dozen analyses of sentences. Only the first one, which is also the most detailed, will be examined here. Figure 4 proposes a diagram summarizing it. As we can see, Du Marsais mixes ideas from Buffier (1709) and from Girard (1747), proposing a hybrid description between dependency and constituency:

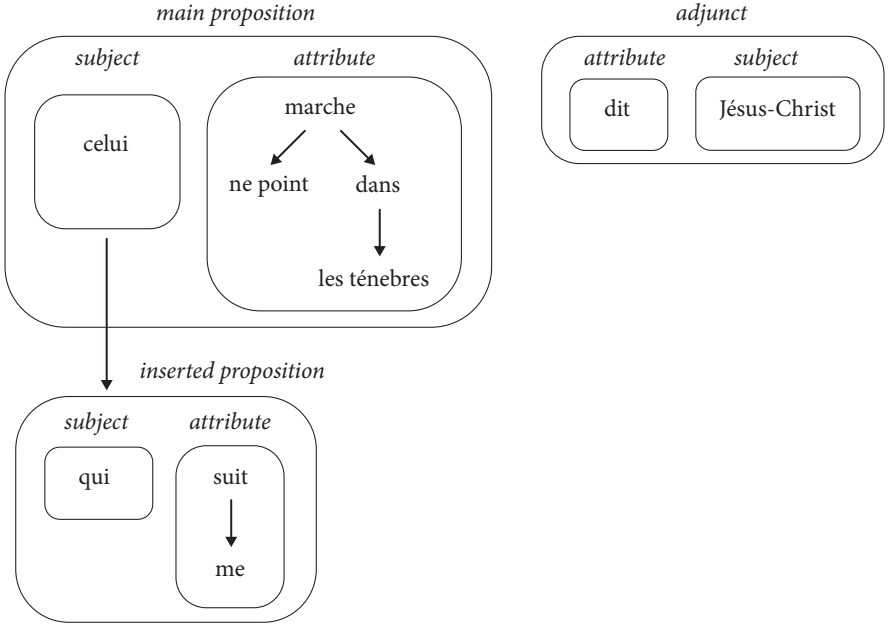

Figure 4. Du Marsais's determination

Celui qui me suit, dit Jesus-Christ, ne marche point dans les ténebres: considérons d'abord cette phrase ou cet assemblage de mots grammaticalement, c'est-à-dire selon les rapports que les mots ont entr'eux; rapports d'où résulte le sens: je trouve que cette phrase, au lieu d'une seule proposition, en contient trois.

1°. *Celui* est le sujet de *ne marche point dans les tenebres*; & voilà une proposition principale; *celui* étant le sujet, est ce que les Grammairiens appellent *le nominatif du verbe*. *Ne marche point dans les ténebres*, c'est l'atribut; […] *ne point* est la négation, qui nie du sujet l'action de marcher dans les ténebres.

Dans les ténebres, est une modification de l'action de celui qui marche, *il marche dans les ténebres*; *dans* est une préposition qui ne marque d'abord qu'une modification ou maniere incomplete; c'est-à-dire que dans étant une préposition, n'indique d'abord qu'une especе, une sorte de modification, qui doit être ensuite singularisée, appliquée, déterminée par un autre mot, qu'on appelle par cette raison *le complément* de la préposition: ainsi *les ténebres* est le complément de *dans*; & alors ces mots, *dans les ténebres*, forment un sens particulier qui modifie *marche*, c'est-à-dire qui énonce une maniere particuliere de marcher.

2°. *Qui me suit*, ces trois mots font une proposition incidente qui détermine *celui*, & le restreint à ne signifier que le disciple de Jesus-Christ, c'est-à-dire celui qui regle sa conduite & ses mœurs sur les maximes de l'Evangile: ces propositions incidentes énoncées par *qui*, sont équivalentes à un adjectif.

Qui est le sujet de cette proposition incidente; *me suit* est l'attribut; *suit* est le verbe; *me* est le déterminant ou terme de l'action de *suit*: […]

> 3°. *Dit Jesus-Christ*, c'est une troisieme proposition qui fait une incise ou sens détaché; c'est un adjoint: en ces occasions la construction usuelle met le sujet de la proposition après le verbe: *Jesus-Christ* est le sujet, & *dit* est l'attribut. ['*Celui qui me suit, dit Jesus-Christ, ne marche point dans les ténèbres* ['He who follows me, Jesus Christ says, does not walk in darkness']: let us first consider this sentence or this assembly of words grammatically, that is to say, according to the relations that the words have between one another; relations from which the meaning results: I find that this sentence, instead of only one proposition, contains three. 1°. *Celui* ['he'] is the subject of *ne marche point dans les ténèbres* ['does not walk in darkness']; and here is the main proposition; *celui*, being the subject, is what the Grammarians call *the nominative of the verb*. *Ne marche point dans les ténèbres*, that is the attribute; […] *ne point* is the negation, which denies the subject's action of walking in darkness. *Dans les ténèbres* ['in darkness'] is a modification of the action of the one who walks, ['he walks in darkness']; *dans* is a preposition that first marks only an incomplete modification, that is to say, that, being a preposition, first indicates only a kind of modification, which must then be singularized, applied, determined by another word, which is called for this reason *the complement* of the preposition: thus *les ténèbres* is the complement of *dans* and then these words, *dans les ténèbres*, form a particular meaning which modifies *marche* ['walk'], that is to say, which expresses a particular way of walking. 2°. *Qui me suit* ['who follows me']: these three words make an incidental proposition that determines *celui* ['he'], and restricts him to signifying only the disciple of Jesus Christ, that is, the one who regulates his conduct and his morals on the maxims of the Gospel; such incidental propositions stated by *qui*, are equivalent to an adjective. *Qui* ['who'] is the subject of this incidental proposition; *me suit* ['follows me'] is the attribute; *suit* is the verb; *me* is the determiner or term of the action of *suit*: […] 3°. *Dit Jesus-Christ* ['Jesus-Christ says'] is a third proposition that makes an inserted or detached sense; it is an adjunct: on such occasions, the usual construction puts the subject of the proposition after the verb: *Jesus-Christ* is the subject, and *dit* is the attribute.']
>
> (ibid., p. 84, paragraphs added for readability)

Just after that, Du Marsais contrasts his grammatical notion of *subject* with the logical or total subject, a terminology that will be used and clarified by Beauzée:

> Considérons maintenant cette proposition à la maniere des Logiciens […] *celui qui me suit*: ces mots ne forment qu'un sens total; qui est le sujet de la proposition logique […]; car on ne juge de *celui*, qu'entant qu'il est *celui qui me suit*: voilà le sujet logique ou de l'entendement. C'est de ce sujet que l'on pense & que l'on dit qu'*il ne marche point dans les ténebres.* ['Let us now consider this proposal in the manner of the Logicians […] *celui qui me suit* ['he who follows me']: these words only form a total meaning, which is the subject of the logical proposal […]; because one only judges *celui* ['he'] as *celui qui me suit* ['he who follows me']: here is the logical subject or comprehension subject. It is this subject that one thinks of and of whom one says that *il ne marche point dans les ténebres* ['he does not walk in darkness'].']
>
> (ibid., p. 84)

3.4.4 *The distinction between government and complement*

As pointed out above, Buffier (1709) and Girard (1747) used the term *regime* in two different senses. Du Marsais makes a clear distinction between the two notions. He uses the term *complement* or *determiner* for Buffier's regime:

> Un mot doit être suivi d'un ou de plusieurs autres mots déterminants, toutes les fois que par lui-même il ne fait qu'une partie de l'analyse d'un sens particulier; l'esprit se trouve alors dans la nécessité d'attendre et de demander le mot déterminant, pour avoir tout le sens particulier que le premier mot ne lui annonce qu'en partie. […] Alors le mot qui acheve le sens, dont la préposition n'a énoncé qu'une partie, est le complément de la préposition; […] Il en est de même des verbes actifs: quelqu'un me dit que *le Roi a donné*; ces mots *a donné* ne font qu'une partie du sens particulier, l'esprit n'est pas satisfait, il n'est qu'ému, on attend, ou l'on demande, 1° *ce que le Roi a donné*, 2° *à qui il a donné*. On répond, par exemple, à la premiere question, que *le Roi a donné un régiment*: voilà l'esprit satisfait par rapport à la chose donnée; *régiment* est donc à cet égard le déterminant de *a donné*, il détermine *a donné*. On demande ensuite, *à qui le Roi a-t-il donné ce régiment*? on répond *à monsieur N.* ainsi la préposition à, suivie du nom qui la détermine, fait un sens partiel qui est le déterminant de *a donné* par rapport *à la personne*, à qui. ['A word must be followed by one or more other determining words, whenever by itself it is only part of the analysis of a particular meaning; the mind then finds itself under the necessity of waiting and asking for the determining word, in order to have all the particular meaning that the first word announces only in part. […] Then the word which completes the meaning which the preposition has expressed only in part, is the complement of the preposition; […] The same is true of active verbs: someone tells me that *the King gave*; this word *gave* fills only a part of the particular meaning, the mind is not satisfied, it is only moved, we expect, or ask, 1° *what the King gave*, 2° *to whom he gave*. The person answers the first question with, for example *the King gave a regiment*: here the mind is satisfied with regard to the given thing; *regiment* is therefore in this respect the determiner of *gave*, it determines *gave*. Then we ask *to whom did the King give this regiment*? The person answers *to mister N.* Thus the preposition *to*, followed by the noun which determines it, makes a partial meaning which is the determiner of *gave* with respect *to the person*, to whom.'] (ibid., p. 86)

And Du Marsais uses the term *determination* for Girard's regime:

> Si je veux parler de la lumiere du soleil, je dirai en latin, *lumen solis*, & en françois *de le soleil*, & par contraction, *du soleil*, selon la construction usuelle: ainsi en latin, la terminaison de *solis* détermine *lumen* à ne signifier alors que la lumiere du soleil. Cette détermination se marque en françois par la préposition *de* […] La détermination qui se fait en latin par la terminaison de l'accusatif, *diliges Dominum Deum tuum*, ou *Dominum Deum tuum diliges*; cette détermination, dis-je, se marque en françois par la place ou position du mot, qui selon la construction

> ordinaire se met après le verbe, *tu aimeras le Seigneur ton Dieu*. […] La syntaxe d'une langue ne consiste que dans les signes de ces différentes déterminations. ['If I want to speak of sunlight, I would say, in Latin, *lumen solis* and, in French, *de le soleil* and, by contraction, *du soleil*, according to the usual construction: thus in Latin, the ending of *solis* determines *lumen* by restricting it to mean only sunlight. This determination is marked in French by the preposition *de* […] The determination that is made in Latin by the termination of the accusative, *diligent Dominum Deum tuum* or *Dominum Deum tuum diliges*; this determination, I say, is marked in French by the place or position of the word, which according to the ordinary construction is put after the verb, *tu aimeras le Seigneur ton Dieu* 'you will love the Lord your God'. […] The syntax of a language consists only in the signs of these different determinations.'] (ibid., p. 86)

A further point is that Du Marsais was particularly interested in the semantic contrasts between different constructions. For instance, he makes a clear distinction between defining/restrictive and non-defining/non-restrictive relative clauses, adopting the terms *determinative* and *explicative* relative clause (p. 83) introduced by Arnault and Nicole (1662) and still used in French grammar. He also evokes the distinction between necessary complements and adjuncts:

> Il faut donc bien distinguer les déterminations nécessaires d'avec celles qui n'influent en rien à l'essence de la proposition grammaticale, ensorte que sans ces adjoints on perdroit à la vérité quelques circonstances de sens; mais la proposition n'en seroit pas moins telle proposition. ['It is therefore necessary to distinguish the necessary determinations from those which do not influence in any way the essence of the grammatical proposition, so that without these adjuncts some circumstances of meaning would indeed be lost; but the proposition would still be a proposition.'] (ibid., p. 86)

4. Conclusion

Chevalier (1968) decided to limit his monumental studies on the emergence of the concept of *complement* to the period 1530–1750, considering that the notion was already mature with Du Marsais and Beauzée. I have extended Chevalier's analysis by arguing that the idea of a complete syntactic structure of the sentence was also there and that this syntactic structure was mainly expressed in terms of dependency, even if the authors preferred the terms *regime, determiner*, or (*initial/grammatical*) *complement* to the term *dependent*. Following the path opened up by the *Port-Royal Grammar* (1600), Buffier (1709) seems to have been the first to propose a complete syntactic structure for sentences, though unfortunately using a confusing terminology. While Buffier's analysis was clearly dependency-oriented, Girard (1747)

proposed a more constituency-oriented analysis, also introducing the notions of government and grammatical function. These two approaches were merged by Du Marsais (1754) but in a rather convoluted style. It would be no exaggeration to say that Beauzée (1765) was the first linguist to give a clean description of a dependency tree, as well as the syntactic structure I have called a Beauzée-Gladkij tree.

It is noticeable that all the syntactic analyses of the 18th century were expressed by words, without any diagrams. It was not until two centuries later, with Tesnière (1934), that syntactic diagrams made their appearance in the French school, even if diagrams had appeared one century earlier, with Billroth (1832) and Barnard (1836). This situation is not specific to formal linguistics, since the same thing also happened in mathematics: While Leonhard Euler (1736) introduced the mathematical concept of *graph* in his solution to the problem of the Seven Bridges of Königsberg, diagrams representing graphs only appeared more than one century later (Cayley, 1857; Kempe, 1886; Sainte-Laguë, 1926) and started to be regularly used only in the second half of the 20th century (Biggs et al., 1976), exactly like syntactic diagrams.

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CHAPTER 4

Dependency in early sentence diagrams

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American grammarians were the first to make a systematic use of diagrams to depict syntactic relations. Among the most elaborated early attempts to visualize syntactic relations, Stephen W. Clark's *Practical Grammar* (1847) delivered many diagrams that merge constituency-based analyses, relying on the description of the relations between constructions and their parts, and a dependency-based approach, focusing on hierarchical relations between words. Clark used labeled bubbles to express his analyses. The same system was altered and derived numerous times during the early history of syntactic diagramming, thus resulting in the famous Reed & Kellogg's system. By systematically evaluating Clark's analyses with respect to five general characteristics of dependency-based descriptions, I show how much dependency-based Clark's system is.

1. Introduction

This contribution deals with the writings of Stephen W. Clark (1810–1901), who was one of the many progressive grammarians who taught English to American pupils during the 19th century. Little is known about Clark's life, and his books lack references to previous works that may have inspired him. Influences could be very diverse, judging by the sheer quantity of English grammars available at that time (Görlach, 1998). It is difficult to reconstruct in detail the social context in which he elaborated his views. What can be established, however, is that some teachers initiated a paradigm shift, from traditional *parsing* to *sentence analysis*. This paradigm shift modified deeply the conceptualization of syntax in American grammar. Simultaneously, it established itself as fertile ground for a new kind of linguistic knowledge representation: *sentence diagramming*. Clark has raised little interest so far in the linguistic literature,[1] despite the fact that he introduced a novel

1. The few works that mention him include Gammon, 1963, p. 1; Brittain, 1973, pp. 25–31; Görlach, 1998, p. 83; Florey, 2006, pp. 29–61. In addition, an extensive survey of his works has been recently published (Mazziotta, 2016b).

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system for diagramming sentences in his *Practical grammar* (1847), which he kept nearly untouched in numerous revisions of his work (culminating in his *Normal grammar*, 1870).[2]

Diagrams had been used before Clark by a few authors, but they seem not to have influenced him: (i) Gustav Billroth (1808–1836) uses a graph-like structure that looks like a dependency tree in his *Lateinische Syntax* (1832; see Coseriu, 1980, p. 58 and Osborne, this volume, Chapter 6); (ii) Frederick Barnard (1809–1889) proposes a constituent-based system, packed with a huge variety of symbols to represent word classes and morphological analyses, in his *Analytic grammar, with symbolic illustration* (1836; see Brittain, 1973, pp. 6–15; Mazziotta & Kahane, 2017, p. 121–122); (iii) Oliver Peirce (b. 1808) uses diagrams to provide partial analyses of sentences in the revised edition of his *Grammar of the English language* (1843; see Brittain, 1973, pp. 15–21); (iv) Solomon Jr. Barrett (b. 1801?) draws a single diagram that looks like concatenated trunks with branches in his *Principles of English grammar* (1845; see Gammond, 1963, pp. 377–378 for a very brief presentation). Billroth managed to elaborate a complete analysis that abstracts away from the linear order of the sentence. But he only used one diagram in his book, whereas Clark made an extensive use of graphical devices to represent his non-linear analyses and reasoning. Clark is not often cited, but Hays (1965, p. 1) mentions his system as an early example of dependency theory.[3] Although only a few authors acknowledge their debt to Clark, his legacy is immense: many authors[4] drew inspiration from his diagrams, including the famous Alonzo Reed (d. 1899) and Brainerd Kellogg (1834–1920).

This paper focuses on the conceptions and diagramming conventions that could be interpreted as an early manifestation of dependency concepts in Clark's grammar.[5] Concepts and their graphical representation will be investigated in parallel. Section →2 introduces the paradigm shift from word-based descriptions to clause-based ones in the 19th century. Section →3 briefly introduces Clark's diagrams, and the analytic notion of 'reification' that will be used to describe how

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2. The system remained the same in the revisions that followed the *Practical grammar.* I will reproduce the diagrams from any of the revised editions.

3. Oddly, Hays seems not to have had a proper look at Clark's diagrams, which he cites through Gammond's paper (1963).

4. See →6. See also Brittain (1973) and the quality blog *Polysyllabic* by K. Hagen (n.d.) for a review and illustrations.

5. Many important features of Clark's system will not be investigated in this paper (such as coordination and relative clauses). For an in-depth study of Clark's syntactic conceptions, see Mazziotta (2016a).

diagrams are built. Section →4 gives an overview of dependency-based concepts in Clark's grammar. Section →6 investigates Clark's legacy and concurrent diagramming systems form the time. Section →7 summarizes the main points of the paper.

2. From *parsing* to *sentence analysis* and diagrams

For dependency analyses to be even possible, one has to acknowledge that words are linked together by an abstract relation.[6] Traditional grammatical analysis relied on a practice that was called 'parsing,' i.e. providing the part of speech and the morphological analysis of each word, one by one. The term *to parse* (hence the derivate *parsing*) comes from Lat. *pars*, from the expression *pars orationis* 'part of speech'. Parsing was indeed inherited from traditional Latin grammar, and was still the mainstream way to produce the analysis of a sentence in American schools during the 19th century. The following is an excerpt from Murray's (1745–1826) *English exercises* (1797/[16]1812), a major authority on the teaching of grammar (Linn, 2006, p. 72):

> "He who lives virtuously prepares for all events." *He* is a personal pronoun, of the third person singular number and masculine gender. *Who* is a relative pronoun, which has for its antecedent "he," with which it agrees in gender and number […]. *Lives* [is] a regular verb neuter, indicative mood, present tense, third person singular, agreeing with its nominative, "who" […]. *Virtuously* is an adverb of quality. *Prepares* [is] a regular verb neuter, indicative mood, present tense, third person singular, agreeing with its nominative, "he." *For* is a preposition. *All* is an adjective pronoun, of the indefinite kind, the plural number, and belongs to its substantive, "events," with which it agrees […]. *Events* is a common substantive of the neuter gender, the third person, in the plural number, and the objective case, governed by the preposition, "for" […]. (Murray 1797/1812, p. 18)

This written commentary combines morphological and syntactic analyses. It does not completely overlook relations between words: using expressions such as "has for its antecedent," "agreeing with its nominative", "belongs to its substantive" or "governed by the preposition" conceptually corresponds to a pairwise grouping of the words. The commentary also partly succeeds in discriminating morphological relations from syntactic ones.[7] On the one hand, words "agree" with other

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6. This paradigm shift seems to occur earlier in France (Kahane, 2020 (this volume), Chapter 3). Additionally, previous contributions from this book demonstrate that dependency-like ideas are possible prior to achieving such a paradigm shift (Luhtala, 2020 (this volume), Chapter 1; Colombat, 2020 (this volume), Chapter 2).

7. On the definition of 'morphological dependency', see Mel'čuk, 2006, pp. 3–11, 2009, pp. 13–21.

words; on the other hand, they play syntactic roles corresponding to their cases (e.g. "*its* nominative"). However, the distinction is less clear as far as the expression "governed by the preposition" is concerned. But the major drawback of such a description is that it fails to account for the sentence as a structure: words are simply glossed one after the other, following the surface order. As a result, the syntactic position of the adverb *virtuously* is completely overlooked, despite its ambiguity. The linear, word-based analytic practice made it very difficult to grasp the complete structure of a sentence. Some scholars do not hesitate to use very harsh words to criticize parsing. Here is Frederick S. Jewell's (1821–1903) judgment, in his treatise on diagrams:

> There are many teachers who, with a commendable regard for improvement in science and in methods of instruction, are faithfully endeavoring to redeem the study of English Grammar from its old-time restriction within the narrow bounds of mere verbal etymology [morphology] and syntax, and its absurd culmination in the pitiful practice of oral "parsing." (1867, p. 7)

Andrew Linn points out that a major development in the evolution of English grammar was the shift from a word-based description to a clause-based one (Linn, 2006, p. 76), supposedly inherited from Karl Ferdinand Becker's (1775–1849) *Schulgrammatik der deutschen Sprache* (1835/1831). The trend was already in full swing at the time, and Clark himself focused on what he called the 'offices' of the words, a mix between their grammatical functions and their semantic roles (Mazziotta, 2016a, pp. 306–307, and note 8). Such a focus on the organization of the clause led to the use of a graphical device to represent the grammatical relations which put less emphasis on the order of the words compared to parsing:

> In the diagrams we bring in superficial extension to take the place of the simply linear extension to which we are limited in the ordinary use of words. Words standing in line or uttered in succession present themselves each one as connected immediately only with one preceding and one following. By the diagrams each may stand connected immediately with any number of others, and by one or another kind of connection. Hence the advantage of this mode of representation.
> (Porter, 1869, p. 47)

3. Clark's diagramming system: Basic rationales, and the notion of 'reification'

Clark's conception of grammar is grounded in the concept of the "office" of words. To express his analyses, he has to represent them. This can be done in a textual way or in a diagrammatic way, i.e. a graphical formalism. Similarly to commentaries, syntactic diagrams are means of expressing linguistic knowledge (Stewart, 1976; Mazziotta, 2016a) and there is a semiotic relation between the commentary and the diagram: they correspond to one another in an analogical way; a diagram is thus an icon, according to Ch. S. Peirce (Chauviré, 2008; Stjernfeldt, 2007). Diagrams are complex graphical signs that can be broken into smaller signs (components) that interact in the graphical space. The relative positions of the components can also be meaningful. Diagrams consist of an inventory of discrete[8] graphical signs, or "graphical entities" (Groupe μ, 1992; henceforth 'entities'), and of configurations. From the perspective of this paper, diagrams are *formalisms*, i.e. they follow a finite set of rules that constrain the behavior of a finite set of elements.

Clark's basic approach is that words are represented by labeled bubbles[9] that are arranged horizontally or vertically, according to the way they interact. Figure 1 (from Clark, 1870) is the diagram of (1). Henceforth, I will call Clark's diagrams 'bubble diagrams'.

(1) The fur warmed a bear

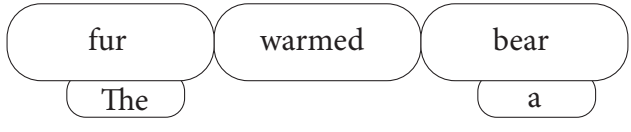

Figure 1. Bubble diagram of a simple transitive sentence (Clark, 1870, p. 44)

Along these lines, Clark distinguishes between "principal elements" and "adjuncts". The principal elements of the sentence (i.e. the subject, the predicate, and the object)[10] are arranged horizontally, whereas the adjuncts (including determiners, adjectives, *V-ing* forms and prepositional phrases) attach vertically to another word.

---

8. A graphical sign is discrete when its contour is perceived (see Groupe μ, 1992, p. 65–67 for a discussion on the concepts of *limit* and *contour* from a cognitive perspective).

9. The fact that words are represented by bubbles and that the linguistic form that accompanies the geometric shape finds evidence in the numerous diagrams that do not contain any word in Clark's publications (Clark, 1859).

10. Clark also draws numerous examples of sentences containing only a subject and a predicate.

In order to survey Clark's diagram, I will make use of the analytic concept of *reification*, i.e. the use of graphical entities to express conceptual elements.[11] The fact that Clark chooses to represent words by an entity, i.e. by a discrete graphical sign, will be called 'reification' hereafter: bubbles are reifications of words.

On the other hand, interactions between the words are not represented by a discrete device (→5.1), but rather by geometric configurations. Indeed, another important feature of the diagram is that it sets the description free from the linear order of the words (Brittain, 1973, p. 31). The linear order of the sentence can of course be ignored in analytic commentaries as well, but the latter also being linear texts, they cannot represent structural configurations in a geometric way. The bi-dimensionality of the plane allows for the depiction of complex configurations. Moreover, diagrams force the analysis to be comprehensive: each word must find its place in the diagram. A graphical depiction would have prevented Murray's oversight of the structural position of the adverb (→2).

4. Diagrams and dependency trees compared

For the purpose of this paper, I will break down the concept of *dependency tree* into five defining attributes that I briefly introduce below. A dependency tree is a formal tree[12] that validates five defining attributes, namely node-to-word mapping, connection-basedness, binarity, headedness, and flatness.[13] Figure 2a is a classic example of a dependency tree corresponding to (1). A classical constituency tree is provided in Figure 2b for comparison.

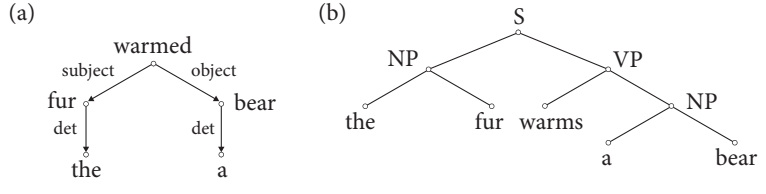

Figure 2. (a) Sample dependency tree; (b) Sample constituency tree

11. From Lat. *rēs* 'thing'; hence to *reifiy* 'to turn into a thing'. On the concept and its application to syntactic diagrams, see Kahane & Mazziotta, 2015; Mazziotta, 2016a, pp. 31–32.

12. From a mathematical perspective, a tree is a kind of connected directed acyclic graph (with nodes and arcs pairing them) that satisfies two additional constraints: a single node is the second member of no arc, and no node is the second member of more than one arc (for an introduction to these mathematical concepts, see Meľčuk & Milićević, 2014, pp. 277–298).

13. See Mazziotta and Kahane (2017) for a discussion, and for the application of these attributes to demonstrate that early diagrams for immediate constituent analysis were partly dependency-based.

The five defining attributes can be observed as follows:

1. In Figure 2a, each of the nodes of the tree, represented by labeled discs, corresponds to a single word in (1). Henceforth, this attribute will be called "node-to-word mapping": there is no node in the tree that does not correspond to a word in the sentence, and *vice versa*. Several dependency-based descriptions treat this characteristic as a preeminent one, distinguishing dependency trees from classical constituency trees (Kahane, 1996, p. 45; Hudson, 2007, pp. 117–118 and 183; Osborne et al., 2012, pp. 356–358): Figure 2b also contains nodes that encode constructions.
2. The branches of the tree are represented by labeled arrows between discs that correspond to syntactic relations. I will use the term "connection" to refer to this kind of relation between words. This attribute is heavily emphasized by Tesnière (1966/2015, Chapter 1). By contrast, the strokes on classical constituency trees (Figure 2b) represent part-whole relations only.
3. The "binarity" attribute corresponds to the fact that the nodes of a classical dependency tree are grouped pairwise. Binarity is not generally considered to be a defining attribute of dependency, since dependency linguists implicitly assume it to be a direct consequence of the previous two attributes. I will show that this is not the case.
4. The term "connection" refers to syntactic relations in general, abstracting away from their directions. Some connections can be undirected, but Figure 2a only depicts directed relations between a "governor", conceived as a hierarchically superior node (also called "head"), and its dependents. This hierarchy corresponds to the direction of arrows in the diagram: from the head to its dependents – it could also be represented by the relative positioning of the words, the governor being placed higher than its dependents. This is the "headedness" attribute. Mel'čuk (2009, pp. 27–34) insists that all connections in a dependency tree must be directed. In constituency trees such as Figure 2b, no head is identified.
5. The last property will be called "flatness". Flatness is the defining attribute that most strongly sets apart immediate constituent analysis ("ICA") from dependency-based descriptions (Mazziotta & Kahane, 2017). It captures the fact that the connections always go from one word (node) to another (Hudson, 2007, pp. 117–118). ICA posits that groups of words can be embedded, in a mereological fashion.[14] Figure 2b shows how stratification generally goes hand in hand with the addition of nodes to represent groupings. Figure 3 is an example of an ICA diagram from *A synopsis of English syntax*

14. In reference to mereology, the part of logic that deals with parts and wholes, I will use the term 'mereological' to refer to the relation between a whole and its parts.

(1966/1960) by Eugene Nida (1914–2011) that satisfies node-to-word mapping, because the contact points between the strokes are not discrete entities, and should not be interpreted as nodes – this point will not be elaborated here; see Mazziotta and Kahane (2017, p. 122) for a demonstration. It also satisfies connection-basedness, binarity and headedness, but it fails to validate flatness. The opposite of flatness can be called "stratification" (Kahane, 1997). In Nida's diagram, words form a grouping that consists in a stratum which may itself form a group with another word or grouping, thus building layers of strata.

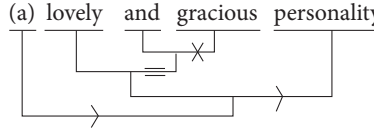

Figure 3. Nida's diagram, with stratification that validates word-to-node mapping (Nida, 1966/1960, p. 23)

Beside these five defining attributes, "verb centrality" is generally considered to be an important feature of dependency analysis. In Figure 2a, the verb *warmed* is the root of the tree (the node that has no governor), which is not the case in Figure 2b. This property operates at another level. The five attributes above define in a formal way what a dependency tree is. Verb centrality is merely an option in the grammatical description. The dependency-based tradition has demonstrated the validity of verb centrality from an epistemological point of view. Had it not reached this conclusion, it would be acceptable to produce dependency trees containing root nodes that are not verbs.

It will appear that from a formal perspective, Clark's bubble diagrams are not genuine trees (even the identification of a root is debatable, see →5.3.2). Nevertheless, the defining attributes can be applied to graph-like structures in general.

5. Clark's diagramming system and dependency

In the following subsections, I will evaluate the validity of the five defining attributes for syntactic relations that are treated as dependencies in current dependency-based framework (I will not investigate coordination).[15] I will first

15. In dependency-based frameworks (and in syntax in general), the theoretical stances about coordination remain controversial and complex. The main issue is to make a decision about the theoretical status of coordination: either it is treated as a dependency, cf. Mel'čuk, 2009, pp. 50–51, who admittedly cannot deal with marginal aspects of coordinated constructions (Mel'čuk,

discuss connection-basedness (→5.1), then binarity (→5.2) and headedness (→5.3), with flatness and word-to-node mapping evaluated together (→5.4). Verb centrality will also be addressed in the context of headedness (→5.3). Since it is sometimes difficult to find diagrams that are simple enough to illustrate only one issue at a time, I will sometimes make use of cross-references to point at sections providing further analysis.

5.1 Connection-basedness

Connection-basedness refers to the fact that the nodes of the structure are conceptually grouped by a link that can be qualified. In this subsection, I will highlight two features of Clark's analyses: the absence of reified connections in the diagrams (→5.1.1) and the complex status of function words (→5.1.2).

5.1.1 *Absence of reified connections*

From the diagram on Figure 1, it appears that syntactic relations are expressed by means of geometric configurations. Bubbles aggregate in a way that leaves no room for an additional entity between them: in the aforementioned diagram, *a* is directly attached to *bear*. (To avoid cumbersome expressions I will use the words the bubbles stand for whenever there is no ambiguity.) Syntactic relations seem not to be reified in this simple diagram. Since there are no additional entities between the bubbles, there also happens to be no possibility to add a label to describe the relationship that unites them without attaching it to a word (see Clark, 1870, p. 237 for one of the rare diagrams containing such labels). Given that diagrams are formalisms, the absence of any entity in bubble diagrams is similar to the absence of a node or edge in a mathematical graph. This absence is somewhat similar to the absence of connection between immediate constituents of the same structure in modern constituency trees (Figure 2b). However, the grammatical description that accompanies the diagrams makes extensive use of terms such as *modify*, *describe*, *qualify*, *limit*, etc. (Mazziotta, 2016a, p. 315). Such words are the discursive expressions of different types of connections.

2009, pp. 92–95), or it is understood as an orthogonal relation that complements dependencies (Tesnière, 1966/2015, Chapter 136; Kahane, 2012). See Osborne (2006, 2008) and Gerdes and Kahane (2015) on the many cases of complex coordination. Given the absence of consensus, I do not think it is legitimate to study the dependency-like aspects of coordination in Clark's system without a proper clarification that would go well beyond the scope of this paper (on coordination in Clark's writings, see Mazziotta, 2016a, pp. 323–327).

5.1.2 *Function words as connections*

However, the interpretation under →5.1.1 does not fit the way Clark deals with function words. Sentence (2), diagrammed in Figure 4, contains the preposition *of*.

(2) The king of shadows loves a shining mark.

Figure 4. Bubble diagram containing a prepositional phrase (Clark, 1847, p. 23)

A superficial evaluation of the diagram would yield a simple interpretation: *of* is a word that aggregates with two other words (*king* and *shadows*). But Clark states the following about prepositions:

> A Preposition is a word used to express a relation of other words to each other. (Clark, 1847, p. 10)
>
> A word used to introduce a phrase, showing the relation of its object [i.e. the word introduced by the preposition] to the word which the phrase qualifies, is a preposition. (Clark, 1847, p. 92)
>
> It should be remembered that Prepositions connect words by *showing a relation*. (Clark, 1847, p. 97)

In his view, prepositions are means of expressing relations. Accordingly, *king of shadows* contains three words indeed, but the word *of* expresses a syntactic relation between the other two. One could represent this in a more modern fashion by drawing the diagram in Figure 5. In this diagram, the label *of* stands beside the arrow that goes from *king* to *shadows*.

Figure 5. Prepositional phrase, with the preposition labeling a reified relation

By distorting a type of diagram we are used to (dependency trees), Figure 5 helps us understand that *of* is both a word and a relation in Clark's system: it is reified as a word that labels an arrow. In Figure 4, this hybrid status is graphically expressed by the configuration of the bubbles: the bubble that *of* fits into connects vertically to *king* and horizontally to *shadows*.

Clark considers that subordinate (as well as coordinative) conjunctions share with prepositions the ability to express relations. He posits one major difference, though: conjunctions can be used to connect structures, but they are not part of

them (Mazziotta, 2016a, p. 319). The graphical representation of the relation is also very different, as shown by the bubble diagram of (3), Figure 6.

(3) They kneeled before they fought.

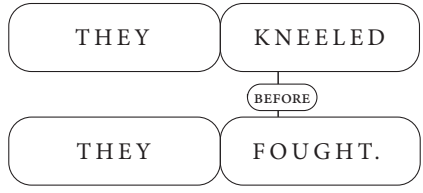

Figure 6. Bubble diagram containing a conjunction (Clark, 1847, p. 29)

The conjunction interrupts the stroke that goes from *kneeled* to *fought*. The comparison with Figure 5 is striking. By drawing such a configuration, Clark reifies the syntactic relation between the two verbs[16] and uses the bubble representing the conjunction as a label, thus granting this word the same kind of hybrid status as the prepositions.[17] The analysis of conjunctions as labels is also supported by statements such as:

> Conjunctions used to introduce Auxiliary Sentences, and some others, constitute also an index or type of the office of the sentence which they introduce.
>
> (Clark, 1847, p. 97)

This kind of usage is not to be confused with the usage of *but* observed in Figure 7.[18]

(4) But Brutus says he was ambitious.

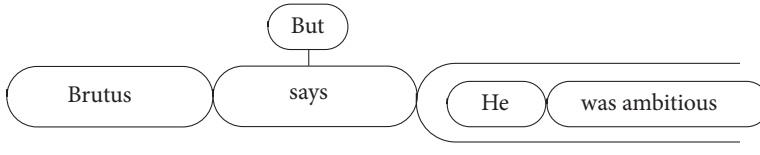

Figure 7. Bubble diagram containing a clausal object (Clark, 1870, p. 47)

In this case, "a word used to introduce a sentence, [*sic*] is placed above the predicate of the sentence, and attached to it by a line" (Clark, 1847, p. 19). The stroke has a completely different value: it reifies the connection between *says* and *but*, and the latter cannot be regarded as a label on the connection. This is the only type of interaction that precisely corresponds to our current depiction of connections: a stroke between the two words they link.

---

16. This aspect will be investigated further under →5.3.2, on verb centrality.

17. The status of conjunctions will be developed under →5.2.

18. The status of subordinate clauses as objects is evaluated under →5.4.

Clark does not manage to completely eschew the word-based approach in his diagrams. On the one hand, he does not systematically provide syntactic relations with a graphical counterpart. On the other hand, when he chooses to do so, he seems to consider that the function word *is* the relation. To conclude, when it comes to connection-basedness, the words in Clark's diagrams seem to be connected, but in a way that tends to make no explicit difference between words and syntactic relations.

5.2 Binarity

In the diagrams we have seen so far, we can observe that each bubble always aggregates with other bubbles in one dimension at a time. In Figure 8, the bubble labeled *the* aggregates vertically with *fur*, *fur* aggregates horizontally with *warmed*. Some bubbles connect with several words: *warmed* connects leftways with *fur* as well as rightways with *bear*. Leaving temporarily aside the status of prepositions (→5.1.2), each aggregation is a configurational representation of the syntactic relation that links the words *pairwise in a single direction*. To demonstrate this, let us look at Figure 8, which interprets Figure 1 by reifying the syntactic relations: each stroke groups exactly two words. The use of verbs such as X *modifies* Y, X *describes* Y, and of expressions such as X *is the subject of* Y, X *is the object of* Y, also supports this interpretation.

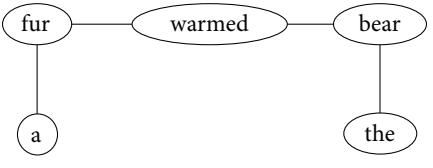

Figure 8. Reification of the syntactic relations in a bubble tree

As mentioned in the previous paragraph, the interpretation of Figure 8 overlooks the specific behavior of function words that we introduced in the previous section. If a relation goes from one word to another, the consequence is that the description acknowledges three elements: two words and a syntactic relation. Given that (i) in Clark's view, function words are expressions of syntactic relations and (ii) no syntactic relation can exist if less than two words are involved, we are facing a grouping of three words. In my interpretation (Figure 5), this grouping cannot be simplified as two consecutive pairs. In other words, the combination of the pair ⟨*king*, *of*⟩ and the pair ⟨*of*, *shadow*⟩ is not equivalent to the triplet ⟨*king*, *of*, *shadow*⟩.[19]

19. I use angle brackets to enclose lists of ordered elements.

Clark's diagrams partially validate binarity, but the classification of function words as words as well as relations implies that some groupings are actually ternary.[20] Principal elements of the sentence are also problematic, but to be able to assess binarity in their respect, one has to evaluate headedness at the same time.

5.3 Headedness

As far as headedness is concerned, the status of adjuncts is easy to evaluate, and the developments around the notion are clear enough to allow us to think that adjuncts always attach to a head (→5.3.1). By contrast, the status of principal elements is not as clear, and it leaves the question about verb centrality open for discussion (→5.3.2).

5.3.1 *Adjuncts*

In Figure 1 and Figure 4, adjuncts are attached beneath the words they 'qualify'. This rule is stated overtly by Clark (1847, p. 18). The graphical configuration of the entities corresponds to the conceptual hierarchy of the words, one being hierarchically superior to the other. Therefore, in Figure 1, *the* 'modifies' *fur*, which is equivalent to "*fur* is the governor of *the*". Figure 4 already shows that several adjuncts (dependents) can attach to the same word (governor), thus forming larger groups that modern linguists recognize as phrases.[21]

Clark distinguishes between "primary" and "secondary" adjuncts (1847, p. 18): the latter are adjuncts that attach to another adjunct. Such is the case of *too* in Figure 9, which is a partial diagram of (5).

(5) *They build too low*, who build beneath the stars.

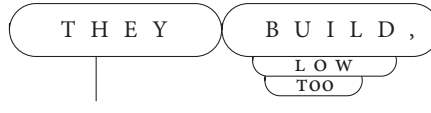

Figure 9. Partial bubble diagram, containing a secondary adjunct (Clark, 1847, p. 30)

20. Similar examples of ternary groupings can be found in Tesnière's description of coordination (1966/2015, Chapter 136; see Mazziotta, 2014, p. 146), and in Kern's description of subordinate conjunctions (Osborne, this volume, Chapter 6, Section 2.2). Ternary groupings are sill used in some modern studies (e.g. Débili, 1982).

21. The term 'phrase' does not have the same meaning in Clark's system (Mazziotta, 2016a, pp. 315–317).

By doing so, Clark makes use of a fundamental concept of dependency-based frameworks: the statuses of governor and dependent are relative statuses. A word can be a dependent while acting as the governor of its own dependents. This possibility allows for the very same kind of relation to be used at different levels. This is the necessary condition for recursive analyses to be possible.[22]

Some diagrams in Clark's grammar further demonstrate headedness in a less direct way. Figure 10a,[23] the diagram of (6), contains secondary bubbles, drawn with a dashed line. These bubbles entirely wrap prepositional phrases, thus containing the preposition, the word it introduces and all the adjuncts attached to the latter, recursively.

(6) Our national resources are developed by an earnest culture of the arts of peace.

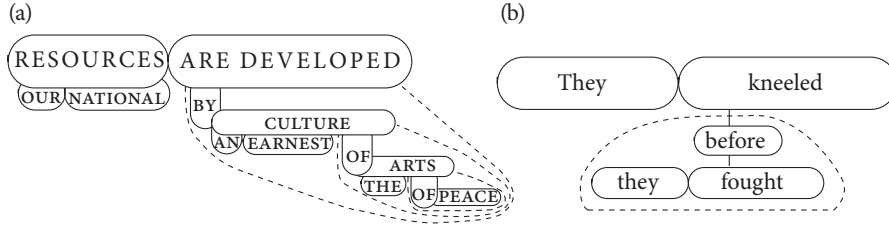

Figure 10. (a) Bubble diagram identifying phrases (Clark, 1847, p. 17); (b) Bubble diagram with secondary bubble on a clausal adjunct (Clark, 1870, p. 49)

Figure 10b is an alternate diagram for (3) (to be compared with Figure 6). The secondary bubble acts similarly as in Figure 10a. Such bubbles always attach prepositional phrases and clausal adjuncts to the same word as the one governing the relation reified by the function word or the stroke (→5.1.2). In a sense, wrapping bubbles show that the phrase attaches as a whole by the means of the relation between head and the governor. There is a striking, albeit partial, resemblance between Clark's secondary bubbles and the bubbles used in the trees drawn by Gladkij (1968) in a modern dependency-based approach – see Figure 11, which is an analysis of (7) (translation of the example given by Kahane, 2001, p. 30).

22. All theories that feature dependency ideas have in common that the status of words depends on their contexts: the governor of a specific dependency generally is a dependent with respect to another syntactic relation. See the many expression of this idea in this volume.

23. Figure 10a contains a complex predicate. The value of the stroke within the predicate bubble will not be investigated here. See Mazziotta, 2016a, pp. 311–313 for a discussion.

(7) The little boy talks to Mary.

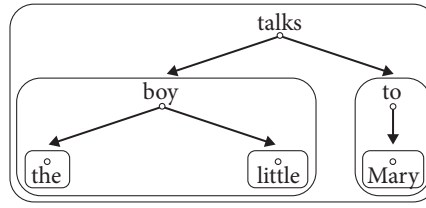

Figure 11. Sample Gladkij tree

In Figure 11, the boxes wrap complete phrases as well as the sentence itself. Each box contains a subtree with a unique subroot. Therefore, *boy* is the root of one subtree, and its dependents share the same box. Similarly, the preposition *to* and its dependent, *Mary*, are in another box – of course, in this analysis, the preposition is not interpreted as the expression of a syntactic relation. Figure 10a shows that entire phrases attach to the governor of their head, much as in Gladkij's trees. Secondary bubbles and boxes in the Gladkij tree are a graphical expression of Tesnière's well-known statement: "every subordinate shares the fate of its governor" (Tesnière 1966/2015, Chapter 3, § 4).

Provided that one pays attention to the specific behavior of prepositions and conjunctions, there is no difficulty in accepting that, as far as adjuncts are concerned, Clark's system acknowledges headedness. By extension, his treatment of prepositional phrases does not contradict this. But the status of the principal elements of the sentence is much more controversial.

5.3.2 *Principal elements and verb centrality*

In Clark's diagrams, the subject, the predicate and the object are all aligned in a horizontal fashion. Clark opposes a contemporary trend in American grammar (cf. Downey, 1991) that tends to assimilate threefold grammatical analysis (subject + predicate + object) with the two-fold logical system (subject + predicate).[24] Admittedly, whereas the vertical arrangement of the adjuncts left hardly any place for doubt about headedness, the horizontal arrangement of principal elements seems to imply the absence of a head within the group they form. The following interpretation is offered by Jewell:

> [W]hat device more natural than [bubble diagrams], in which, by the simplest of figures, represented in its natural order, confined within its own field, established in a common grade of equality, and connected according to its prevailing relation?
> (Jewell, 1867, p. 30)

24. The debate is explicit in Storrs's paper (1880a), which rejects Clark's system for this very reason (see the corresponding diagram in Figure 17c, →6.1).

Under Jewell's assumptions, there is no hierarchy whatsoever between the principal elements. In modern terms, from his point of view, the structure of the sentence resembles an exocentric construction in ICA (Figure 2a).[25] Nevertheless, as far as binarity is concerned, the basic structure of (1) would not be a set of three unordered elements such as, in alphabetical order; *bear*, *fur*, *warmed*. The aggregation of the bubbles occur in two circumstances ("prevailing relations"): the aggregation of the subject with the predicate, and the aggregation of the predicate with the object. All relations remain binary (→5.2). In this respect, it would be more accurate to acknowledge two binary groupings (*bear* with *warmed*, and *fur* with *warmed*). Additionally, the syntactic relations are typed: *bear* and *warmed* are the elements of the relation between the verb and the object; *fur* and *warmed* are the elements of the relation between the verb and the subject.

I found no definitive argument in Clark's writings fully supporting the idea that principal elements are, or are not, hierarchically related. This is partly due to the fact that Clark fails to define the object in grammatical terms. He states very clearly that the grammatical object is not part of the predicate, whereas the logical object is (Clark, 1847, p. 13). Unfortunately, when he defines the concept of grammatical object, he always does it in reference to the underlying semantic structure. The definitions highlight some kind of lexical dependency between the object and the predicate:

> The Object of a sentence, is the word or words on which the action, asserted by the predicate, terminates. (Clark, 1847, p. 13)

> The Object of a Sentence is that on which the act expressed by the Predicate terminates. (Clark, 1847, p. 111)

Some other clues in Clark's texts may be invoked to support that the object is actually subordinated to the predicate. As exposed by Mazziotta (2016a, pp. 310–311), the presence of an underlying hierarchy is also hinted by the terminology at use for the taxonomy of sentences: sentences are transitive if their predicate is transitive.

> A Transitive Sentence is a Sentence that asserts an act which terminates on an Object […] A Transitive Sentence has at least one Subject, one Predicate, and one Object. (Clark, 1870, p. 42)

> Predicates that have Objects are called Transitive Predicates. (Clark, 1870, p. 208)

One last element in favor of the hierarchical interpretation can be observed in the general inventory of rules for diagramming sentences: as already mentioned under →5.1.2, Clark writes that "a word used to introduce a sentence, [*sic*] is placed above

25. Storrs (1880a, p. 119) interprets Clark's diagrams similarly and criticizes the apparent lack of hierarchy between the predicate and the object.

the predicate of the sentence, and attached to it by a line" (1847, p. 19). This is the case of *but* in Figure 7. Additionally, in Figure 6, which contains the diagrammatic representation of a clausal adjunct depending on the predicate *kneel*,[26] the stroke connects to the clausal adjunct as a whole *via* its predicate. If the same logic as the one at work in Gladkij trees holds, complex dependents are connected to their governor by their heads. Hence, *fought* is likely to be the head.

In summary, there is a strong contrast between the crystal-clear application of the concept of headedness to adjuncts, and the controversies that arise when it comes to principal elements. This contrast alone suffices to support the claim that Clark's view of headedness is heterogeneous, to say the least. Even if he implicitly identifies the predicate as a prominent element in the hierarchy, he chooses not to represent this in the same way as in constructions with adjuncts. In my opinion, the choices Clark made are constrained by the fundamental graphical rationale behind his diagrammatic system. Using mostly bubbles leaves hardly any place for reified relations (→5.1.1). Consequently, Clark cannot qualify further the syntactic relations he represents by using the kinds of labels we use nowadays on the arrows of dependency trees (Figure 2a). Clark's only choices are to alter the shape of the bubbles or to provide the configurations with a specific meaning.[27] He chooses the latter: the subject is on the left of the predicate and the object is on its right. It is the arrangement of the bubbles that expresses the type of their relations, which leads to the complex situation described above.

5.4 Flatness and word-to-node mapping

In all of Clark's diagrams discussed above, words seem to be connected only to other words, and with the exception of function words, every connection is binary (→5.2). When a phrase is taken as a whole (the head and all its dependents), it is still connected to another word via its head, i.e. a word (→5.3.1). Clark's treatment of the principal elements of the sentence does not feature stratification (layered strata of groupings; →4).[28] In this respect, what I have described of Clark's system so far is very different from stratified ICA, and very similar to flat dependency-based analyses. However, there are several exceptions to flatness in his grammar: words can be occasionally connected to groups of words. Bubbles are not strictly equivalent

26. Similarly, in Figure 7 (→5.3.2) the conjunction *but* that introduces the sentence attaches to the predicate.

27. In the diagrams displayed in this paper, the shape of the bubbles is indeed significant to express the types of the elements they represent: adjuncts are partial bubbles open at the top, objects of prepositions are open at the left, etc. I will not elaborate on this subject.

28. The debate is focused on verb-centrality →5.3.2 rather than stratification.

to nodes, but one can observe that some diagrams make use of additional entities of the same kind to express stratification. I will present two types of stratification: stratification which does not add supplementary entities (→5.4.1), and stratification which does (→5.4.2).

5.4.1 *Stratification without additional entities*

Adding stratification without adding entities is actually rare in Clark's grammar. A first example is visible in Figure 12: *almost* is aggregated simultaneously with *to* and with *Boston*.

(8) Robert went almost to Boston.

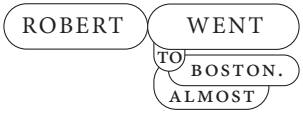

Figure 12. Bubble diagram containing an adjunct modifying a phrase (Clark 1847: 170)

Such a representation could mean either that binarity is not valid (there would be a ternary relation between the terms; →5.2), or that flatness does not hold. The written commentary suggests that the latter is a better interpretation: Clark writes that *almost* modifies a phrase. It attaches to the phrase as a whole, but the graphical formalism does not capture the wholeness of the phrase in a discrete entity. The bubble labeled *almost* aggregates with a group of two bubbles.[29] Consequently, one can conclude that word-to-node mapping is the same as if *almost* had connected to a single word.

Another marginal case also demonstrates that stratification can occur without adding entities to the structure. In a sentence like (9), Clark suggests that there are two objects in the sentence: "one object is the name of a person or thing, and the other a title, acquired by the action of the verb." The diagrams (Figure 13) supply rare examples of evolution in Clark's system.

(9) They named him John.

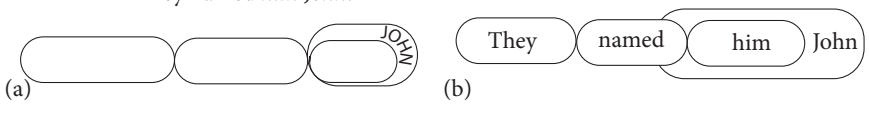

Figure 13. Bubble diagrams containing a secondary nominal predicate ('object')
(a) Clark, 1847, p. 141; (b) Clark, 1870, p. 240

29. This diagram is rejected by Jewell (1867, pp. 94–95), who attaches *almost* to the preposition alone.

Clark wants to express that the noun *John* (the "remote object", cf. Clark, 1870, p. 240) is both related to *named* and to *him*. His first attempt to diagram the sentence (Figure 13a) shows that *John* attaches to *named* and wraps *him*. It is difficult to interpret such a configuration faithfully to the author's underlying idea, but one could simply interpret the configuration as the expression of two binary relations between words. In later developments of his theory, Clark uses Figure 13b, where *John* simultaneously wraps completely *him*, and partially *named*.[30] This *could* be interpreted as stratification, if *John* relates indeed to the group formed by the verb and the object as a whole.

The examples above show that the bidimensionality of the bubbles allows them to group with several bubbles at the same time, thus allowing for stratification without adding supplementary entities. In the next section, I will illustrate cases that display the use of such entities.

5.4.2 *Stratification with additional entities*

Stratification can be associated with the presence of entities that do not correspond to single words. Such is the case when a clause is used as a principal element, be it a subject or an object. It can be observed in Figure 7 (→5.1.2) that *he was ambitious* is wrapped in half an ellipsis, and takes the position of a normal object. By this representation, Clark shows that principal elements can be sentences taken as a whole. In his written theory, he states that the object (as well as the subject) "is always a noun, or a word, phrase [i.e., mainly, a prepositional phrase or a *V-ing*], or sentence, used for a noun" (Clark, 1847, p. 13). There is an important difference between the terms: *noun* refers to a word, whereas *phrase* and *sentence* refer to constructions that always contain several words: "[a] Sentence consists of Principal Parts and Adjuncts" (Clark, 1847, p. 111).[31] E.g., in (1), the object is not *the bear*, but *bear*. Headedness ensures that attaching the word *bear* alone is enough (→5.3). In the case of subordinate clauses used as principal elements, Clark chooses to aggregate the complete sentence with the predicate. The direct consequence of this choice is that flatness does not prevail any more: such embedded clauses are treated like CP constituents in the X-bar approach. From a graphical perspective, the semi-ellipsis

30. This option is criticized by Jewell (1867, pp. 97–98), who prefers the first form.

31. Clark posits that a sentence contains two or three principal elements. In the case of imperative sentences, for instance, the subject is 'understood', and it is represented as a kind of 'zero' in the diagrams (Mazziotta, 2016a, pp. 332–334). Note that zeros are often considered as a feature of ICA-based models, but according to the defining attributes under →4, their presence or absence does not define the structural identity of dependency trees. One can indeed find zeros in dependency-based description (see examples in Mel'čuk, 2009, pp. 46 and 82; Groß, 2003, pp. 347–348).

entity embodies the mereological process at work. The treatment of prepositional structures used as subjects or objects is completely identical. As far as word-to-node mapping is concerned, the wrapping entity does not correspond to a word.

The theoretical discourse is similar for clausal adjuncts:

> An *Adjunct* is a word, phrase, or sentence, used to qualify or define another word, phrase, or sentence. (Clark, 1847, p. 16)

However, as already demonstrated under →5.3.2, clausal adjuncts are attached by their predicates to their governors. There is no entity similar to the semi-ellipsis that wraps them as wholes. The description is somewhat inconsistent, demanding cautious interpretation.

Again, the cause of this inconsistency may be related to the graphical conventions chosen, but more to ergonomics than to formal constraints. Clark does not wrap clausal adjuncts in a bubble before attaching them beneath their governors, since it would require the bubble of the latter to be enlarged up to a point that would seem awkward. Therefore, one can understand why Clark does not take this path. Similarly, Clark cannot use a stroke to link the main predicate to the predicate of a clausal subject or of a clausal object: this option requires the stroke to be horizontal to discriminate between principal elements and adjuncts, but, if one wants the stroke to link the predicates of the connected clauses, it cannot remain completely horizontal. As an attempt to avoid the proliferation of distorted curly lines, Clark's solution seems reasonable. Clark's conception of the predicate as a principal element induced the use of a specific graphical convention, which in turn prevented him from proposing a homogeneous treatment for subordinate clauses.

Clark uses the same kind of reification of the wholeness of a structure in at least two other cases, illustrated by Figure 14.

(10) A part of the students have gone.

(11) Not as the conqueror comes, they, the true-hearted, came.

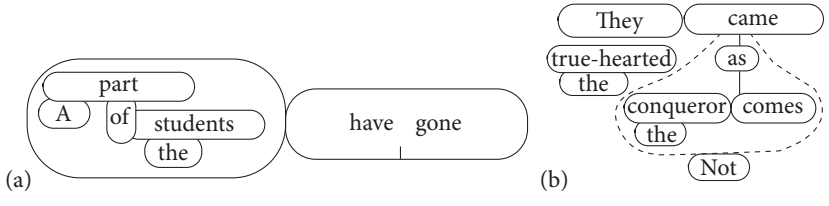

Figure 14. (a) Bubble diagram containing a modified subject (Clark, 1870, p. 227); (b) Bubble diagram containing an adjunct modifying an adverbial clause (Clark, 1870, p. 287)

In Figure 14a, Clarks wants to demonstrate that the plural form of the verb comes from agreement with the 'modified' subject rather than the word *part* alone (which is singular). The graphical device he uses is an additional entity in the diagram.[32] A similar convention is at use in Figure 14b. It pictures the analysis of (11). Clark suggests that *not* modifies the entire adverbial clause. This is represented by a bubble attached to the secondary bubble that wraps the clause (→5.3).[33]

This kind of interaction demonstrates that secondary bubbles can express groupings that are treated as a whole in the diagram. Therefore, one must admit that Gladkij-like diagrams such as Figure 10a and Figure 10b do not validate word-to-node mapping.

One last case of stratification with the addition of entities is the complex predicate. So far, all the predicates in the diagrams correspond to a single verb. However, predicative adjective, complex verbal tenses such as the present perfect, and passive voice imply that several words are used. Clark introduces a small dash in the bubble of the predicate in order to separate the auxiliary from the form it introduces (Figure 15).

(12) John is sleepy.

Figure 15. Bubble diagram containing a complex predicate (Clark, 1847, p. 15)

In this case, there is only one bubble, but two words. The dash can be interpreted as the reification of the binary relation between the auxiliary and the subsequent word. That would correspond to an additional case of reification of the relations between the words (→5.1).

To conclude this section about stratification, Clark seems not to want to add unnecessary complexity to his diagrams whenever it is possible to avoid it. But again, the graphical conventions he chooses forces him to make the diagrams more complex. A word that attaches to a wrapping bubble is not equivalent to a word that attaches to all of them separately. Besides, it is impossible to attach a group of bubbles that are arranged hierarchically to a single governor in Figure 14. The graphical system carries its own limitations.

32. The treatment of the complex predicate will be surveyed below in this subsection.

33. This suggestion is also rejected by Jewell, 1867, pp. 94–95.

6. Legacy and similar systems

This section briefly presents the variety of diagrams produced by Clark's contemporaries. The difficult issue of the genealogical relations between the systems is discussed (→6.1), and I also comment on some of the graphical choices involved (→6.2).

6.1 Genealogy of the diagramming systems

We know from the novelized essay on Clark by Kitty Burns Florey (2006) that the famous diagrams by Reed and Kellogg (1876; 1877) are a revised version of Clark's. In their preface (1876/1879, pp. 5–6), Reed and Kellogg explain that Reed copyrighted their system with O. H. Hall in 1868.[34] So far, I have not been able to access the work they refer to, nor to identify clearly who O. H. Hall was. We are left with only the diagrams to reconstruct a possible genealogy. Figure 16 depicts the analysis of (13) and of (14) using this system.

(13) Juda's sister Mary has lost her diamond ring.

(14) We started when the sun rose.

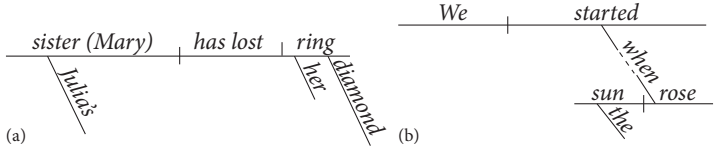

Figure 16. Sample diagrams by Reed and Kellogg (a) 1876/1879, p. 70; (b) 1876/1879, p. 78

The similarity to the bubble diagrams might be overlooked, but on closer inspection, Clark's influence is beyond any doubt. Words are reified by strokes instead of bubbles, and the configurations are adapted accordingly: adjuncts are slanted strokes that attach to the word they modify, and the principal elements are separated by different kinds of strokes. Function words are represented by intermediate lines that are partially dashed.

The many examples of diagramming systems presented by Brittain (1973, Chapter 2) demonstrate a chronological continuity between them leading up to the diagrams by Reed and Kellogg (see sample diagrams in Figure 17).[35] These

34. Already mentioned by Percival, 2007.

35. I could not access the books marked by an asterisk; for them, I rely on the facsimile in Brittain 1973. Dates are revised according to Görlach (1998) whenever possible.

include Z. M. Chandler's diagrams (dates unknown) in his *Class book on English grammar and analysis* (revised edition, 1861),[36] Frederick Schwartz Jewell's in his already cited *Grammatical diagrams defended and improved* (1867), William Henry Parker's (dates unknown) in his *Grammar of the English language* (1869*), Andrew Burtt's (dates unknown) in his *Practical grammar of the English language* (1869), Richard Salter Storrs's (1830–1884),[37] published by Francis Andrew March (1825–1911) in his *Parser and analyzer for beginners* (1869), G. E. Lighthall's (dates unknown) in his *Introduction to Analysis and parsing* (1872*),[38] and Alfred Holbrook's (1816–1909) in his *English grammar* (1873*).

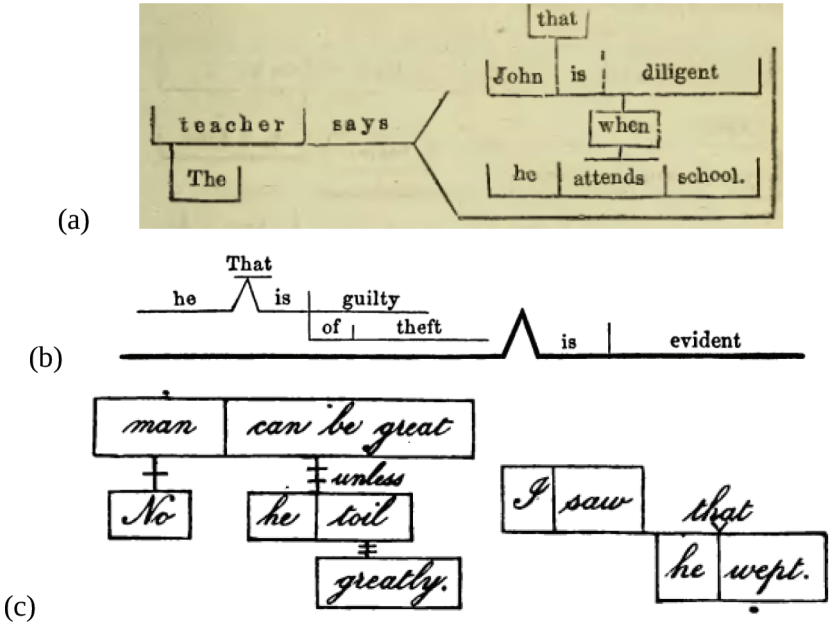

Figure 17. (a) Chandler (1861, p. 159); (b) Burtt (1868/1869, p. 275); (c) March (1870/1869, pp. 63 and 78)

In the introductions of these grammars, authors generally do not cite any inspiration for their diagrams, with the exceptions of Jewell (1867, p. iii), who refers explicitly to Clark, and March (1870, p. iii), who refers to the work of Richard Salter Storrs, an eminent teacher of deaf-mute students in Hartford. In an article in the

36. Not in Görlach, 1998.

37. Brittain does not mention that Storrs is the one who invented the system published in March 1869. Storrs published explanations on his system in later articles (1880a; 1880b; 1881).

38. Not in Görlach, 1998.

American annals of the deaf and the dumb, Samuel Porter (dates unknown), briefly introduces Storrs's system and mentions Clark and Jewell (Porter, 1869, p. 43). Storrs himself claims that he invented his "sentence-maps" in his early years of professorship (probably around 1854; cf. Williams, 1885, p. 9), before reading Clark's *Practical grammar* (1880a, p. 117). He cites authors such as Frederick Barnard[39] (→1) and Karl-Ferdinand Becker (see Graffi, 2001, pp. 136 sqq.). This shows that he was well aware of contemporary theoretical advances in syntactic analysis. It may be that Clark, Storrs, and Reed and Hall elaborated the same kinds of systems independently as they claim, as is often the case when a novelty is popular in the zeitgeist. The discovery of common influences would facilitate a better understanding of the development of early diagrams. Unfortunately, such influences are currently difficult to evaluate, due to the lack of information about the education Clark received.

6.2 Other choices in reification

I will not survey thoroughly every system between Clark's and the diagramming rules of Reed and Kellogg, since it would go well beyond the scope of this study. However, I would like to briefly draw attention to the importance of the graphical formalism selected by the pioneers, with respect to what it allows them to do. I will focus on features that are the most closely related to a graphical convention in dependency trees: strokes that reify dependencies are often accompanied with a label that expresses their type.

The first, most striking, difference between Clark's bubbles and the diagrams by Reed and Kellogg is that the latter use strokes rather than bidimensional bubbles. The use of strokes allows the reification of relations between the principal elements of the sentence by means of orthogonal lines. As a further refinement, Reed and Kellogg use a graphical convention to distinguish between the types of principal elements. The short line separating the subject from the predicate cuts the horizontal stroke, whereas the one separating the predicate from the object does not (Figure 16):

39. Barnard is well known by Storrs because they both belong to the community of teachers who instruct deaf-mutes. Interestingly, according to the numerous references in the *American annals of the deaf and the dumb*, the members of this community were very aware of the works of the Abbé de l'Épée and the Abbé Sicard (Raby, 2011). It seems that the necessity to rely on visual devices to teach grammar is closely bound to the development of syntactic ideas in the 19th century.

> You will see that the line standing for the *object complement* is a continuation of the predicate line, and that the little vertical line only touches this without cutting it.
> (Reed & Kellogg 1876/1879, p. 54)

The graphical convention is made possible by the use of strokes rather than bubbles – although a similar approach is taken by Clark when he analyses complex predicates (→5.4.2). Hierarchizing the strokes like this induces a hierarchy between the syntactic relations. This seems to correspond to stratification (→5.4), and to a two-fold analysis of the sentence. It should be noted that Chandler and Burtt also use similar conventions to distinguish between elements of different kinds.

Secondly, Clark, and Reed and Kellogg reify the relations between adjuncts and their heads by a line only in the case of subordination. By contrast, Storrs's system (Figure 17c) always connects the adjuncts by means of a vertical stroke. As explained by Porter, the stroke can be cut by cross lines, thus specifying the kind of modification:

> The mode of attaching other modifiers by a vertical line is shown in [some Figure]; the single and the double cross lines distinguishing them respectively as adjective and adverbial. (Porter, 1869, p. 46)

What is reified can be easily assigned a type. What is not must rely on configurational properties. The difference between an adjective and an adverb in Clark's diagrams is inferred indirectly from the layout: if a bubble is attached below the first bubble of the sentence, then it is an adjective; if a bubble is attached below the second bubble of the sentence, then it is adverbial; etc. Reifying relations allows for easy identification of their types, a well developed practice in current dependency-based diagrams (such as Figure 2a).

7. Conclusion

Clark introduced his original diagramming system during a period of fundamental changes in grammatical discourse. At the time, scholars began to shift their focus from a word-centered analysis to a sentence-centered one. Gradually, it became clear that structural order deserved closer scrutiny. Such an epistemological renewal put diagrams into the forefront of attention (→2). Their use was very popular, as demonstrated by the abundance of available systems, and the difficulty in reconstructing their genealogy (→6.1). Clark's diagrams rely on a bidimensional device: aggregated bubbles that represent words (→3). Some of their features are equivalent to modern dependency trees (→4), some are not even close:

1. Clark graphically expresses connections when function words are involved (→5.1.2), *but* he does not in any other cases (→5.1.1).
2. Most of the connections are binary, *but* the analysis of function words involves three words in a single connection (→5.2).
3. The way adjuncts modify other words genuinely corresponds to headedness (→5.3.1), *but*, as far as verb-centrality is concerned, the presence of hierarchical structure is a matter of controversy (→5.3.2).
4. Single words are generally connected to other single words, *but* Clark's analysis acknowledges many cases of words attached to groupings, be they reified (→5.4.2) or not (→5.4.1).

It is likely that such a complex model is actually merging traditional word-centered considerations with a more modern syntactic conception of grammar (→2).

Different kinds of graphical conventions constrain differently what can be expressed or not. By using aggregated bubbles with hardly any reified connections, Clark never has the possibility to overtly specify the type of grammatical relations, in contrast with some of his successors (→6.2).

Hays (1965) cites Clark as one of the earliest "publications on dependency theory". This is certainly a legitimate view, but careful examination of Clark's diagrams demonstrates that it would be hazardous to assimilate them to dependency trees. Some characteristics, such as non-reified connections (→5.1.1) and stratification (→5.4), resemble modern constituency-based systems (Percival, 2007). Some others, such as ternary relations (→5.1.2), have no exact counterparts in major syntactic theories.

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CHAPTER 5

Sámuel Brassai in the history of dependency grammar

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The paper presents the syntactic work of Sámuel Brassai with special regard to his dependency-based theory of the sentence. Brassai is already relatively well-known as a pioneer in the study of information structure, where his discoveries predate Gabelentz by several years. The present work aims to show that Brassai also developed a consistently dependency-based theory of syntax long before Tesnière. The paper first discusses the motivations and influences underpinning Brassai's work. Secondly, it presents Brassai's verb-centred theory, expressed both metaphorically and by sentence diagrams. The latter appeared as early as 1873, thus Brassai may well have been the first to produce verb-centred dependency diagrams of clause structure. Finally, we show that Brassai's discovery of a bipartite (information structural) division of the sentence does not amount to an early adoption of constituency; rather, it is seamlessly integrated into his dependency-oriented approach.

1. Introduction

Sámuel Brassai (1797/1800?–1897) was a Transylvanian polymath, whose work extended to botanics, mathematics, philosophy and pedagogy (to name only the most important areas) as well as linguistics. In addition to his Hungarian mothertongue, he spoke all the major Western languages, was an expert of Latin and Greek, and understood Russian, Sanskrit, Turkish and Hebrew as well. His main scientific achievements are linked to linguistics (cf. Elekfi, 1950, p. 351). However, the fact that he only published his results in Hungarian prevented him for a very long time from gaining international recognition.[1]

Thanks to the efforts of Hungarian generative linguist Katalin É. Kiss, the situation has recently improved. Brassai is now known to the professionals as a

1. For a recent collection of Brassai's major syntactic works, see Brassai, 1860–1888/2011.

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pioneer of the study of information structure, preceding Gabelentz (1868) by several years (cf. É. Kiss, 2008).[2] At the same time, É. Kiss's interpretation of Brassai through the prism of generative grammar has created another problem. In particular, it has masked several key aspects of Brassai's syntactic theory, including his assignment of a dependency-based structure to the sentence (cf. Wacha, 2005, p. 88; Imrényi, 2013).

The goal of the present paper is thus twofold. On the one hand, we want to further promote Brassai in the international arena, allowing his thoughts to make more of an impact on today's and tomorrow's linguistics. On the other, we also want to offer a more detailed and more accurate picture of yesterday, establishing Brassai's place in the history of dependency grammar (DG). Although Wacha (2005, p. 88) already reproduced one of Brassai's diagrams, and Imrényi (2013) argued extensively for his status as a dependency grammarian, the present contribution adds both breadth and depth to this argument.

In Section →2, we sketch the personal and historical context in which Brassai's theory was developed. Section →3 is dedicated to Brassai's verb-centred, dependency-based theory of the sentence, expressed both in metaphorical terms and by sentence diagrams produced as early as 1873. In Section →4, we show that Brassai's bipartite (information structural) division of the sentence is fully compatible with his dependency-based theory, and does not support the assumption of constituency as a feature of his model. Finally, summary and conclusions follow in Section →5.

2. Motivations and influences behind Brassai's work

In this section, we look at Brassai's general agenda (→2.1), remark on the influences that shaped his thinking either positively (by inspiring him) or negatively (by provoking his strong disagreement) (→2.2), and interpret his efforts in terms of the *techne/episteme* distinction pertaining to the status of linguistics (→2.3).

2.1 Motivations, general agenda

Brassai was a polymath with an enhanced capacity to spot analogies (metaphorical connections) between seemingly disparate areas and to make generalizations regarding the very nature of scientific inquiry. A cursory look at his works reveals that

2. An even earlier treatment of information structural phenomena is due to Weil (1844), cf. Kiefer (1998).

he made ample use of analogical reasoning, and while his attention kept transgressing disciplinary boundaries, his true (proclaimed) subject matter was methodology (cf. Fitz, 1911, p. 11). As a related point, he had a deep metacognitive interest in the domain-general processes of understanding, which went hand in hand with an interest in how these processes could be best taught and acquired (cf. Brassai, 1867–1869). In the present section, we first identify the inductive method and a strong pedagogical commitment as two fundamental traits of Brassai's thinking, then discuss his reasons for regarding the sentence as the central unit of language.

Brassai insisted that the *inductive method* was the sole reliable basis of linguistic inquiry. His strong disapproval of speculative, overly deductive approaches is succinctly expressed by the passage below.[3]

> I have to see that a great many people (not all of them at the bottom of Parnassus), rather than moving from the specific to the general, strive to bring all facts by force under an *a priori* general rule, just as if someone attempted to draw the map of Switzerland from Mt. Rigi, which might be a fine panorama but only a poor map with all the distortions of perspective. […] I have to see that the "so it is" of analogy is replaced, with a tricky syllogism, by "that is how it must have been", in an attempt to win our approval by force. (Brassai, 1860/2011, p. 16)

In the history of science, Brassai sees a world of difference between the fruits of inductive investigations and those produced by speculative reasoning.

> Statements or, if you prefer, theories gained by induction have usually been readily accepted by the majority of linguists, often all of them. Reaching an agreement rarely requires debate, and the debate itself is of a mild, peaceful, scientific character. The authority of such gains is unabated until it is superseded, adjusted or supplemented by *a more complete induction* which reaches a higher level. By contrast, the fruits of speculation are all Apples of Discord provoking not only vicious debates and contests but also quarrels which have brought neither solid results nor honour to science. (Brassai, 1860/2011, pp. 17–18)

It is clear from these excerpts that Brassai had more respect for consolidated results and practices which had stood the test of time than for high-flown theories, no matter how prestigious the latter might be. Most of the linguistic books in his library had *practical, pedagogical import*. These included pedagogical grammars, readers and textbooks of Greek, Latin, Hebrew, Classical Arabic, Sanskrit and modern languages. Throughout his life, Brassai was actively involved in language pedagogy, both as a teacher and as an author of pedagogical grammars (e.g. Brassai 1845, 1863) as well as methodological treatises (Brassai 1867–1869).

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3. Throughout the paper, Brassai's passages are quoted in our own English translation.

Even though he had great respect for Bopp, Grimm and others (cf. Brassai, 1860/2011, p. 17), works on historical-comparative linguistics were remarkably absent from his library (cf. Lőrinczi, 2005). One reason may be that in an era when historical phonology and morphology were the dominant fields of linguistics, he regarded the *sentence as the central unit of language*, the unit which can stand on its own but whose parts only exist to support it (Brassai, 1860/2011, p. 28). In this respect, he likened the central ontological status of the sentence (with respect to texts on the one hand, and words on the other) to that of a tree in the woods, a sheep in the flock, or a house in the village (Brassai, 1860/2011, p. 29).

It is not hard to detect a link between Brassai's pedagogical commitment and his view of the sentence as the central unit; after all, what students are required to learn is not just words but also ways of linking them to form utterances. His approach was also reinforced on a theoretical level, however. Brassai considered language as a tool for communication between human minds, for directing attention at something that has grabbed our own attention (Brassai, 1860/2011, p. 43). These views anticipate the current focus in cognitive linguistics on social cognition; on the "shared mind"; on engaging in acts of meaning in scenes of joint attention (Tomasello, 2003; Zlatev et al., 2008).

To conclude this section, Brassai promoted the inductive study of language use, had a strong pedagogical commitment, and interpreted language in its social cognitive context. All of these supported his view of the sentence as the central unit of language. In what follows, we look at how the history of linguistics shaped his assumptions about this topic.

2.2 Influences behind Brassai's verb-centred theory of the sentence

Brassai's view of the history of syntactic theorizing can be summed up briefly as follows: It was a fundamental mistake to confuse linguistic analysis with logic, and base syntactic theory on the dualism of subject and predicate. A more solid foundation is offered by the school grammatical tradition of Latin, in which the technique of starting sentence analysis with the verb, and proceeding to other words by considerations of case and agreement, is commonplace. In this section, we look back on the history of linguistics from Brassai's perspective, and situate his verb-centred approach vis-à-vis the (by then) established traditions. The coverage will be necessarily selective; we will focus only on the main line of the narrative.

It seems that the protagonist in Brassai's story was Priscian.[4] Remarkably enough, he served for Brassai both as a negative and as a positive example. Much

4. On Priscian, see Luhtala, this volume, Chapter 1.

of what Brassai had to say about sentence structure (and the history of linguistics) can be traced back to, and explicated from, his mixed opinion of the Latin author.

Priscian's work was in turn based on the results of Apollonius Dyscolus, whose sample sentence *Ho autos anthrōpos olisthēsas sēmeron katepesen* 'The same man slipping today fell down' was to become a topos in linguistics. As Apollonius argued,

> The ordering is a reflection of the complete sentence, quite properly placing the noun first, after it the verb, since any sentence which lacks (either of) these is not complete. It's easy to test this with a sentence-structure containing all the parts of speech; if either noun or verb is deleted, then the sense of the sentence is indeterminate, but if any of the others is removed, there's no defect in the sentence at all.
>
> (Apollonius Dyscolus, 2nd c. AD/1981, p. 23–24)

Priscian took over Apollonius Dyscolus's system. Accordingly, he observed that the two indispensable parts of a complete sentence were the noun (*nomen*) and the verb (*verbum*). The Latin equivalent of the Greek sentence just mentioned (*Idem homo lapsus heu hodie concidit*) aptly proved this point (Priscianus, ca. 520/1961, Book I, p. 17).

Brassai noted that "from Priscian, the faithful interpreter of Apollonius […], we learn […] that the sentence consists of noun and verb, with all other parts of speech serving merely as expanding, elaborating supplements" (Brassai, 1873, p. 4). Here, the phrase "we learn" is ironic, as Priscian's teaching about the (subject) noun and the verb enjoying equal privileged status was something that Brassai fiercely opposed. Importantly, he saw this tradition as still exerting a strong influence (as indeed it continues to do so today). As he put it, "in the dualism of the modern era, which seeks the core of the sentence in logical predication, Priscian's »nomen et verbum« surfaces again, *mutato nomine*" (Brassai, 1873, p. 5).

By the "dualism of the modern era", Brassai primarily referred to the Port-Royal grammar of French rationalism. According to Arnauld and Lancelot,

> A judgment that we make about things, as when I say, *The earth is round*, is called a *proposition*, and thus every proposition necessarily embodies two terms: the first is called the *subject* and is that of which one predicates, as *earth* in the above example, and the second is called the *predicate* [*attribut* in the French original] and is that which is predicated, as *round* in the above example. In addition to the terms, a proposition includes the connection between the two terms, the copula, *is*.
>
> (Arnauld & Lancelot, 1660/1975, p. 67)

While Brassai agreed with the Port-Royal grammarians' focus on the sentence rather than the word as the main object of study, he considered their logical approach to syntax as fatally flawed. In Brassai (1874), he expressed this emphatically as follows.

> [The dualistic view of the sentence] takes its origin in the sophistry of French grammarians, who made the foolish generalization that "every sentence is a logical proposition"; and since the latter consists of subject, predicate and copula, so must also the former. To this they were prompted by the fixed structure of their language in the last century. (Brassai, 1874, p. 64)

As the passage shows, Brassai had two basic problems with the Port-Royal grammarians' analysis. One was the confusion of linguistics with logic,[5] the other the language bias built into their assumptions. Specifically, the fact that subjects are obligatory in French declarative sentences (owing to the verb's impoverished morphology) had been mistakenly taken as evidence for a universal property of sentences. Contemporary German grammars, including Wurst's (1836) popular work going back to Becker's (1830) philosophical systematization, also belonged to the dualist tradition. When Brassai developed his concept of *igehatározó* 'verb's dependent' (→3), subordinating the subject to the verb, he noted that by doing so he had departed from the French and German grammars of the time. In particular, the German term *Ergänzung* and the French term *complément* crucially did not include the nominative dependent (Brassai, 1860/2011, p. 49).

So far, then, we have seen why Priscian was a negative example for Brassai, representing a school of syntactic analysis (including Apollonius Dyscolus, the Port-Royal grammarians and many others) which assigned equal privileged status to the (subject) noun and the verb. However, Priscian was at the same time also a positive example; remarkably, he embodied both what Brassai was fiercely opposed to and what he firmly endorsed.

In his analysis of verbs, Priscian set up a classification based on the case forms that each verb "requires" *(exigit, requirit)* to appear in the sentence. Along these lines, he distinguished between intransitive verbs (which only require a nominative noun), transitive verbs (which require one oblique noun in addition to the nominative) and verbs demanding the appearance of two oblique nouns. Besides emphasizing case relations, Priscian also highlighted the role of agreement in marking binary correspondences between words (Priscianus, ca. 520/1961, Book XVIII, p. 40 and 127; see also Kelly, 2011, p. 135). Brassai was of course aware of this, and also of its influence on subsequent generations of linguists. As he noted,

5. For a similar point about logic having no place in linguistics, and a corresponding argument against the subject/predicate division of clauses, see Tesnière, 1966/2015, p. 100.

> the world has made little progress since Priscian. The only step I am familiar with is that in grammars following the Renaissance, the rules have been divided between "syntaxis concordantiae" and "syntaxis regiminis"[6] (Brassai, 1873, p. 5)

From this perspective, it is understandable that Brassai used Priscian as a key source of inspiration and legitimization when he was arguing for a verb-centred approach to the sentence.

> To choose the verb as the starting point of the sentence, and link to it the other words under the rubrics of "concordantia" and "regimen", is a procedure as old as Priscian and Donatus, and so frequent that the analysis of sentences into subject and predicate has a share of not more but perhaps much less than one in a million. (Brassai, 1860/2011, p. 102)

As the following passage reveals, Brassai first encountered this procedure as a schoolboy; his work as a linguist and language teacher was guided by a technique he had mastered in childhood years.

> Let us recall our school years and benches. When we received a new excerpt in Latin for translation, it was handed over to us with the single instruction that we find the finite verb in every sentence. And in the overwhelming majority of cases this clue […] led us to our goal. And […] since then how many times we have made use of this simple technique. (Brassai, 1860/2011, p. 42)

To conclude this section, the school grammatical tradition of Latin can be identified as the direct source behind Brassai's verb-centred theory of the sentence. However, he also proudly proclaimed that while the truth of his statements might be debated, their originality was beyond contest (Brassai, 1865/2011, p. 259); that his method was exclusively his own (Brassai, 1862, p. 45). To reconcile these facts, we will next interpret Brassai's efforts in the context of the *techne/episteme* distinction underpinning the history of linguistics.

2.3 From techne to episteme

The previous sections already strongly support the impression that there is nothing new under the sun. Rationalist (often speculative/universalist) and empiricist, dualist and verb-centred approaches have sought to gain the upper hand for centuries if not millenia in linguistics. In this section, we note that these splits reflect another

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6. Here, Brassai was not completely right about the chronology. The study of regimen was already present in pedagogical grammars of the late Middle Ages, distilled from the philosophical works of the Modistae (cf. Law, 2003, p. 161).

fundamental division in the canon, namely that between the study of language as *techne* and as *episteme*. In the context just sketched, Brassai's work can be interpreted as an effort to bring the results of *techne* to the level of *episteme*; in other words, to develop a theory on the basis of consolidated practices.

Classical Greek philosophy distinguished between several kinds of knowledge. Systems of statements logically deducible from axioms (e.g. those of logic, mathematics and philosophy) were referred to as *episteme*. By contrast, skills to be mastered in practice on an inductive basis were called *techne*, including both such crafts as pottery and such intellectual professions as the study of grammar.[7] In contrast with *episteme*, *techne* did not have a logical system behind it, and was therefore considered inferior (Dinneen, 1995, p. 163). The craft of grammar *(tekhné grammatiké)*, concerned with reading, writing and text comprehension as a basis for understanding literary works, belonged to this inferior category. At the same time, the study of grammar also had its roots in logic, and more specifically in Stoic philosophy (Atherton & Blank, 2013). The history of linguistics has seen numerous attempts at raising the results of *techne* to the level of *episteme* by demonstrating the deducible nature of rules. However, these attempts generally enhanced the role of logic (cf. Arnauld & Lancelot 1660/1975), led to a view of sentences as propositions, and consequently reinforced the dualist view of the sentence.

In this context, we can see why Brassai (1865, p. 273) was proud of his "original" theory despite making explicit references to the school grammatical tradition of Latin as a direct source of influence. In particular, the latter tradition had provided only a technique rather than a theory; a method for corpus analysis rather than an account of how language works. The move from the former to the latter was by no means self-evident.[8] By taking the verb-centred approach to sentence analysis and raising it to a theoretical level, Brassai moved from *techne* to *episteme*, and crucially did so in a novel way, without falling back on logical concepts.

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7. For a threefold distinction also including *phronesis*, or practical wisdom, see Aristotle (349 BC/1999).

8. With regard to the Immediate-Constituency Analysis of American structuralists, Chomsky (1957) did something very similar. He took a technique (a discovery procedure for extracting grammatical categories from a corpus), and re-interpreted it as part of the speaker's mental grammar. While the structuralists' method was certainly useful for its intended purpose, it is less clear if phrase structure rules can be attributed psycholinguistic plausibility. With DG, the situation seems to be quite different. Not only is it well-suited to pedagogical and corpus linguistic applications, but may also be argued to have strong cognitive, developmental plausibility (cf. Ninio, 1996; Hudson 2007, p. 536).

3. Brassai's verb-centred theory of the sentence

In this section, we present Brassai's vision of sentence structure in more detail, with the aim of demonstrating that he was a dependency grammarian. We first discuss his metaphorical treatments of syntax (→3.1), then observe one of his sentence diagrams (→3.2). Finally, we review the dependency notions he used for the description of Hungarian (→3.3).

3.1 Metaphors

A dominant theme in cognitive linguistics has been the recognition that metaphors are crucial for cognition. In particular, they make abstract target domains such as LIFE, THEORY, DEBATE, etc. accessible via more concrete source domains such as JOURNEY, BUILDING, and WAR. Conceptual metaphors such as LIFE IS A JOURNEY, THEORIES ARE BUILDINGS, and DEBATES ARE WARS help explain the frequency and systematicity with which metaphorical expressions are employed for describing abstract phenomena (Lakoff & Johnson, 1980).

In their conceptual integration theory, Turner and Fauconnier (2002) make the further important point that the mappings between input spaces (the source and target domains) often support the generation of two additional spaces. Firstly, a generic space representing schematic commonalities (e.g. what is common to LIFE and JOURNEY) and secondly, a blended space where properties from the input spaces are mixed with emergent consequences.

The creative use of metaphors involves what Mayer (1993) calls *instructive metaphors*, serving as aids to students' understanding of science. In the present subsection, we explore the instructive metaphors that Brassai invented for describing sentence structure. This will be followed in Section →3.2 by the presentation of one of his sentence diagrams, drawing on the generic space that results from conceptual integration.

Brassai's first metaphor of choice is that SENTENCES ARE FEUDAL SOCIETIES. He introduces the metaphor as follows.

> Sitting at the beginning, middle, or end of the sentence, wherever it pleases him, is the monarch, the verb, related by meaningful bonds to his vassals, the dependents [*igehatárzók*]. […] The rule of the verb is no dictatorship, and his vassals are no slaves but have lawful relations to their lord and to one another; they each possess a degree of autonomy and a certain rank, with a feudalism whose slogan, just as in history, is *nulle terre sans seigneur* [no land without a lord].
>
> (Brassai, 1860/2011, p. 48)

Upon careful analysis, several analogical connections can be established between the source domain of FEUDAL SOCIETY and the target domain of SENTENCE STRUCTURE. Collectively, these clearly establish Brassai's adherence to the principles of dependency grammar (see e.g. Tesnière, 1966/2015, pp. 5–7, Robinson, 1970, p. 260, Ágel & Fischer, 2010, p. 248, see also Mazziotta, this volume, Chapter 4, Section 4).

Firstly and most obviously, the finite verb in a sentence corresponds to the monarch of a feudal society. They have it in common that they act as the *root node* (unique undominated node, cf. Mel'čuk, 1988, p. 23) of their hierarchies, with all other elements subordinated to them either directly or indirectly.

Secondly, binary asymmetrical relationships between lords and vassals are mapped onto (what are now known as) *dependencies*, i.e. binary asymmetrical relations between heads and dependents, cf. Nivre (2005). Brassai's wording highlights that such relationships are meaningful (cf. Tesnière 1966/2015, p. 36) and lawful, i.e. governed by the regularities of grammar.

Thirdly, just as a vassal in one relationship can act as a lord in another, a dependent of a word may also act as head, i.e. have dependents of its own (Tesnière 1966/2015, p. 6). As implied by the hierarchy of dependencies, words of the sentence occupy different *ranks*, and enjoy a certain *autonomy* (since regularities tend to be local).

Fourthly, it is a well-known generalization of (most versions of) DG that there is a *one-to-many* correspondence between a head and its dependents. While a head may have several dependents, each dependent must have a single head (Tesnière 1966/2015, p. 6). This is also reflected in the organization of feudal societies, where lords may have several vassals, but each vassal must be directly subordinated to a single lord.

The fifth parallel concerns what Brassai expresses with the French phrase *nulle terre sans seigneur* 'no land without a lord'. The corresponding syntactic observation is that no word is outside of the hierarchy; put differently, the graph is fully *connected* (cf. Mel'čuk, 1988, p. 23) and gives a *complete* description of the sentence.

Finally, from the perspective of the 21st century, it is worth foregrounding another implication of the metaphor. Specifically, the model of feudal society that the metaphor relies on does not require separate nodes for groups consisting of a lord and his vassals. Instead, groups like these are emergent entities implied by a network of interpersonal relations. By the same token, Brassai's model of sentence structure does not posit separate nodes for phrases; rather, *phrases are merely implied* by the network of word-to-word relations (dependencies).

It is remarkable how precisely the metaphor works, and how unequivocally it establishes Brassai as a dependency grammarian. The properties form a coherent group rather than a random list, and each relevant property of the source domain can be mapped onto a property in the target domain. As conceived of in DG, the

organization of sentences reflects general principles that are not unique to language (see e.g. Hudson, 1990, Chapter 4). It is interesting to contrast this with the X'-theory of phrase structure grammar (Jackendoff, 1977), which has no direct analogues in any other domain.

Somewhat surprisingly, Brassai (1873) still felt the need to introduce another metaphor, whereby THE SENTENCE IS A SOLAR SYSTEM.

> In the system that they call "sentence" (Satz, phrase), the Sun, the governing centre, is the verb. This attracts the planets which orbit around it, discussed by grammars under the names of Subject, Attribut, Object, Umstandswort, and who knows how many more, all of which I subsume under the concept of "dependent" [*határozó*]. And rightly so, since syntactically speaking, there is as much as no difference between them. In a neatly formulated sentence, none is more prominent, more important, more indispensable than any other. The dependents in turn attract and govern moons around them in the form of attributes [*jelzők*], which again appear in various shapes but as dependents of dependents, they are syntactically of the same kind.
>
> (Brassai, 1873, p. 5–6)

This metaphor arguably has certain advantages over the previous one. Firstly, it incorporates the notion of *attraction* (as well as government) between heads and dependents. It thus implies a natural rather than artificially imposed bond between the two terms of a relationship. Secondly and relatedly, the metaphor makes stronger implications about *word order* matching the hierarchical dependency relations. Whereas a vassal need not be physically close to his lord (the bond being artificial rather than natural, and lords having a higher degree of mobility), planets and moons cannot leave their attractors' domain. With his SOLAR SYSTEM metaphor, Brassai managed to approximate what today's DG recognizes as the principle of *projectivity* (Nivre 2005, p. 10; Hudson 2007, p. 130).

At the same time, the earlier metaphor may also be said to have an advantage over the new one. Specifically, the schematic structure of a feudal society is more amenable to a two-dimensional representation that can be easily reproduced on paper. By contrast, there are many central aspects of (our conception of) the solar system that must be suppressed when the nature of sentence structure is at issue. For example, the fact that planets inhabit three-dimensional space and are constantly on the move need not have any direct bearing on the DG understanding of sentences.

To summarize this section, Brassai produced two instructive metaphors for describing sentence structure, SENTENCES ARE FEUDAL SOCIETIES and THE SENTENCE IS A SOLAR SYSTEM. Together, these metaphors anticipate virtually all of the basic concepts of DG, including root node, head, dependent, connectedness and projectivity. Most importantly, Brassai put the finite verb at the top (and in the centre) of sentence structure, breaking with the logically inclined tradition which regarded the subject and the verb as having equal status.

3.2 Sentence diagrams

Switching between structurally similar source domains for describing a target domain presupposes a clear understanding of the schematic commonality between them. In this section, we present a sentence diagram produced by Brassai, and remark on a few similar attempts by his contemporaries. As far as we know, Brassai (1873) was the first to draw a verb-centred dependency diagram, followed by Kern (1883) (see Osborne, this volume, Chapter 4). In all relevant respects, he created stemmas of the kind that would later appear in Tesnière's work.

The Latin sentence in (1) has three different interpretations, each of which is represented with a tree diagram by Brassai (1873, p. 7–8). Following Wacha (2005), we reproduce only the first of these in Figure 1.

(1) *Uxor amans flentem flens acrius ipsa*
wife.NOM loving.NOM crying.ACC crying.NOM more bitterly herself.NOM
tenebat, imbre per indignas usque
was hugging shower.ABL on unbecoming.PL.ACC continuously
cadente genas.
falling.ABL cheek.PL.ACC
'The wife, herself even more bitterly crying, was hugging the crying one, while a shower [of tears] was falling on her unbecoming cheeks [i.e. cheeks to which tears are unbecoming]'.

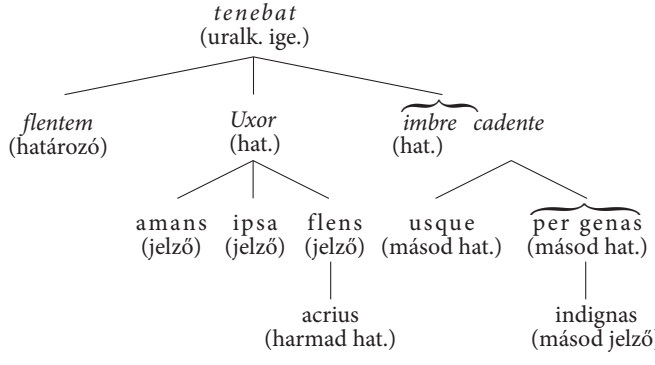

Figure 1. Brassai's tree diagram of a Latin sentence

The diagram leaves no doubt that Brassai was able to construct the generic space over the source and target domains of his metaphors. Topologically, the tree in Figure 1 could just as well apply to one portion of a feudal society as a sentence. The tree also includes terminological labels, which can be translated as follows: *uralk(odó) ige* means 'governing verb', *határozó* means 'dependent', and *jelző* means 'attribute'. The modifiers *másod* and *harmad* mean 'secondary, second-level' and

'tertiary, third-level', respectively. These terms will receive further comment in Section →3.3.

Brassai considers each horizontal line of a diagram as a "level" of the sentence, and notes that "if we begin with the verb, and stop at any of the levels, the part that we have read has a basically complete meaning. This is in fact a proof that we have analysed the sentence correctly" (Brassai, 1873, p. 8).

At this stage, the question that needs to be raised is whether Brassai's notation had any direct precedents or it was developed independently. What is clear is that sentence diagramming was "in the air" in Brassai's time, and several attempts had been made at signalling hierarchical syntactic relations. Here, we mention some of these for illustration.

In Beilhack's school grammar of German, numbers written above words mark the rank of each word in the hierarchy, e.g. *Die Wohltat der Gesetse[1] des Staates[2] befördert das Aufblühen[1] der Industrie[2] in allen Zweigen[3] der Gewerbe[4]* 'The favouring of the laws[1] of the state[2] promotes the flourishing[1] of industry[2] in all branches[3] of commerce[4]' (Beilhack, 1840, p. 193). Others like Götzinger (1850) wrote letters at distinct heights to convey a similar message (see also Jespersen's rank theory, Cigana, this volume, Chapter 7). In a school grammar of Latin by Billroth and Ellendt, we already find a complete diagram of the sentence *Miltiades dux Atheniensium toti Graeciae libertatem paene opressam in pugna apud Marathonem reddidit* 'Miltiades, the leader of the Athenians gave back to the whole of Greece their almost lost freedom in the battle by Marathon' (Billroth & Ellendt, 1838, p. 329, see also Osborne, this volume, Chapter 6, Section 1). However, all of these implement the view that the subject and the verb represent two poles of equal status in the sentence. As far as we know, verb-centred dependency trees do not appear until Kern (1883) (cf. Osborne, this volume, Chapter 4); thus, the chronological priority is with Brassai (1873).

In conclusion, Brassai's basic method was not unprecedented in the literature. The significance of his diagrams comes from the fact that (to the best of our knowledge) they were the first to reflect a consistently verb-centred DG analysis of the sentence.

3.3 Dependency notions in Brassai's description of Hungarian

In his analyses, Brassai relied heavily on only one part of speech category, that of verbs (Hu. *ige*). Other words were typically named by their case forms rather than their word classes; hence, he made frequent use of terms such as *nevező* 'nominative', *accusativus* 'accusative', etc. He generally preferred to call the subject *nevező* in order to avoid confusion with the logical interpretation of subjects.

Brassai of course knew that a given case form was able to fulfil various functions in the sentence. He referred to the predicative complement of a copula as *tulajdonítmány,* a deverbal noun derived from *tulajdonít* 'attribute/assign (a property to something)', and noted that it was also in the nominative. In copular sentences with two nominative dependents, he called the other dependent *alany* 'subject'. For these sentences, but only these, he accepted the view that they were logical propositions, using logical concepts for their analysis (Brassai 1863/2011, p. 236). This strategy of positing construction-specific categories is reminiscent of work in Construction Grammar, especially its "radical" flavour (Croft, 2001).

Brassai called the attribute of a noun *jelző,* following standard practice in Hungarian grammar. He also inherited the term *határzó* (also spelt *határozó*), which had been a word class label for adverbs. However, Brassai crucially decided to use the latter term in a generalized functional sense, now covering not only adverbs but also all case-marked nouns (the nominative and the accusative included) as well as adpositional phrases. Hence, in effect, he arrived at the notion of *dependent*. In the subsections below, we first focus on the concept of *határzó* (→3.3.1), then discuss some other dependency labels in Brassai's work (→3.3.2).

3.3.1 Határzó *'dependent'*

Brassai's semantic innovation regarding the term *határzó* ('adverb' > 'dependent') is made explicit as follows.

> [I]n my treatise, I do not adopt the notion "igehatárzó" in the narrow sense of "adverb", but rather use it as a name for everything that the sentence includes in addition to the verb. There is no risk of confusion, since the two uses are quite far apart in their degrees [of generality]. By contrast, the more closely matching term "regimen" (i.e. vox, quae regitur a verbo [word governed by the verb]) or the "Ergänzung" of the Germans, the "complement" of the French would have been less felicitous names, these only differing from my concept by excluding the subject-nominative. What are, then, these dependents [*igehatárzók*]? Grouped together and without regard for language-specific differences: the *cases*, nouns with *pre-* or *postpositions*, and adverbs. (Brassai, 1860/2011, pp. 48–49)

As a polyglot, Brassai goes on to make typological comments about the various ways of dependent marking (cf. Nichols, 1986). He distinguishes between languages using cases, adpositions, or a combination of these. Interestingly, but characteristically of Hungarian grammars of the time, he tends to regard elements as pre- or postpositions even when they are affixed to the noun. For example, Hungarian is categorized as a postpositional language (even though Brassai admits that its postpositions "can almost be regarded as proliferated cases", Brassai, 1860/2011, p. 49). Similarly, Semitic languages with prefixes are considered prepositional.

As noted above, Brassai adopts the notion *jelző* 'attribute' for dependents of nouns. However, it is clear that these are subsumed under the general concept of *határzó*. In Brassai's formulation (quoted *supra*, →3.1), "as dependents of dependents, they are syntactically of the same kind" (Brassai 1873, p. 6).

To summarize, Brassai developed a generalized concept of dependent by endowing the word class label *határzó* 'adverb' with a new (more inclusive and functional) meaning. When he did want to refer to subclasses, he mostly adopted case terms such as *nevező* 'nominative' and *accusativus* 'accusative'. For attributes of nouns, he reserved the term *jelző*, interpreted as a subcategory of *határzó* 'dependent'. However, *jelző* also had another use in Brassai's analysis, whereby it referred to direct dependents of verbs. This, along with the notion of *egészítvény* 'post-dependent', will be the topic of the section below.

3.3.2 Jelző *'attribute' and* egészítvény *'post-dependent'*

A key aspect of Brassai's work that has so far been ignored in this paper is the analysis of word order. His main discovery concerns the information structural division of sentences to two parts, an issue to which we return in Section →4. For the purposes of the present section, it suffices to mention that he divided sentences into an optional preparatory part called *inchoativum* 'inchoative' and a main part called *(mondat)zöm* 'bulk (of the sentence)', with the beginning of the bulk marked by main accent. Our chief concern here is word order within the bulk (corresponding to the notion of comment in modern descriptions of information structure), where the two categories he set up are *jelző*, this time used in reference to immediate dependents of verbs, and *egészítvény*.

(2) a. *A gyermek játszik.*
the child.NOM plays
'The child is playing.'
b. *A GYERMEK játszik.*
the child.NOM plays
'It is the child who is playing.'

In (2a), where the main accent falls on the verb, *a gyermek* represents the inchoative (the preparatory part) and *játszik* is the bulk. By contrast, in (2b), the main accent is on the preverbal dependent, which consequently belongs to the bulk. As the translation suggests, the pattern's meaning is roughly the same as that of the English cleft construction.

In (2b), the head verb is deaccented, and it forms a tight conceptual as well as phonological unit with the accented preverbal expression. These properties prompted Brassai to analyse the accented preverbal dependent as *jelző*, since "it bears the same relation to the verb as an adjective to a noun" (Brassai, 1863/2011, p. 208–209).

Note that nouns are also frequently deaccented in Hungarian when preceded by an attribute (which is the obligatory placement for most types of attribute), e.g. *piros alma* 'red apple' has its accent on the first syllable of *piros* 'red'.

Whether or not Brassai made a sound terminological choice can be debated. While the properties just mentioned provide some justification for Brassai's decision, the restriction that there may be only a single *jelző* before the verb (cf. Brassai, 1863/2011, p. 262) is hardly illuminated by the parallel with adjectival attributes. In any case, the concept gives further support to the interpretation of Brassai as a dependency grammarian, as it captures a binary asymmetrical relation between two discrete elements of clause structure.

Dependents within the bulk fall into two basic categories, *jelző* 'attribute' and *egészítvény*, the latter term literally meaning 'complement'. As the definitions make it clear, these are in fact positional subclasses of *határzó*. As Brassai (Brassai, 1863/2011, p. 262) remarks, "an attribute is a dependent placed before the verb, and a complement a dependent placed behind it." The best match for *egészítvény* is thus 'post-dependent' (cf. Hudson, 2007, p. 161), especially as Brassai makes no distinction between complements and adjuncts in the modern sense.

So far, all of Brassai's categories have been found to conform to the principles of DG. The root node is the verb, governing a variety of dependents *(határzók)*, with the nominative (the subject) also belonging to these. Dependents within the bulk are subclassified into *jelző* (a single pre-dependent) and *egészítvények* (post-dependents). For example, the sentence in (3) may receive the analysis in Figure 2, intended as a reconstruction of Brassai's proposal.

(3) *A GYERMEKET dicséri a tanító.*
the child.ACC praises the teacher.NOM
'It is the child that the teacher praises.'

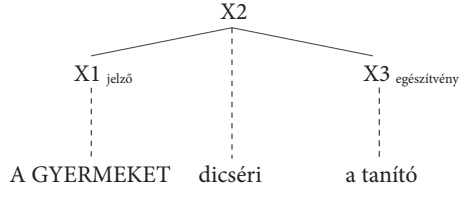

Figure 2. Reconstructed tree diagram of a sentence with *jelző* 'pre-dependent' and *egészítvény* 'post-dependent'

Having reviewed aspects of Brassai's analysis which clearly reflect a verb-centred, dependency-based approach, we next turn to a more controversial issue. In particular, Brassai's binary division of sentences into inchoative and bulk led É. Kiss (2005, 2008) to assume constituency as a feature of his model. The section below reaches the conclusion that Brassai's account was in fact fully dependency-based.

4. Inchoative and bulk. Does duality require constituency?

As the previous sections demonstrated, Brassai had a verb-centred, dependency-based understanding of the sentence, and was firmly opposed to the dualistic view of subject and verb being on the same level. However, he did introduce another kind of dualism, dividing the sentence into inchoative and bulk. Here we first present his analysis, then address the question whether it is justified to interpret it in constituency terms.

The question that led Brassai to the discovery of inchoatives was the following.

> Is there any dependent of the verb [*igehatározó*] that must be placed first? In other words, is there a rule by which some dependent of the verb is entitled or indeed required to occupy the very first position in the sentence on account of its form or meaning, its relation to the governing verb or to the function of the sentence?
>
> (Brassai, 1860/2011, p. 51)

At this point, Brassai's attention was not limited to Hungarian. Rather, he made the methodologically sound decision to look for patterns in languages where the nominative (the subject) has a fixed default position in front of the verb. The above question was thus made more concrete, the issue being which dependent may or must precede even the nominative in these languages. Based on an impressive cross-linguistic sample of sentences, Brassai found that sentence-initial dependents may denote

> (1) a *place*, wherein the event is unfolding, or property is dwelling, that is expressed by the sentence. This place can be physical or […] abstract. (2) *Time*, as specified more or less definitely. (3) A *circumstance* that bears on a part or the whole of the sentence. (4) A *precondition* of the sentence or the *characterization* of its main theme. (5) The *main theme* of the sentence. (6) A *prior event* whose consequence is the main content of the sentence. (7) Rarely, a *consequence* when it is the preceding event that the sentence is informing about. (8) A *means*, when the sentence discusses the goal, and (9) a *goal*, when the sentence is about the means. It can also mark (10) a *superior or more general concept* or *group*, whose subordinate member or members are the theme of the sentence. (11) *Concession*. (12) *Contrast*. (13) *Comparison*. (14) *Stipulation* or *restriction*. (15) *Distinction*. (16) *Witness* or *authority*. (17) *Marking of serial order*, and finally, [there are] (18) certain words which I cannot characterize in any other way than by calling them *attention*-grabbers.
>
> (Brassai, 1860/2011, pp. 52–54)

Following an Arabic tradition, he adopted the term *inchoative* (derived from the Latin verb *inchoare* 'to begin') to refer to these varied element types in a unified manner.[9] He defined the function of inchoatives as follows.

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9. On the Arabic term *mubtada'* 'inchoative' that Brassai alludes to here, without naming his source, see Farina 2017, p. 166.

> [They] prepare the ground in the listener's mind for comprehending the meaning of the sentence, in other words they have an attention-directing, preparatory role, linking up the mental operations of the listener with those of the speaker.
>
> (Brassai, 1860/2011, p. 54)

It is clear from both the listed types and the definition that Brassai discovered a much broader category than what was to be called "topic" in 20th century linguistics (see e.g. Li & Thompson, 1976). His notion is closer to what Halliday (2014, p. 89) calls *Theme*, following the Prague School, and interprets as "the point of departure of the message", "that which locates and orients the clause within its context". In a similar spirit, Imrényi (2017) argues that the phenomenon may be best captured by the term of *contextualization*, with contextualizers (corresponding to Brassai's inchoatives, and subsuming topics) serving the dual purpose of facilitating sentence processing and/or signalling the speaker's intended interpretation.

With regard to inchoatives in Hungarian, Brassai made two formal generalizations; namely, that they begin the sentence and are unaccented (Brassai, 1863/2011, p. 213). Here, accent is probably understood as special prosodic prominence, since the sentence-initial elements he identified as inchoatives may receive a default, normal degree of stress.

Whereas inchoatives are optional, the bulk is an obligatory part of sentence structure. This is the part in which the speaker conveys something new, something assumed to be unknown to the hearer (Brassai, 1874, p. 71). The beginning of the bulk is marked by the main accent of the sentence.

Let us now observe a few examples discussed by Brassai (Brassai, 1863/2011, pp. 252–256) which include a nominative and an accusative dependent. In (4a), both dependents are inchoatives, while in (4b),(4c), one of them appears in front of the verb within the bulk as *jelző*. Finally, in (4d), we also find an *egészítvény*, viz. *a gyermeket* 'the child.ACC'. Since Brassai's concept of *jelző* as applied here corresponds to the modern notion of focus, I mark its instances by capitalization, a standard convention for highlighting foci. A slash has been added to signal the boundary between inchoative and bulk.

(4) a. *A tanító a gyermeket / dicséri.*
the teacher.NOM the child.ACC praises.
'As for the teacher, as for the child, he praises him/her.'

b. *A tanító / A GYERMEKET dicséri.*
'As for the teacher, it is the child that he praises.'

c. *A gyermeket / A TANÍTÓ dicséri.*
'As for the child, it is the teacher who praises him/her.'

d. *A tanító / dicséri a gyermeket.*
'The teacher praises the child.'

In Section →4.1 below, I present É. Kiss's interpretation of Brassai in constituency terms. This is followed by a consistently dependency-based explication of Brassai's proposal (→4.2).

4.1 Brassai's interpretation by É. Kiss in constituency terms

Given that Brassai divided the sentence into two parts, and used such wordings as "one dependent is an inchoative, the other an attribute [*jelző*] and as such makes up the bulk of the sentence together with the verb" (Brassai, 1863/2011, p. 253), it is not hard to get the impression that he had constituency in mind. Celebrating Brassai as a precursor to the generative enterprise, É. Kiss (2005, p. 14) indeed reconstructed Brassai's proposal in the form of the phrase structure on the left in Figure 3. She argued that except for the hierarchical position of *jelző* vs. *focus,* it was the same as the generative analysis on the right.

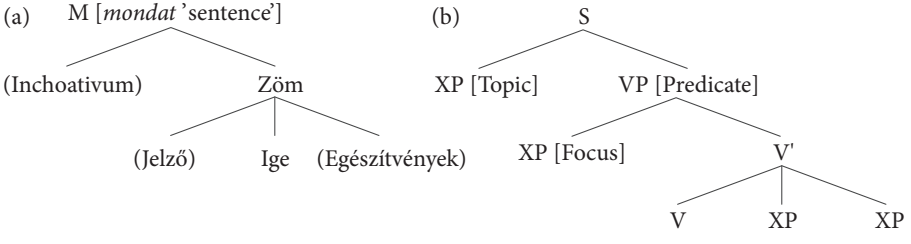

Figure 3. É. Kiss's constituency-based reconstruction of Brassai's model and a corresponding generative analysis

We have already seen why equating Brassai's *inchoativum* with the modern notion of *topic* is problematic; Brassai clearly had a much broader category in mind. Equally questionable is the semantic affinity between *zöm* and É. Kiss's *predicate*, understood as 'logical predicate' (cf. É. Kiss, 2002, p. 8), in view of Brassai's objection to logical analysis in linguistics. However, our concern now is whether it is justified to interpret Brassai's model in constituency terms. There are at least two major reasons to suggest otherwise.

Firstly, since Brassai's metaphors and tree diagrams clearly establish him as a dependency grammarian, É. Kiss's reconstruction could only be plausible under the assumption that Brassai produced a mixed framework. Apart from a few wordings of the kind mentioned at the beginning of this section, which turn out to be compatible with a dependency-based interpretation as well (see →4.2 below), there are no grounds for this assumption.

Secondly, the reconstruction implies that inchoatives somehow leave the phrase of their heads, i.e. they are no longer governed by the verb in surface structure. Without recourse to movement, it is hard to see how Brassai could have arrived at this conclusion. A passage quoted earlier makes it clear that inchoatives belong to the dependents of the verb. Moreover, the excerpt below reaffirms the fact that according to Brassai, they are in the same rank as other dependents.

> More loose is the relationship between the nominative and the verb in complete or bipartite clauses (consisting of an inchoative and a bulk). However, even here, the nominative does not renounce its verb-modifying character. Whether it is an attribute, a complement, or an inchoative, in all cases it is a dependent of the verb, assuming its place in the rank of other elements of this kind.
>
> (Brassai, 1863/2011, p. 215)

To put it in modern terms, inchoatives are special only on the horizontal axis (word order), not on the vertical dimension of dominance. In the section below, we argue that Brassai's views support a DG analysis that makes crucial use of the concept of *catena*.

4.2 A consistently dependency-based explication of Brassai's ideas

The conclusion reached in the previous section supports the following tree diagram for (4b) as a reconstruction of Brassai's analysis.

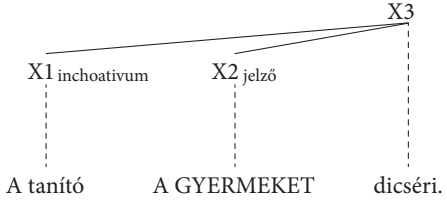

Figure 4. Dependency-based reconstruction of Brassai's analysis of (4b)

This account is faithful to Brassai's proposal whereby inchoatives are in the same rank as other immediate dependents of the verb. However, it also raises the question as to how the binary division of the sentence into inchoative and bulk could be reflected. In its current form, Figure 4 does not seem to indicate the fact that *A GYERMEKET dicséri* constitutes the bulk.

The solution is extremely simple once we recognize a unit type of DG called *catena*. Building on O'Grady (1998) and Osborne (2005), Osborne and Groß (2012, p. 174) define this unit type as follows: "A word or a combination of words

that is continuous with respect to dominance". Crucially, the catena is a more inclusive unit than the *phrase*, or constituent, which can be given the following schematic definition (applicable to DG as well as phrase structure grammars): "a node plus all the nodes that that node dominates" (Osborne, 2006, p. 54).

In Figure 4, *A GYERMEKET dicséri* fails to qualify as a phrase, since it does not include all the words that its root (the verb *dicséri*) dominates. Nevertheless, it does constitute a catena, i.e. a continuous combination of words in terms of dependency relations. The inchoative *a tanító* also counts as a catena, and the two "information structural" catenae (that of the bulk and that of the inchoative) together make up the entire sentence. This reconstruction captures two key aspects of Brassai's analysis, namely that the inchoative is subordinated to the verb and at the same time falls outside of the bulk.

To conclude, it is safe to say that Brassai's syntactic model was consistently dependency-based. His binary division of the sentence into inchoative and bulk does not support the assumption of constituency as a feature of his model. Instead, the two notions can be interpreted as referring to catenae, supplementing the terminology he introduced for dependency relations (e.g. *határzó, jelző, egészítvény*).

5. Summary and conclusions

This paper has presented Sámuel Brassai as a dependency grammarian, following Wacha (2005, p. 88) and Imrényi (2013). After an overview of Brassai's general agenda, including his emphasis on the inductive method, on language pedagogy and on the sentence as the central unit of language, we highlighted the school grammatical tradition of Latin as the direct source of influence behind his verb-centred, dependency-based analysis.

In addition to providing vivid metaphorical treatments of sentence structure (with the source domains of FEUDAL SOCIETY and the SOLAR SYSTEM), Brassai also produced in 1873 the earliest fully dependency-based sentence diagrams on record that we know of. Although his information structural division of sentences into inchoative and bulk may at first sight indicate constituency at work in his model (cf. É. Kiss 2005, 2008), we offered a consistently dependency-based reconstruction of his views, making crucial use of the concept of catenae.

The history of science is typically the story of influences and incremental development. However, the early history of DG seems in no small measure to have been a series of independent breakthroughs in similar directions. While there are absolutely no grounds to assume that Franz Kern or Tesnière knew about Brassai, their congeniality is striking. It almost seems as if being a polyglot with Classical

erudition and having a strong pedagogical commitment predisposed one to become a DG theorist.

It is hoped that Brassai has not only finally been introduced into the Hall of Fame of DG, but may also have an impact on the development of linguistics. On the practical side of things, we believe that his instructive metaphors are worthy of discussion in any introductory course on (dependency) syntax. In terms of theoretical advances, a promising avenue of research is to combine the study of information structure with a catena-based, dependency-oriented approach to sentences.

Acknowledgement

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CHAPTER 6

Franz Kern

An early dependency grammarian

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An examination of Franz Kern's main works (1883a, 1883b, 1884, 1886, 1888) quickly reveals that his concept of sentence structure is closely similar to many modern analyses in the tradition of *dependency grammar* (DG). Kern took the finite verb as the sentence root and positioned the subject and object phrases as equi-level dependents of the verb in a like manner. In so doing, he was rejecting the binary subject-predicate division associated with the works of some of his contemporaries, most notably, Reed and Kellogg (1876). The aspect of Kern's understanding of sentence structure that is particularly valuable in tracing the development of dependency syntax was his use of sentence diagrams. Kern produced numerous diagrams that are similar to the stemmas Tesnière used approximately 60 years later. Thus, Kern's works on sentence structure stand as a particularly clear manifestation of dependency syntax long before dependency grammar became associated primarily with Tesnière's efforts (1953, 1959). Interestingly, Tesnière did not cite Kern. This situation raises a basic question about whether Tesnière knew about Kern's works at all, or whether he was indirectly influenced by Kern through the ideas of other German grammarians following in a tradition that Kern had helped establish many decades earlier.

1. Introduction

Franz Kern (1830–1894) deserves a prominent position in the history of dependency syntax, as pointed out and established by Baum (1976, pp. 39–42), Coseriu (1980, pp. 59–61), and especially Keinästö (2001). Born and raised in Stettin in Prussia, Kern taught German, Latin, Greek, religion, and geography in gymnasiums inside and outside of Stettin and published academic works in those fields. The highpoint of his school career occurred when he became the director of the Köllnisches Gymnasium in Berlin, where he served from 1880 until his death in 1894.[1] In those years, he

1. For much more detail concerning biographical information about Kern, see Keinästö (2001, pp. 13–18).

https://doi.org/10.1075/slcs.212.07osb

wrote a number of treatises that focused mainly on two areas: the nature of sentence structure of the German language and the reform of the manner in which grammar was taught in Prussian schools. His main works in these areas are listed next:

1883a. *Die deutsche Satzlehre: Eine Untersuchung ihrer Grundlagen*. Berlin: Nicolaische Verlags-Buchhandlung.
1883b. *Zur Methodik des deutschen Unterrichts*. Berlin: Nicolaische Verlags-Buchhandlung.
1884. *Grundriss der deutschen Satzlehre*. Berlin: Nicolaische Verlags-Buchhandlung.
1886. *Zustand und Gegenstand: Betrachtungen über den Anfangsunterricht in der deutschen Satzlehre – Nebst einer Lehrprobe*. Berlin: Nicolaische Verlags-Buchhandlung.
1888. *Leitfaden für den Anfangsunterricht in der Deutschen Grammatik*. Berlin: Nicolaische Verlags-Buchhandlung.

Three of these works – the second, third, and fifth one – contain sentence diagrams. There are, all told, approximately 50 sentence diagrams that appear in these three works, although some of the diagrams are repeated. It is the presence of these diagrams that allows one to easily and confidently assess Kern as an early dependency grammarian.

Kern's diagram of the next sentence is shown in Figure 1.[2]

(1) *Ich bitte Dich, es mich denselben Tag wissen zu lassen.*
I ask you it me the.same day know to let
'I ask of you that you let me know about it on the same day.'

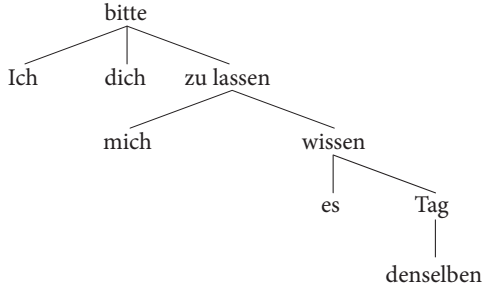

Figure 1. Kern's (1884, p. 33) Diagram of Example (1)

2. Many of Kern's diagrams that are reproduced in this contribution have been adapted somewhat. Kern produced three types of dependency diagrams depending on the type of node label used: 1. diagrams with the actual words as the nodes, 2. diagrams with just category labels (Fin. V., Part., etc.), and 3. diagrams with both the categories and the actual words as labels. Just the first type is provided in this contribution, since it shows the hierarchical structure in the most transparent way.

Two aspects of the sentence diagram in Figure 1 help identify it as dependency-based: the word-to-node ratio and verb centrality. The first of these, i.e. the word-to-node ratio, acknowledges a one-to-one mapping of words to nodes, whereby each word is a node in the structure, and each node is a word[3] – in contrast, phrase structure diagrams have the number of nodes exceeding the number of words. The second aspect of the diagram that identifies it as dependency-based is that the finite verb *bitte* 'ask' is positioned as the root of the structure, which means the binary division of the clause that was present in other early works containing sentence diagrams is absent. In this regard, the diagram bears witness to a verb-centric understanding of sentence structure.

The latter point is worth establishing further via a brief comparison with the diagrams produced by others from the time period before and during Kern's lifetime, both inside and outside of Germany (e.g. Billroth, 1832; Clark, 1847; Reed & Kellogg, 1876/1909).[4] In his 1832 book on Latin syntax for school grammar, the German classicist Gustav Billroth diagrammed a Latin sentence in the following manner:[5]

(2) *Miltiades, dux Atheniensium, toti Graeciae libertatem*
Miltiades leader of.the.Athenians all.DAT Greece.DAT freedom.ACC
paene oppressam in pugna apud Marathonem reddidit.
severely oppressed.ACC in battle.ABL at Marathon.ACC returned.
'Miltiades, leader of the Athenians, returned severely oppressed freedom to all of Greece by way of battle at Marathon.'

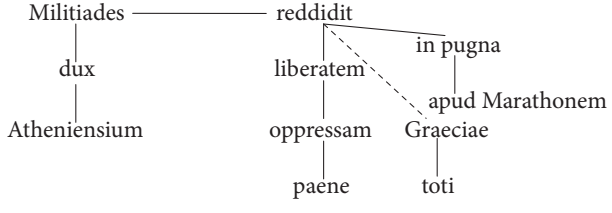

Figure 2. Billroth's (1832, p. 102) diagram of Example (2)

3. Note that *zu* and *lassen* are positioned together as a single node. This is consistent with the observation that the *zu* of *zu*-infinitives in German behaves like an affix instead of like a separate word.

4. See also Imrényi & Vladár, this volume, Chapter 5, Section 3.2, for discussion of a consistently dependency-based sentence diagram produced by the Hungarian linguist Sámuel Brassai (Brassai, 1873, p. 7). See Mazziotta, this volume, on sentence diagrams by Clark and Reed & Kellogg.

5. Figure 2 is the only diagram present in Billroth's book from 1832.

With the exception of the prepositional nodes, this diagram contains the one-to-one mapping of words to nodes and nodes to words. Verb centrality, however, is absent; the traditional binary division of the sentence into subject and predicate is instead present in the diagram.

Similarly, the sentence diagrams produced by Alonzo Reed and Brainard Kellogg maintain the binary subject-predicate division, e.g. (3).

(3) The finest trout in the lake are generally caught in the deepest water.

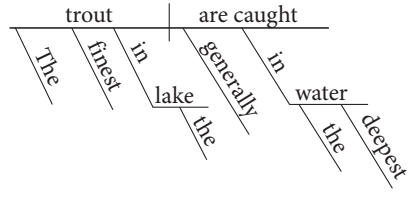

Figure 3. Reed and Kellogg's (1876/1909, p. 69) of Example (3)

By placing the subject noun and the predicate verb equi-level on the horizontal axis and then dividing this axis with the vertical line between the two, this diagram also contains the subject-predicate division. To state the point in other words, the presence of the subject-predicate division in Figure 2 and Figure 3 prohibits one from acknowledging verb centrality, which is a defining characteristic of dependency syntax.

Modern dependency syntax is associated above all with the seminal works of the Frenchman Lucien Tesnière (1890–1954). Interestingly, the stemmas that Tesnière produced in his main works *Esquisse d'une syntaxe structurale* (1953) and *Éléments de syntaxe structurale* (1959) are closely similar to Kern's diagrams. Like Kern, Tesnière was versed in the grammars of Greek and Latin and like Kern, Tesnière was also interested in reforming the manner in which grammar was taught in schools. The similarities in research interests and career goals across the two linguists are noteworthy, and they suggest a connection. However, Tesnière did not cite Kern at all in his *Éléments*. This fact suggests that Tesnière was not aware of the extent to which his theory of sentence structure was in fact following in the footsteps of Kern, who died when Tesnière was just four years old. According to Keinästö (2001), Kern's efforts to reform the manner in which sentence grammar was taught in Prussian schools met with little success. Nevertheless, it seems likely that Tesnière, who studied German in school in addition to Greek and Latin and who was enrolled for a time as a young man at a German university, the University of Leipzig, was at some point exposed to Kern's diagrams in one form or another and that he was in fact building unknowingly on this early exposure to Kern's understanding of sentence structure when he was, as an established linguist, drafting his theory of syntax (cf. Baum, 1976, p. 42; Engel, 1980, p. 19).

This contribution explores the issues raised above. It examines some key aspects of Kern's dependency syntax, and it speculates on the potential sources of insight and inspiration that may have influenced and motivated Kern to pursue his dependency-based understanding of German syntax. The message that is then emphasized in the conclusion below is that Kern deserves a more prominent position in the history of dependency syntax than he has heretofore enjoyed.

2. Aspects of Kern's DG

The following sections examine some noteworthy aspects of Kern's DG. The analysis focuses on the interpretation of Kern's sentence diagrams.

2.1 Finite verbs and complex predicates

The most prominent trait of Kern's DG is an emphasis on the primacy of the finite verb. The first two sentences from his treatise *Zur Methodik des deutschen Unterrichts* 'on the methodology of German instruction' illustrate this emphasis:

> The basis of every sentence is the finite verb, in indicative, subjunctive, or imperative form. Where there is a finite verb (even if it appears alone), there is a sentence, however unimportant the content might be.
>
> (Kern, 1883b, p. 1, translated from German)

Similarly, the foreword of his *Grundriss der deustchen Satzlehre* 'Outline of German Syntax', begins with the following sentence:

> This outline of German syntax, which is intended for the classes of tertiary education and which I have now designed for teachers of the German language, is unlike other books of this sort especially in that it takes the finite verb to be the definitional building block of the clause.
>
> (Kern, 1884, Vorwort 'Prologue', translated from German)

This emphasis on the finite verb is repeated time and again in all five of Kern's works listed above. It is a vivid expression of the primarily dependency-based understanding of syntax that Kern pursued. Interesting in this regard is also the emphasis on the type of verb, namely the *finite* verb. Like Tesnière many decades later (1966/2015, pp. 421–423 and 458–461), Kern emphasized (e.g. 1883a, p. 4) that nonfinite forms are actually not purely verbs. An infinitive is more like a noun than a verb, and a participle is more like an adjective than a verb.

Kern defended the primacy of the finite verb in his treatise *Betrachtungen über den Anfangsunterricht in der deutschen Satzlehre* (1886) 'observations about beginning instruction of syntax'. Receiving critique in this area from Ewald Lange,

who had emphasized that a subject and a predicate together are constitutive of a clause,[6] Kern countered that his approach did not contradict the necessity to acknowledge a role for both the subject and the predicate. Kern drew a distinction in this area between the *Prädikat* 'predicate' and the *volles Prädikat* 'full predicate'. The latter consisted of the *Prädikat* and all of its *Bestimmungen* 'modifiers'. In other words, what tradition called (and still calls) the *predicate*, Kern called the *full predicate*. Indeed, Kern (1883a, p. 110; 1884, p. 30) strived to accommodate the presence of the traditional predicate in his dependency hierarchies by placing all the modifiers of the verbal root on right branches below the verb. This point is illustrated here next:

(4) *Eine stolze Krähe schmückte sich mit den ausgefallenen Federn*
a proud crow decorated itself with the fallen.out feathers
der Pfauen.
of.the peacock
'A proud crow decorated itself with the errant feathers of the peacock.'

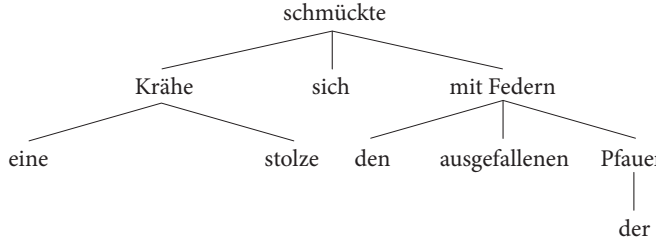

Figure 4. Kern's (1884, p. 30) Diagram of Example (4)

By placing the subject *eine stolze Krähe* 'a proud crow' on a left branch underneath *schmückte* 'decorated', and *sich* 'self' and *mit den ausgefallenen Federn der Pfauen* 'with the loose feathers of the peacocks' on right branches, Kern was in fact advocating an approach that in a sense maintained the subject-predicate division of the clause. He was, however, emphasizing verb centrality at the same time, an obvious point by virtue of the finite verb appearing as the clause root.

What Kern understood a finite verb to be was actually not clear, however, in particular when a pure auxiliary verb was present (*have* 'have', *sein* 'be', *werden* 'become'). Finiteness is of course manifest in the auxiliary verb, the lexical verb appearing in non-finite form. Kern viewed the two forms together as the predicate

6. According to Kern (1886, VI), Lange had written a critique of Kern's approach to sentence structure in the *Programm of the Erfurter Gymnasium*; the critique bore the title *Die Erkenntnistheoretischen Grundlagen der Kern'schen Satzlehre* 'The theoretical bases of Kern's syntax'.

of the clause, and he placed them together in one node. He stated that "the complex tenses are viewed as a single word" (1884, p. 30), e.g.

(5) *Eine alte Kirche wurde ausgebessert.*
an old church was renovated
'An old church was renovated.'

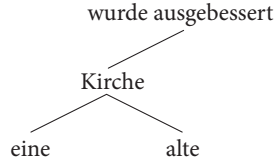

Figure 5. Kern's (1883b, p. 10) Diagram of Example (5)

(6) *Ein Schäfer hatte durch eine grausame Seuche seine ganze Herde verloren.*
a shepherd had via a terrible plague his entire herd lost
'A shepherd had lost his entire herd due to a terrible plague.'

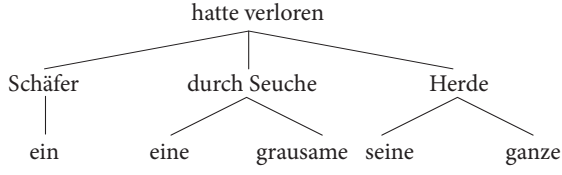

Figure 6. Kern's (1884, p. 31) Diagram of Example (6)

Kern's diagrams of these sentences, given as Figures 5 and 6 here, illustrate the manner in which Kern viewed the auxiliary verb together with the participle as the root of the clause. In his virtual diagrams (1884, pp. 30–38), he labeled the root node with *Fin. V.* (finite verb).

Interestingly, Kern did not extend this practice to the verb *sein* and predicative nominals. He did not position predicative nouns in the root together with the form of *sein* 'be', e.g. Figure 7.

(7) *Gold, Silber, Eisen, Blei sind Metalle.*
gold, silver, iron, lead are metals

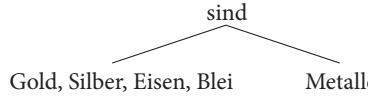

Figure 7. Kern's (1884, p. 35) Diagram of Example (7)

This example shows Kern's analysis of coordination – see 2.4 below for discussion. What is important at present is the manner in which the predicative noun *Metalle* 'metals' is viewed as the complement of *sind* 'are'; the two are not placed together in the root node as the predicate. This aspect of Kern's analysis was not consistent, since it contradicted what he otherwise understood a predicate to be, nor is it congruent with the modern understanding of predicates.

The modern understanding of predicates in the tradition of the German language is consistent with the analyses shown in Figure 5 and Figure 6.[7] A matrix predicate typically consists of the finite verb and potentially one or more predicative elements (see, for instance, Tarvainen, 1981, pp. 36–40; Homberger, 1993; Helbig & Buscha, 1999, pp. 536–543), which can take on a variety of forms. It is also consistent with Tesnière's analysis of predicates. Tesnière addressed the issue in terms of his *dissociated nucleus* (Tesnière, 1966/2015, p. 40). For Tesnière, a dissociated nucleus was a semantically simple but syntactically complex unit. It typically encompassed the finite verb plus any other predicative elements that were present, regardless of the nature of these predicative elements (e.g. verb, noun, adjective, etc.). In order to draw attention to the fact that a dissociated nucleus was semantically simple, Tesnière put a circle around the words that constituted the nucleus, e.g. Figure 8.

(8) Alfred has arrived.

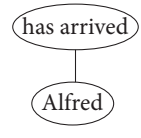

Figure 8. Tesnière's (1959, p. 39) Diagram of Example (8)

The example shows that Tesnière enclosed both *has* and *arrived* in a single nucleus circle, indicating that the two words constitute a single nucleus together.[8]

The similarity across Kern's and Tesnière's analyses of matrix predicates is striking. It is one of the many similarities across their grammars that suggest that Tesnière was influenced, directly or indirectly, by Kern.

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7. Interestingly, the understanding of predicates that Kern pursued was also present in the works of grammarians of English. Clark (1847, pp. 12–13; see also Mazziotta, this volume, Chapter 4), for instance, distinguishes between *subjects*, *predicates*, and *objects*, whereby the object in a sentence is not part of the predicate. Similarly, Green (1873, pp. 71–74) distinguishes between *subject terms*, *predicate terms*, and *object terms*, whereby the object term in a sentence is again not part of the predicate term.

8. The actual example Tesnière used here was the French equivalent, i.e. *Alfred est arrivé*. The example given as Figure 8 is from the English translation of Tesnière's *Éléments*.

2.2 Prepositions and subordinators

Kern's analysis of prepositions was consistent with the spirit of the times (e.g. Billroth, 1832, p. 102), insofar as an exocentric analysis was assumed, that is, neither the preposition nor the noun was head over the other. Kern positioned a preposition together with its noun in such a manner that the two occupied a single node in the syntactic structure. For example, Figure 9.

(9) *mit den ausgefallenen Federn der Pfauen.*
with the fallen.out feathers of.the peacocks
'with the errant feathers of the peacock'

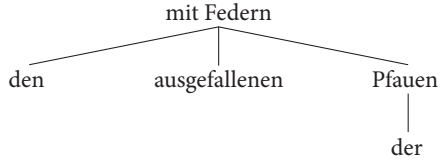

Figure 9. Kern's (1888, p. 67) Diagram of Example (9)

(10) *in ihrem neuen Glanze*
in its new glory

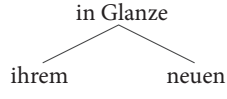

Figure 10. Kern's (1883b, p. 17) Diagram of Example (10)

The noteworthy aspect of these hierarchies concerns the fact that *mit Federn* and *in Glanze* each occupy a single node. Thus, two words – *mit* and *Federn*, and *in* and *Glanze* – occupy a node together each time. Prepositional phrases are headless on this analysis, since neither is the preposition head over its noun, nor is the noun head over the preposition.

This exocentric analysis of prepositional phrases was the dominant analysis until the 1970s. Bloomfield (e.g. 1933, 194), for instance, assumed that prepositional phrases were exocentric. Tesnière (1966/2015, pp. 381–384) also proposed an essentially exocentric analysis of prepositional phrases, which he formalized in terms of his theory of *transfer*. The modern understanding of prepositions acknowledges various aspects that support the preposition as head over its noun. For instance, preposition stranding in languages that allow it strongly suggest the preposition as the head, and the fact that prepositions are case assigners in languages that have morphological case is easily accommodated if the preposition assigns case down to its noun, but mysterious otherwise, that is, if case assignment were to occur across or up the syntactic hierarchy.

Kern did not extend his analysis of prepositions to subordinators (subordinate conjunctions) in a clear way. In fact, his analysis of subordinators was inconsistent. Examine in this regard the position of the subordinator *als* 'as' in Figure 11:[9]

(11) *Als sie nun in ihrem neuen Glanze da stand, kamen die Sperrlinge*
as it now in its new glory there stood came the sparrows
wieder, ihre alten Wohnungen zu suchen.
again their old homes to seek.
'As it now stood there in its new glory, the sparrows came again to seek their old homes.'

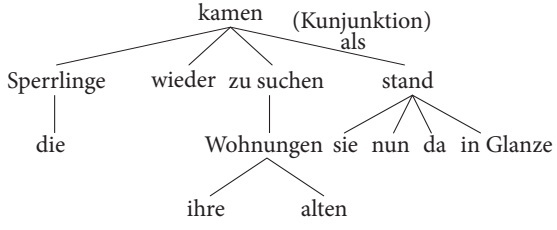

Figure 11. Kern's (1883b, p. 17) Diagram of Example (11)

Kern placed *als* on the dependency edge connecting *kamen* 'came' and *stand* 'stood', and in so doing, he granted it a special status such that it does not qualify as a node in the syntax. Consider further Kern's analysis of the relative clause in the case of (12).

(12) *Eine alte Kirche, welche den Sperrlingen unzählige Nester gab,*
an old church which the sparrows countless nests gave
wurde ausgebessert.
was renovated
'An old church that gave the sparrows countless nests was renovated.'

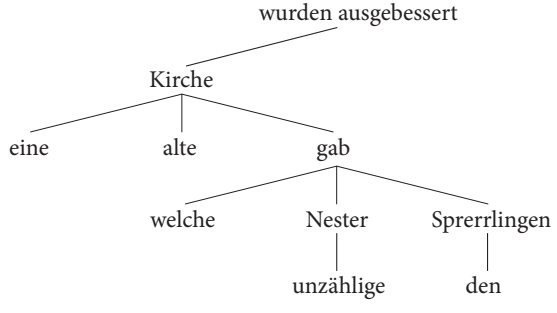

Figure 12. Kern's (1883b, p. 13) Diagram of Example (12)

9. Sentences (11–13) are from Lessing's fable *Die Sperlinge* 'The sparrows'.

The relative clause *welche den Sperrlingen unzählige Nester gab* 'which gave the sparrows countless nests' in (12) has VF (verb final) order just as the adjunct clause *Als sie nun in ihrem neuen Glanze da stand* 'as it now stood there in its new glory' in (11) has VF order. This commonality in word order suggests that the relative proform *welche* 'which' and the subordinator *als* 'as' should be positioned in similar positions in their respective clauses. Of course, this is not what we see in Figure 11 and Figure 12, though, but rather the relative proform and the subordinator are analyzed in quite distinct ways. This inconsistency of analysis concerning the structure of subordinate clauses has persisted up to the present in modern DGs, most of which have also not produced a consistent hierarchical analysis of the varying types of subordinate clauses.

2.3 Secondary predicates

Kern pursued a particular analysis of certain secondary predicates. He connected the predicate to its logical subject via an additional link in the dependency hierarchy. This link is unlike the other links because it appears as a completely horizontal edge. For example, Figure 13 and 14.

(13) *Sie fanden sie vermauert.*
they found them walled.up
'They found them walled up.'

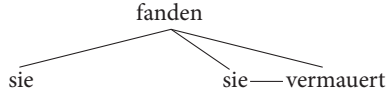

Figure 13. Kern's (1883b, p. 26) Diagram of Example (13)

(14) *Er weint sich die Augen rot.*
he cries self the eyes red
'He cries his eyes red.'

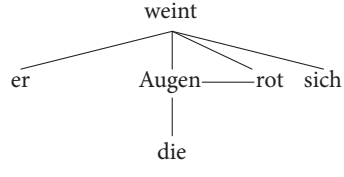

Figure 14. Kern's (1883b, p. 26) Diagram of Example (14)

The horizontal edges linking *sie* 'them' to *vermauert* 'walled up' and *die Augen* 'eyes' to *rot* 'red' indicate that *vermauert* and *rot* are predicates taking *sie* and *die Augen* as their logical subjects.

Kern also assumed this sort of analysis for so-called *accusatives with infinitives*, which, as he emphasizes (1883b, 25), are structurally distinct from the objects of infinitives, e.g. Figure 15.

(15) *Er wollte die eigene Hand rein vom Blute erhalten.*
he wanted the own hand clean from blood keep
'He wanted to keep his own hands free of blood.'

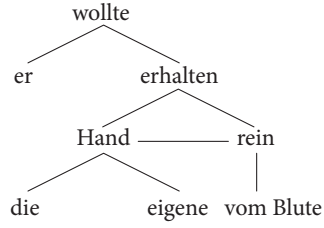

Figure 15. Kern's (1883b, p. 26) Diagram of Example (15)

The noun phrase *die eigene Hand* 'his own hands' is the object of the infinitive *erhalten* 'receive', and at the same time, it also functions as the logical subject of the adjective predicate *rein* 'clean'. The horizontal edge signals the presence of this special relationship. Observe that Kern viewed each of the verbs *wollte* 'wanted' and *erhalten* 'receive' as a separate predicate – they did not form a single predicate together.

The next example is noteworthy in a subtle way:

(16) *Lasst euch mein Misstrauen nicht beleidigen*
let you my mistrust not insult
'Do not let my mistrust insult you.'

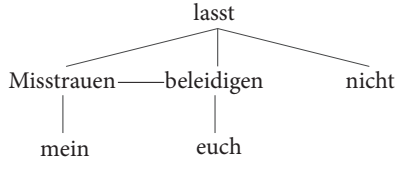

Figure 16. Kern's (1883b, p. 25) Diagram of Example (16)

The structure here is again one involving an accusative object, *mein Misstrauen* 'my mistrust', combined with an infinitive, *beleidigen* 'insult'. The unusual aspect of this example is the fact that the object of *lasst* 'let', i.e. *mein Misstrauen*, is positioned directly below *lasst* – instead of below and to the right of it. Kern positioned object noun phrases in this manner in those cases in which the object is itself the logical subject of a secondary predicate appearing to its right. This aspect of Kern's analyses

muddies the waters concerning the subject-predicate division mentioned above, because in such cases it is no longer possible to view the object noun phrase as a *Prädikatsbestimmung* 'modifier of the predicate' in a straightforward way. Kern does not discuss this aspect of such sentences containing secondary predicates, but rather the analysis is simply manifest in his trees.

Kern's use of the horizontal edge to connect object noun phrases to a secondary predicate appearing to its right might be viewed as linguistically well motivated. But if that is so, then one might expect the horizontal edge to also be used in more mundane cases, i.e. in cases of control when the subject controls the lower predicate. For example, Figure 17.

(17) *Ihr habt mich ermorden lassen wollen.*
you have me killed have want
'You wanted to have me killed.'

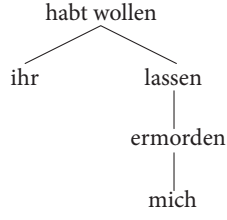

Figure 17. Kern's (1883b, p. 28) Diagram of Example (17)

The matrix predicate *habt wollen* 'have wanted' takes the infinitive valent *lassen* 'let'. This infinitive is of course a predicate in its own right and its subject valent is the matrix subject *ihr* 'you'. Given this state affairs and the horizontal edge used in the examples immediately above to indicate secondary predication, one might expect a horizontal edge to connect *lassen* 'let, have' to its logical subject *ihr* 'you', but Kern employed no such edge in such cases. One can therefore view the presence/absence of the horizontal edge as an inconsistency in Kern's analysis of predication.

Kern's use of the horizontal edge to indicate secondary predication has not been adopted by other dependency grammarians, nor has something similar been pursued independently in general. There are various reasons why this is so: the one is that it results in an inconsistent analysis of predication as just established with Example (17), and another reason is that it introduces a cycle into the tree structure, and in so doing it carries important theoretical implications that may not be warranted – concerning the latter point, Kern (1883b, p. 26) even viewed the secondary predicate as a dependent of the object NP; thus in Figure 14 above, Kern understood the adjective *rot* as having two mothers, *weint* 'cries' and *Augen* 'eyes'.

2.4 Coordination

Kern (1884, pp. 34–36) gives an analysis of coordinate structures and provides a bit of discussion. He positions the coordinator on the same hierarchical level as the roots of the conjuncts and attaches the dependency edge that reaches into to the coordinate structure from above to the coordinator, e.g. Figure 18 and 19.

(18) *Dir, aber nicht ihm, werde ich es geben.*
you but not him will I it give
'I will give it to you, not to him.'

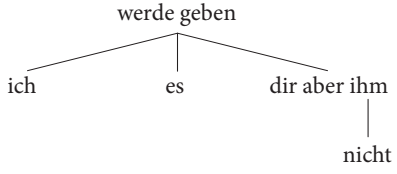

Figure 18. Kern's (1884, p. 34) Diagram of Example (18)

(19) *Das war ein schnell und glücklich beendigter Krieg.*
that was a quickly and happily ended war
'That was a quickly and happily concluded war.'

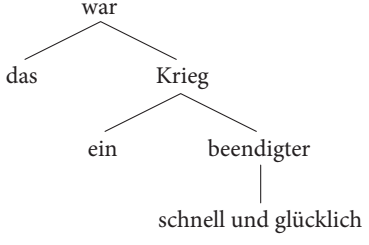

Figure 19. Kern's (1884: 34) Diagram of Example (19).

The coordinator *aber* 'but' in Figure 18 is positioned on the same hierarchical level as the conjuncts *dir* 'you' and *ihm* 'him', and the dependency edge that reaches into the coordinate structure is connected to the coordinator. Similar comments are true of the coordinated adverbs *schnell* 'fast' and *glücklich* 'luckily' and the coordinator *und* 'and' in Figure 19.

The coordinate structure in the next Example (20) is similar to those just given, but this time there are four conjuncts (instead of just two).

(20) *Unser König ist gütig, gerecht, tapfer, und ein großer Freund der Kunst.*
our king is kind just brave and a big friend of art
'Our king is kind, just, brave, and a big friend of the arts.'

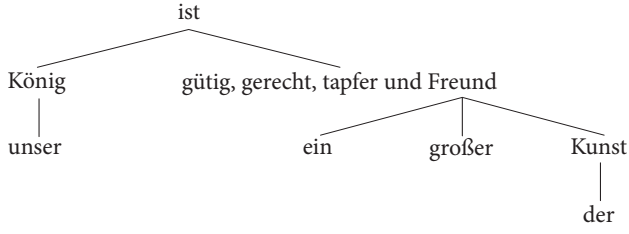

Figure 20. Kern's (1884, p. 35) Diagram of Example (20)

This example illustrates well the extent to which Kern's analysis of coordination resulted in quite flat structures. The four conjuncts *gütig*, *gerecht*, *tapfer*, and *ein großer Freund der Kunst* 'kind, just, brave, and a great friend of the arts' are all positioned next to each other on the same hierarchical level. The analysis of the final conjunct, i.e. *ein großer Freund der Kunst*, is normal insofar as the dependency analysis is maintained within that conjunct.

The next Example (21) is noteworthy because it involves shared dependents as opposed to a shared head.

(21) *Seine Worte hörte, aber vestand ich nicht.*
his words heard but understood I not
'I heard, but did not understand, his words.'

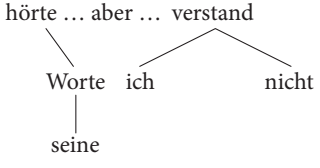

Figure 21. Kern's (1884, p. 36) Diagram of Example (21)

Both the subject *ich* and the object noun phrase *seine Worte* 'his words' are shared by the verbs *hörte* 'heard' and *verstand* 'understood'. In other words, *ich* and *seine Worte* are valents of both of these verbs at the same time. Observe in this regard that *seine Worte* is attached just to *hörte*, not to *verstand* as well, and that *ich* is attached just to *verstand*, not to *hörte* as well. These aspects of Kern's analysis of coordination can be viewed as typical insofar as coordination in general is problematic for dependency syntax, especially regarding valency theory.

A comparison of Kern's analysis of coordination with more modern DG accounts is insightful. Decades later, Tesnière (1966/2015, pp. 325–362) pursued an account of coordination that was similar insofar as Tesnière positioned the conjuncts and coordinator equi-level in the structure. Tesnière's analysis was, in contrast, unlike Kern's insofar as Tesnière attached a shared head or dependent to a word inside each of the conjuncts. Thus, Tesnière would have advocated an analysis like the following one for Example (18) above, given here as (22).

(22) *Dir, aber nicht ihm, werde ich es geben.*
you but not him will I it give
'I will give it to you, not to him.'

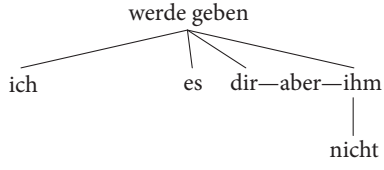

Figure 22. Diagram Tesnière would have produced for example (18 = 22)

A dependency now reaches from the root verbs *werde geben* 'will give' to each of the conjunct roots – rather than reaching only to the coordinator. Therefore, both Kern's and Tesnière's analyses of coordination had difficulty accommodating basic aspects of valency. Kern's analysis overlooked the sharing of dependents, and Tesnière's analysis at times posited multiple like-valents for a single valency carrier, such as with two dative object valents in Figure 22 (*dir* and *ihm*).

Kern's account of coordination is quite unlike a number of analyses that have been advocated since Tesnière. Some modern DGs pursue an analysis of coordinate structures that assume the standard mode of dependency analysis; they thus subordinate the conjuncts to the subordinator and/or they subordinate the one conjunct to the other. Two such analyses of Example (22) are given in Figures 23 and 24.

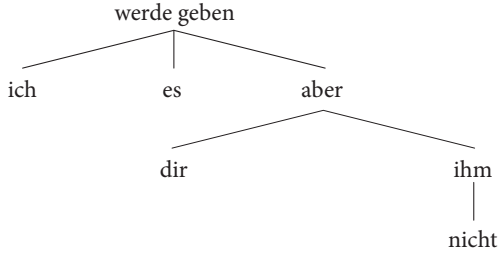

Figure 23. An analysis of coordination that takes the coordinator as the head of the coordinate structure

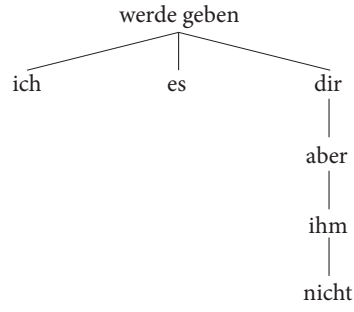

Figure 24. An analysis of coordination that subordinates the second conjunct to the first

Schubert (1987, pp. 114–119) pursues an account of coordination along the lines suggested with Figure 23, and Mel'čuk (1988, pp. 26–33) an account along the lines suggested with Figure 24. Certainly, other variations of these "hierarchical" analyses of coordinate structures are possible, and no attempt to discuss the merits and demerits of these competing analyses is attempted here.

More importantly, other DGs in the modern era pursue an approach to coordination that is similar to Kern's approach insofar as they position the conjuncts and the coordinator equi-level. This is true of the analyses of, for instance, Hudson (1988, 1989), Lobin (1993), and Eroms (2000, pp. 464–478). In this respect, Kern's analysis of coordination should be taken seriously, since it foreshadows modern analyses that are currently influencing the DG understanding of coordination in general.

3. Kern's impact

Keinästö (2001, pp. 51–88) examines the reception of Kern's ideas in the years immediately following the publication of his main works. These works and the ideas they contain were reviewed, discussed, and debated by many dozens of grammarians and pedagogues in book reviews, commentaries in pedagogy journals, contributions to handbooks on the didactics of the German language, and proceedings of school director conferences. Keinästö documents the fact that these evaluations were mixed, some quite positive and others quite negative, and yet others more neutral. The conclusion that Keinästö reaches, however, is that Kern largely failed at reforming the manner in which sentence grammar was taught in Prussian schools, for his reforms were not adopted officially into school curriculums.

Those who evaluated Kern's works positively tended to value the aspects of his approach that are considered the characteristic traits and strengths of dependency

syntax today, e.g. verb centrality, strict hierarchy of sentence elements, scientific consistency and stringency of analysis, and above all, simplicity. Furthermore, the potential of the sentence diagrams Kern employed was recognized in the area of illustrating sentence structure inside and outside of the classroom. Those who evaluated Kern's works negatively tended to emphasize various perceived shortcomings, e.g. an abstract, confusing, and overly complex terminology, the didactically not-yet-worked-out and untested nature of the theory, an absence of scientific validity, a reduction in the importance and status of the subject, a lack of interest in, and emphasis on, the study of morphological form, etc.

The debate that Kern's ideas unleashed receives an evaluation today that is, I believe, much less mixed. The point established below in Section 5 is that Kern's approach foreshadowed closely the theory of syntax that Tesnière would reintroduce five decades later. The fact that Tesnière is widely viewed as having authored the seminal work that has led to a distinct and by now thoroughly established approach to the syntax of natural languages bears witness to just how much of a visionary Kern was. Thus, from a modern perspective, Kern eventually succeeded, his efforts having helped prepare the ground in which Tesnière's ideas were sewed.

One particular aspect of the debate deserves special attention. While many saw great promise in the sentence diagrams Kern employed, Keinästö documents the fact that others viewed these diagrams as overly abstract and thus of little value. From a modern perspective, the value of sentence diagrams as a pedagogical tool for illustrating sentence structure has been demonstrated for well over a century in American schools. Sentence diagrams are the central component of the Reed-Kellogg system (see Figure 3 above), which has been widely used in American schools to teach sentence grammar for over a century. Furthermore, most modern theories of syntax employ tree diagrams to represent sentence structure, be these theories based on dependency or phrase structure. In these respects, the visionary nature of Kern's sentence diagrams should be apparent.

4. Who influenced Kern?

In his works, Kern cites and discusses the views and ideas produced by numerous grammarians, logicians, and language theoreticians, e.g. Adelung, Beneke, Geistbeck, Giesebrecht, Grassman, J. Grimm, Hegel, Herbart, Heyse, Hiecke, Hildebrand, Hoffmann, W. von Humboldt, Jordan, Lotze, Miklosich, Sanders, Schleiermacher, Schömann, Schulz, Schuppe, Steinthal, Trendelenburg, Ueberweg, Ulrici. The extent to which the one or the other of these thinkers influenced Kern's view of syntax is difficult to assess, since Kern does not attribute his main ideas to anyone directly. Definitive statements about the potential impact that one or more

of them might have had on Kern would likely require significant exposure to their works. This task is beyond the bounds of the current project.

There are, however, two theoreticians just listed to whom Kern attributes verb centrality and the primacy of the finite verb. The following passage illustrates that Kern had found verb centrality to an extent in the writings of Wilhelm von Humboldt:

> Humboldt states correctly of the verb that it is completed in concept by both the subject and the object, between which it stands. He says this about Chinese, but the statement is certainly generally valid. I therefore adopt as correct the latter of the following two statements that Humboldt makes about the verb: 'given subject and verb, the subject governs the verb' and 'more than any other word in the clause, the verb is the governing word'. This latter statement is congruent with what Humboldt writes with exaggeration in his treatise on the dualis (p. 570): 'The verb is to a general degree so integral to the entire grammatical structure of the clause that its description is in a sense a description of the entire grammar'.
>
> (Kern, 1883a, pp. 65–66, translated from German)

And concerning the role of the finite verb in particular, Kern took inspiration from Jakob Grimm:

> It is unfortunate that the suggestion by J. Grimm (Gramm. IV., 91) to view the finite verb as the standing (or ruling) and the infinitive as the lying verb has not resonated. On this account, the participle would count as a resting verb. There would thus be three types (moods) of standing verbs: indicatives, subjunctives, and imperatives, and two types of resting verbs, adjectives and participles, and the infinitive would be a substantive. (Kern 1883b, p. 1, translated from German)

These two passages demonstrate that Kern was able to call on the most prominent linguists from the generations that preceded his own to support the verb centrality that he so vehemently argued for.

Indeed, verb centrality was firmly in the air among German grammarians long before Kern wrote his treatises. It was, for instance, expressed prominently in the works of German grammarians who preceded Kern by decades. One prominent name in this regard is Karl Ferdinand Becker. Becker expressed verb centrality – or, rather, predicate centrality – directly in writing. The following passage is from Becker's extensive work *Organismus der Sprache*:

> That the predicate, and not the subject, is the main concept and the actual content of the clause is already visible in the fact that the former bears the main intonational emphasis in the clause, whereas the intonation of the latter is secondary. More importantly, the subject concept is often expressed not by a word, but rather according to its relation by an ending, so that the entire clause consists of just an

> inflected word, as, for instance, in the well-known claim *veni, vidi, vici* – which consists of three clauses. In the language of children, the entire sentence is often expressed by a single word, the word that carries the intonational accent, which is of course the predicate. We must therefore assume that originally, the clause was expressed by a single word, namely by the inflected verb.
>
> (Becker 1841, p. 231, translated from German)

Statements like this one were certainly in the spirit of dependency syntax. Indeed, Heinz Happ (1976, p. 318) views the grammar produced by Becker and Herling – the latter being a colleague of Becker – as a coherent *Satzteil-Grammatik* 'sentence unit grammar' or *Dependenz-Grammatik* 'dependency grammar'. Becker and Herling did not, however, produce sentence diagrams.

Looking for a predecessor of these diagrams, the sentence schema of Gustav Billroth comes to mind. Baum (1976, pp. 38–41) and Coseriu (1980, pp. 58–60) point to the extent to which Kern's sentence diagrams were similar to those produced by Billroth in the 1830s – see Example (2) above as well as footnote 4. Since Kern was a classicist, it is possible that he was exposed at a young age to Billroth's works. Kern's and Billroth's diagrams are closely similar, the one major difference being the verb centrality of Kern's approach, whereas Billroth assumed the binary subject-predicate division, as established above – see Example (2). But since Kern does not mention Billroth directly, we cannot know the extent to which Billroth's approach to sentence structure might have influenced Kern.

One important aspect of verb centrality and dependency syntax in general should be kept in mind when evaluating Kern's contribution and its potential impact on the development of dependency grammar as associated above all with Tesnière. This aspect is that, after the appearance of Tesnière's major oeuvre *Éléments de syntaxe structurale* in 1959, dependency syntax quickly took hold and gained prominence in Germany in the following decades, much more so than in France or other European countries. This fact suggests that grammarians in Germany were more receptive to Tesnière's ideas than elsewhere, which suggests, in turn, that verb centrality had already been established in the grammar tradition of the German language before Tesnière. Franz Kern certainly helped establish the tradition that so readily accepted Tesnière's ideas, as pointed out above.

5. Kern vs. Tesnière

A comparison of Kern's and Tesnière's works reveals many similarities across the two approaches to syntax and the teaching of grammar in schools. Some of the key similarities are listed next:

1. Both Kern and Tesnière viewed the influence of logic on the theory of grammar as misplaced. They were interested in liberating grammar from the logician's inventory of concepts and principles.
2. Both emphasized verb centrality and viewed this emphasis as novel and contrary to the/a more traditional approach in terms of the binary subject-predicate division of the clause.
3. Both were interested in reforming the way grammar was taught in schools. They rejected much of inherited terminology, advocating a new nomenclature.
4. Both employed sentence diagrams to illustrate their theory of sentence structure, and both advocated the use of these diagrams in schools as a means of teaching sentence grammar.
5. Both acknowledged the presence of complex nodes, positioning an auxiliary verb and a non-finite verb together in a single node (Tesnière's *dissociated nucleus*).
6. Both viewed prepositions and subordinators as non-heads. This meant that prepositional phrases and subordinate clauses were headless, i.e. exocentric constructions.

There are certainly many more similarities across the approaches to syntax advocated by the two linguists and pedagogues Kern and Tesnière – and of course there are important differences separating them, too. But considering the importance of these six similarities, one might argue that Tesnière's prominence in the history of dependency syntax is exaggerated, Kern deserving more of the credit.

Concerning the first and the second points just listed, the following passages from Tesnière's and Kern's works are tellingly similar in content and sentiment:

> The mixing in of logical abstractions into the science and teaching of grammar in schools has done untold damage, and it continues to this day to exercise a corrupting influence. The mistake is due to the unjustified adoption of logical concepts of the material into grammar, as if grammar itself were a type of logic, a conclusion that has been successfully countered by Steinthal.
>
> (Kern 1883a, p. 1, translated from German)

> Founded on the principles of logic, traditional grammar strives to find the logical opposition between subject and predicate in the sentence, the subject being what is being spoken about and the predicate what is being said. Hence in the sentence *Alfred speaks slowly*, the subject would be *Alfred*, and the predicate *speaks slowly*, [….] This conception of the sentence is merely a remnant that has not yet been eliminated from the epoch that extends from Aristotle to Port-Royal, when all grammar was founded on logic. Indeed, all arguments that can be invoked against the concept of the verbal node and in favor of the opposition between subject and predicate come *a priori* from formal logic, which has nothing to do with linguistics.

> Concerning strictly linguistic observations about the facts of language, the conclusion drawn *a posteriori* are of a much different nature. There is no purely linguistic fact in any language that suggests the existence of the subject-predicate opposition. (Tesnière 1966/2015, p. 98, translated from French)

The third point (of the six listed above) is present throughout Kern's and Tesnière's works insofar as both pedagogues repeatedly call attention to the improper or unhelpful use of terms such as *copula*, *helping verb*, *predicate*, *definite* and *indefinite article*, *impersonal verb*, etc. The fourth, fifth, and sixth points are evident when one compares Kern's *Satzbilder* 'sentence pictures', i.e. sentence diagrams, with Tesnière's stemmas.

The fact that Kern's works delivered the same messages as Tesnière's works, which appeared many decades later, raises the question as to whether the widespread view of Tesnière as the father of modern dependency syntax might in fact be inaccurate. Based on the points above, Kern might be deemed worthier of this title than Tesnière. Actually, however, no such claim to this effect is advocated here. Tesnière's works on the nature of natural language syntax and grammar were far more extensive than Kern's. Tesnière examined data from dozens of languages, and his goal was much more ambitious than Kern's; Tesnière was interested in producing a theory of syntax that would be valid for, and applicable to, all natural languages. Kern, in contrast, pursued a more modest goal.

Kern was merely interested in producing an approach to teaching sentence grammar in Prussian schools. He even acknowledged the limited goal that he pursued. While defending his verb-centric approach to the syntax of German (against Ewald Lange's critique, see 2.1 above), he produced the following statement in a footnote:

> My works are not intended to further linguistics, but rather they merely strive to cleanse language instruction by eliminating unscientific views and methodological inconsistencies. (Kern 1886, p. VI, translated form German)

Indeed, Kern concentrated on data from German, only mentioning the importance of data from other languages on occasion when supporting his claims about German syntax. His sentence diagrams were exclusively of German sentences. In these respects, the appearance of Kern's sentence diagrams many decades before Tesnière began drafting his theory of grammar should not be construed as challenging Tesnière's preeminence in the history of dependency syntax. Tesnière's prominent status as the key figure in the development of modern dependency-based theories of syntax is not challenged by awareness of Kern's contribution.

Kern should, however, receive more credit than he generally does in this area. As stated above in the introduction, Tesnière may have been exposed to Kern's

sentence diagrams in his school days while studying German. In any case, the similarity of Tesnière's stemmas to Kern's sentence diagrams is obvious, and in this regard, one should not view Tesnière's theory of syntax as an entirely original production. Tesnière was, apparently, unknowingly building on a tradition that began decades before he started working seriously on his theory of syntax.

6. Summary and concluding comments

The following statements summarize Kern's understanding of dependency syntax, his goals in writing about syntax and grammar, and his historical position in the development of dependency grammar in general:

1. Kern was one of the first grammarians to employ diagrams to illustrate sentence structure. He positioned the finite verb as the root of the diagrams he produced, and in so doing, he was clearly rejecting the competing tradition of dividing the sentence into a subject and a predicate. Kern's diagrams predate Tesnière's stemmas by many decades.
2. Kern's main goal was to reform the way in which grammar was taught in Prussian schools. He was not interested in establishing a comprehensive, solid theory of syntax and grammar, but rather his purpose was pedagogical. He was strongly opposed to many of the standard practices in his day for teaching the grammar of German.
3. Many of Kern's ideas concerning the nature of sentence structure and the manner in which school grammar was taught appear again in Lucien Tesnière's main works (1953, 1959), e.g. sentence diagrams, verb centrality, complex nodes, exocentric prepositional phrases, desire to reform school grammar, etc. In this regard, Kern should receive more credit than he does for his historical role in the establishment of dependency syntax.
4. Despite his substantial contribution, Kern should not replace Tesnière as the seminal figure in the history of dependency grammar. Kern's works were brief compared to Tesnière's, and the scope of Kern's investigations were quite limited.

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CHAPTER 7

Some aspects of dependency in Otto Jespersen's structural syntax

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This paper aims to challenge the assumption according to which Otto Jespersen's syntactic model represents an anticipation of the immediate constituent analysis. In our opinion, there are elements that rather align with a more dependency-oriented framework, as it is the case of Jespersen's notorious *theory of three ranks* (1913, 1921, 1937). This was developed over more than twenty years and was meant to constitute the necessary presupposition (and thus the theoretical base) for the very distinction between *junction* and *nexus*, grounding it on a pure functional base. Albeit not always consistently or exhaustively fleshed out, the *theory of three ranks* represents one of Jespersen's most interesting ideas. The model will be described in detail, focusing on the latest and more formalized version given in *Analytic Syntax* (1937), by discussing the notation adopted and checking if it fits the five basic requirements for a dependency-based model, as per Mazziotta & Kahane (2017). Finally, it will be shown how Jespersen's model was taken over by Louis Hjelmslev (1928), in order to develop a purely relations-oriented morphosyntactic theory.

1. Introduction

It has often been assumed, on the one hand, that Jespersen's syntactic theory "somehow anticipate[s], although in a rather different framework and resorting to different analytical tools, the constituent analysis of the structuralistic age" (Graffi, 2001, p. 112). This interpretation was of course encouraged by Chomsky's own references to Jespersen (cf. for instance Chomsky, 1977, p. 25 sqq.). On the other hand, it seems to be common insight that Danish structuralism has never been very interested in pure syntactic analysis, all the more so if syntax is brought so close to the lexical level as is the case for valence-based or dependency-based approaches, which can be regarded as "substance-oriented".

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This paper aims to challenge both these assumptions, although on different levels. With regard to the "Danish structural" movement, it shall be clear that Otto Jespersen occupies a place apart, having never fully aligned with the proper structural approach that was ultimately founded by the following generation of scholars (such as Brøndal, Hjelmslev, Diderichsen, etc.). In opposition to their approaches, which all more or less reject the autonomy of syntactic analyses, Jespersen can be regarded as a clear exception: not only was his work focused specifically on syntax, but his original theory influenced deeply the ensuing linguistic debate at the linguistic Circle of Copenhagen (cf. Sørensen & Spang-Thomsen, 1970). Moreover, insofar as the first consideration is concerned, it shall be noted that Jespersen "cannot, of course, be credited with having developed a theory of generative grammar" (Levin, 1969, p. vi). Yet, even the more cautious claim that his work was a forerunner of immediate constituent analysis is far from being self-evident: in order to support this interpretation, specific ideas and notions have to be collected, highlighted and oriented in a precise theoretical direction (see McCawley, 1970, p. 442 et passim.; Nelson Francis, 1989, p. 83).[1] If such an interpretative direction is allowed, then there is also a legitimate place for an alternative interpretation that confirms which ideas do indeed align with a dependency-based syntax. Clues for such an interpretation have already be suggested elsewhere (see Hewson, 2015, pp. 287–288; Levin, 1969, p. vi; Osborne & Kahane, 2015, p. li). Thus, precisely because in Jespersen's masterwork, *Philosophy of Grammar* (1924), "both dependency and constituency were described (though not by these names, of course)" (Hudson, 1980, p. 180),[2] our specific aim will be to specify which part of Jespersen's theory does rather fit with the framework of dependency syntax.

Otto Jespersen can be regarded as a liminal figure, ushering Danish linguistics to a proper structuralistic approach yet keeping himself somewhat peripheral to it. This clearly applies to his ideas too: as we will see, his model of syntax is not completely separate from semantic or even logical considerations, and the distinction he proposed between *junction* and *nexus* is rather fluid, relying on a quite ambiguous definition of the verb. Yet Jespersen has the merit of having conceived syntactic facts in such terms that were taken on and further reformulated by his successors: indeed, both Diderichsen's valence model, called *theory of fields*, and Hjelmslev's pure functional approach openly drew from Jespersen's model. Hence, it can be rightly assumed that Jespersen paved the way to a non-constituency based

1. But then compare Nelson Francis, 1989, p. 92.

2. Apparently the same holds true for the "father" of dependency syntax, Lucien Tesnière, who "made room for constituency in his analytical system by regarding a dependent element […] plus its […] governing element as constituting what he called a *nœud*" (Percival, 1990, p. 38–39; see also Hudson, 1980, p. 180).

syntactic approach, whose extension in the so-called Danish school of linguistics has yet to be explored.

Our claim is that Jespersen's *theory of three ranks* can be regarded as a dependency attempt, but also that the way Jespersen fleshed it out over the years is not univocal and can be interpreted as a hybrid model. In order to support this claim, we will present Jespersen's syntactic model by discussing the distinction between *junction* and *nexus* (→2.1) and the underpinning idea of *ranks* (→2.2) along with some of its specific issues (→2.2.1, →2.2.2, →2.2.3). Moreover, we will focus on the latest and fully formalized version of Jespersen's syntactic theory given in *Analytic Syntax* (1937), discussing the notation adopted (→3) and checking if it fits the five basic requirements for a dependency-based model, according to the protocol proposed by Mazziotta and Kahane (2017).[3] Our graphical reinterpretation of Jespersen's notation will make use of both directed and undirected strokes (resp.: arrows and lines) in order to visualize rank-dependencies, as well as of bubbles for lexical items. Finally, we will discuss one of the earliest cases of critical reception by one of Jespersen's pupils, the Danish linguist Louis Hjelmslev, who in his *Principes de grammaire générale* (1928) thoroughly discussed Jespersen's theory of ranks, proposing an interesting reformulation on a more morphologically oriented basis (→4).

2. Basic structures

Overall, Jespersen's syntactic theory remained substantially unchanged, receiving little adjustment throughout his works, from *Sprogets logik* (1913) and *De to hovedarter av grammatiske forbindelser* (1921, Eng.: *The two main types of grammatical connections*), to *A Modern English Syntax* (1927/1954), to the more complete approach presented in *Philosophy of Grammar* (1924) and *Analytic Syntax* (1937/1969). In order to explain connected speech, Jespersen adopted two concepts that are commonly acknowledged as his most original "signature" contributions to the study of syntax, namely the distinction between *junction* and *nexus* and the theory of *ranks*. Since the first distinction is said to rely on rank-structure,[4] the claim of Nelson Francis – according to whom "rank, then, is a rather secondary notion. But the other two concepts, *junction* and *nexus*, are at the heart of Jespersen's syntactic theory" (Nelson Francis, 1989, p. 84) – shall be rather inversed:[5] in what follows,

3. Cf. also Hudson, 1980, pp. 188 sqq.

4. Cf. "I thus applied the theory of ranks to nexus as well as to junctions" (Jespersen, 1937/1969, p. 122).

5. Cf. also Hjelmslev, 1942/2002, p. 167.

we will firstly deal with the distinction between *nexus* and *junction* (→2.1) and then discuss the underpinning *rank* theory (→2.2). Both these aspects are indices of a functional conception of syntax that calls upon the very idea of *directed connection* occurring between lexical items and establishing their very linguistic value.

2.1 Nexus and junction

The notions of *nexus* and *junction* seem to be of utmost importance in Jespersen's theory, since they apparently identify two different kinds of word-groups, respectively the verbal one (in Jespersen's famous example: *the dog barks furiously*; Jespersen, 1924, p. 114) and the nominal one (*the barking dog*; Jespersen, 1924, p. 114). Yet, this distinction is not only of secondary significance but also somewhat blurred. Indeed, it never received a fully consistent theorization (cf. Graffi 2001, p. 145): Jespersen often resorted to metaphorical rendering or sheer exemplification, since traditional criteria were assumed to be unsatisfactory. Indeed, the distinction between *junction* and *nexus* was given via a contrast between the stiff picture conveyed by the former and the dynamic drama reproduced by the latter (cf. Jespersen, 1924, p. 116; Jespersen, 1937/1969, p. 120; Jespersen, 1911/1962, p. 360). Of course, such a rendering – which resembles Tesnière's view (1966/2015, Chapter 48, pp. 97 sqq.) – could not be of much help in concrete description.

Therefore, Jespersen resorts to a rather semantic characterization concerning how the *idea* (the *representational meaning*) conveyed by the lexical units is rendered:

> In a junction a secondary element (an adjunct) is joined to a primary word as a label or distinguishing mark: a house is characterized by being mentioned as *the next house* or *the Doctor's house*. Adjunct and primary together form *one* denomination, a composite name for what conceivably might just as well have been called by a single name […]. A junction is therefore a unit or single idea, expressed more or less accidentally by means of two elements. A nexus, on the contrary, always contains two ideas which must necessarily remain separate: the secondary term adds something new to what has already been named.
>
> (Jespersen, 1924, p. 115–116)

This logico-semantic criterion was maintained even later, in his *Analytic Syntax*:

> we get nearer the simple truth by saying that *a junction serves to make what we are talking about more definite or precise*, while *a nexus tells us something* by placing two (or more) definite ideas in relation to one another.[6]
>
> (Jespersen, 1937/1969, p. 121)

6. By suggesting a difference between a *synthetic* and an *analytical* combination of ideas, resulting in two different "sentences", and by conceiving the verb essentially as a conjunction of two

On the one hand, this characterization of junctions and nexus in terms of *different ways of making ideas more specific* is of paramount importance, since it suggests that the global meaning of the sentence does not just depend on the meaning of words in themselves but rather on the connections in which they occur: words occur within a frame of positions linked together by headed dependences, *i.e.* within the structure of *rank*.

On the other hand, it still proves to be fairly insufficient when it comes to distinguishing between the two constructions in a univocal way. It is worth noting that it was firstly the similarity between the two kinds of combinations, and not the difference of pattern, that caught Jespersen's attention in the elaboration of ranks (cf. Jespersen, 1937/1969, pp. 122–123): the two constructions *the furiously barking dog* and *the dog barked furiously* were indeed respectively parsed as 3 2 1 and 1 2 3, so that Jespersen concluded that the same scale was to be found in both cases, although in reverse order (Jespersen, 1937/1969, p. 123):

> *Dog* in both cases is the fixed, supreme point, to which the others are subordinated in descending scale. It has been objected to this that […] in thus paralleling *barks* and *barking* [as secondary] I overlook what is just the chief characteristic of the finite verb, its capacity of forming a complete sentence. My answer is that […] I have in my terminology provided names for a distinction between the two combinations by calling one a junction and the other a nexus; one forming in general only one member of a sentence, while the other is capable of forming a complete sentence (though it does not always necessarily does so). But this difference in life-giving capacity does not exclude a similarity in inner structure, and just as everybody recognizes the analogy with regard to *furiously*, which is 3 in both combinations, I think I am right in placing *barking* and *barks* on the same level in the scale, between 1 (*dog*) and 3 (*furiously*) – though not otherwise identifying them.
>
> (Jespersen, 1937/1969, p. 123)

The objection is of course perfectly legitimate, since through the simple allotment proposed it is impossible to derive a syntactic difference between *junction* and *nexus*: the rigid matching between word-classes and ranks that Jespersen's rendering suggests is in flagrant contradiction with the basic insight behind ranks themselves. By parsing substantive as primaries and adverbs as tertiaries, verbs and adjectives would ultimately be classed together as secondaries, sharing the same rank.

Jespersen's effort to avoid such conflation is quite evident, since a qualitative difference in the semantics of secondary terms was suggested by acknowledging that, in opposition to an adjective, a (finite) verb does not just modify the core-idea

---

junctions ("two definite ideas"), Jespersen paved the way to Hjelmslev's definition of the verb, as well as his reinterpretation of such notions (→5).

expressed by the primary term (the head of the junction), but inserts something new into that very connection. Such solution, which could have led to a distinction between a "junctional secondary" and a "nexual secondary", is far from being acceptable. In fact, while the junction *the painted rose* can be quite easily said to include a secondary (*painted*) that directly modifies the primary (*rose*), it is not so for the nexus *the rose is red*, in which two kinds of problems arise: firstly, the occurrence of two secondary terms (*is* and *red*) the last of which cannot specify the other, and secondly that the insertion of a new semantic element that characterizes a verbal construction, ultimately breaks the uniformity of a headed rank-structure. Indeed, in a nexus like *an old man drank too much wine* it is quite difficult to see how *drank* could be interpreted as a secondary, *i.e.* as a specification of the two primaries *man* and *wine*, if not thanks to a purely semantic reformulation (resp.: *a man drinking …* and *the wine drunk by a man*). Cf. the graphical representations of the examples given above (Figure 1), in which rank-headed functions are represented by arrows, and ranks are signalized by numbers (for a discussion, →3):

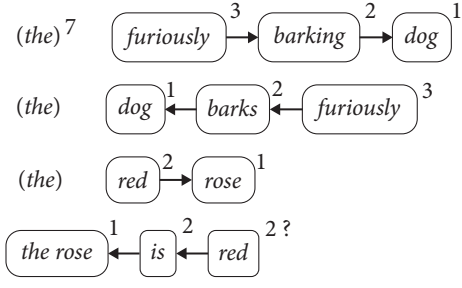

Figure 1. Proposed diagrams of some of Jespersen's simple examples

In this case, if the predicative and the verb are assumed to be two secondaries, then the verb and the adjective shall be understood as two coordinated items, otherwise the rank structure would be invalid. If so, however, the representation should be rather the following one (Figure 2).

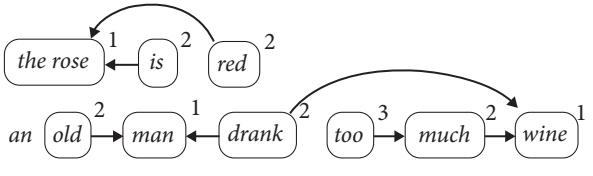

Figure 2. Speculative diagram of predicative and verb as two secondaries

At any rate, how could these definitions be interpreted on a syntactic rather than on a semantic basis? No such issues were discussed in *Philosophy of Grammar* (1924) in which Jespersen basically sketched a typology of different nexus and junctions:[7] as a sheer classification of syntactic constructions (mostly taken from modern English), it shed no light on their dependency structure.

However, by the publication of *Analytic Syntax* (1937), he must have realized that, in order to have the distinction between junction and nexus implanted on ranks, the (finite) verb, along with the other complements, should have been parsed in a different way. Yet, this suggestion remained in a potential stage, since, as we will see, Jespersen adopted a hybrid notation that shortcut through the whole question (→3).

2.2 The functional model of ranks

Insofar as the very idea of a directed connection between lexical items is considered, there is no doubt that Jespersen's model is quite close to a dependency framework. According to Jespersen, no word combination or *phrase* (Jespersen, 1924, p. 95) can be explained as a simple ensemble of words, since its global meaning cannot be "inferred from that of the words separately" (*Id.*); nor can the traditional parts of speech explain the consistency we find in any sentence. Those factors must rely on a deeper level of linguistic organisation. It is not by chance that, when it comes to discussing the theory of ranks, once more in 1937, Jespersen clearly states that, insofar as the two main series of word classes (α) and of ranks (β) are concerned, the main distinction between them is as follows:

> In α we deal with isolated words in their dictionary or lexical value, while in β we deal not only with words, but also with combinations of words (*Wortgefüge*), and we take both of these as they appear in connected speech. […] the dictionary can never tell us whether a word or a group of words in one particular connexion stands as a primary, as a secondary or as a tertiary. That can only be decided by means of syntactic analysis of the whole combination in which it occurs.[8]
>
> (Jespersen, 1937/1969, pp. 109–110)

7. Apart from the junction, whose polymorphous definition covered more or less all kinds of non-verbal constructions (among which the nexus without verb), Jespersen distinguishes between three kinds of finite verb constructions (independent nexus, dependent nexus or subordinate clause, and objectal nexus like *Arthur whome they say is killed tonight*), the infinitival nexus, the nexus-object (such as *I found the cage empty*) and the nexus subjunct (including all kinds of absolute constructions). Cf. Jespersen, 1924, Chapter 8, p. 114 sqq.; Chapter 9.

8. Interestingly enough, Jespersen is led to put this consideration in relation with the Saussurean distinction between *langue* and *parole*, classifying the deep pattern of ranks within the latter.

According to this principle, and regardless of the extension of any "syntactic combination" (which can denote word groups, phrases or sentences), the latter always implies some sort of qualitative link binding together the lexical items and exceeding their simple juxtaposition. Thus, a syntactic combination AB cannot be simply broken down into its two constituents A and B: more information has to be conveyed in order to explain the degree of *conceptual cohesion* (functional autonomy) involved. As is well known, such a link was rendered by Tesnière as a third entity effectively occurring between the two lexical items (Tesnière, 1966/2015, p. 3). This feature was further diagrammatically represented by stemmas, in turn constituted by strokes and points (see Mazziotta & Kahane, 2017). Instead, Jespersen developed a different, still somehow traditional conception (Percival, 1990) by rendering the link in terms of a *qualitative difference* between A and B, one being more *important* than the other so that the first attracts the latter as an attribute A ← B. B is then said to specify A. This feature becomes a universal trait of any syntactic combination whatsoever, so that the core-idea of ranks clearly matches the basic insight of Tesnière's dependency theory: in any construction, we are told,

> there is one word (should be word or part of a word or group of words) of supreme importance to which the others are joined as subordinates.
> (Jespersen, 1937/1969, p. 111; cf. also Jespersen, 1924, p. 96)

The scheme between primary, secondary and tertiary (and possibly between quaternary and quinary terms; 4) is thus conceived as invariant: 1 ← 2 ← 3, the primary term directly governing (= being semantically defined or specialised by) the secondary and indirectly governing (= being semantically specialised by) the tertiary, as the vivid metaphor of the ladders clarifies:

> […] it is really most natural that a less special term is used in order further to specialize what is already to some extent special; the method of attaining a high degree of specialization is analogous to that of reaching the roof of a building by means of ladders: if one ladder will not do, you first take the tallest ladder you have and tie the second tallest to the top of it, and if that is not enough, you tie on the next in length, etc. In the same way, if *widow* is not special enough, you add *poor*, which is less special than *widow*, and yet, if it is added, enables you to reach farther in specialization; if that does not suffice, you add the subjunct *very*, which in itself is much more general than *poor*. *Widow* is special, *poor widow* more special, and *very poor widow* still more special, but *very* is less special than *poor*, and that again than *widow*. (Jespersen, 1924, p. 108)

Such a link of unidirectional specification changes the "absolute" value of lexical items by connecting them into a specific pattern. The theory or ranks allowed Jespersen to reject the idea of *predication* implied in traditional sentence analysis in

favour of the idea of *specialisation*,[9] according to which the meaning of a sentence does not depend on the occurrence of single lexical units but on the way these are mutually connected by a headed dependency. Accordingly, the Subject is said to be the most specialised item, thus a primary term, since it receives the most attributes by all other "circumstants". Indeed, the idea according to which the units' syntactic value can be derived from the positions they occupy within a general syntagmatic structure (*in casu*: the ranks) can be singled out as a first clue of proximity between Jespersen's model and dependency theory.

The very notion of ranks was conceived in two theoretical steps: for a same lexical item (*grosso modo* a word), the grammatical value (word-class) and the syntactical term (rank) were firstly distinguished and then mapped again one on the other, by admitting that each member of a category can correspond to one or more members of another category:

> […] there is certainly some degree of correspondence between the three parts of speech and the three ranks here established. We might even define substantives as words standing habitually as primaries, adjectives as words standing habitually as adjuncts, and adverbs as words standing habitually as subjuncts. But the correspondence is far from complete […]: the two thing, word-classes and ranks, really move in two different spheres. (Jespersen, 1924, p. 98)

> There are two series which to some extent, but only to some extent, run parallel; I call them *α* and *β*. In *α* we have separate classes of words (parts of speech), in *β* separate ranks, thus

α. Word-Classes:	*β*. Ranks:
Substantives	Primaries (1)
Adjectives	Secondaries (2)
Adverbs	Tertiaries (3)

> […] In the easiest and simplest cases the two series cover one another, thus

terribly	cold	weather
α adverb	adjective	substantive
β tertiary	secondary	primary

> But this simple parallelism does not always hold good. Both substantives and adverbs may under certain circumstances be secondaries; adjectives and adverbs are sometimes primaries; one and the same combination of words, even a whole clause, can be used in each of three ranks. (Jespersen, 1937/1969, pp. 109–110)

9. The refusal of predication and of the standard subject-predicate relation is a feature Jespersen shared with Tesnière (cf. Kahane 2001, p. 2).

Actually, the network of correspondence between these categories is more complicated than Jespersen himself supposed, since the series do not include only ranks and parts of speech, but also the logical function of these units, *i.e.* the "sentence members" – a category which remains implicit in Jespersen's mapping, albeit resurfacing in his notation (→3):

word-classes	*ranks*	*sentence members*
substantive	1	subject
adjective	2	object
adverb	3	predicative
(finite) verb		indirect object
…		…

Indeed, ranks are conceived as a third, deeper syntactical category which the other series may supposedly be mapped onto. However, the three series were not fleshed out consistently: the sentence-member series does not include a "predicate", since it was substituted by the (finite) verb clearly belonging to the word-classes series, resulting in an intermingled classification of units. The series of ranks was said to include up to three ranks, even if the possibility of a quaternary and a quinary rank was put forward (→4). Moreover, even if Jespersen acknowledged some sort of "free interplay" between the three sets, which were said to be fairly independent, the risk of defining word-classes on the basis of too rigid correspondences between the series constantly loomed on the theory: an example of this is Jespersen's definition of finite verbs being always secondaries (cf. Jespersen, 1924, p. 100),[10] so that the correspondences "substantive = primary", "adjective = secondary", "adverbs = tertiary" clearly hold true only insofar as junctions are considered on their own.

A too rigid correspondence of word-classes and sentence-members onto ranks is not the only issue with the model. Jespersen's effort in grounding the formation of the sentence on a pure syntactic structure of headed dependencies (specialisation) could be achieved only partially, as the ratio behind rank structure still concerns extensional definiteness, which is a rather semantic criterion. And indeed, this was presented as the "proper" logic of syntax.

> *The logical basis* of this system of subordination is the greater or lesser degree of specialisation. Primary words are more special (apply to a smaller number of individuals) than secondary words, and these in their turn are less general than tertiary words […]. It is very important to keep in view this principle, which is so

10. The standard parsing for "The doctor arrived speedily" is thus the following: the doctor (1) ← arrived (2) ← speedily (3) (cf. Jespersen, 1937/1969, p. 149). However, clues suggest that this solution was not assumed as definitive: an alternative rendering of the verb would have ranked it as primary, implying a complete different parsing (→2.2.3).

> often overlooked, namely that *the word defined by another word is in itself always more special than the word defining it, though the latter serves, of course, to render the former more special than it is in itself.*[11] (Jespersen, 1927/1954, p. 3)

The issues mentioned so far, namely the rigid correspondence and the hybrid classification, can be better appreciated especially in the rendering of those structures that lie – so to speak – beyond the comfort-zone of standardized junctions such as (finite) verbs (symbolized "V"), which are said to occur always as *secondaries*, being conceived as *modifiers* of both subject and object (→2.2.3); the object and indirect object (resp. "O" and "*O*"), which supposedly cover the same rank of subject (S), thus occurring as *primaries* (→2.2.1); and the predicatives ("P") whose rank parsing is not a matter "so simple as in the case of S, O and *O*" (Jespersen, 1937/1969, p. 135) (→2.2.2).

2.2.1 *Objects*

In the case of Objects, assuming Jespersen's indications as a rule would be problematic: once again, a standard connection SVO would then include two primaries, or two definite ideas, and the link of specification occurring between the units would thus run in two different directions, "tearing" the very verb apart. Let us take a sentence such as *I like milk*, whose structure can be described as SVO. If S and O are *primaries* and V is a *secondary*, as we are told, the verb *like* would be conceived as a modifier for both S and O at the same time (Figure 3).

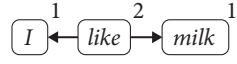

Figure 3. Proposed diagram of a verb modifying the subject as well as the object

Assuming Jespersen's claim that ranks hold for both junction and nexus, and that ranks represent a headed dependence, in this case it is unclear which item can play the role of the head, or which one can be said to be more specific: the one expressed by the subject (= among all my other qualities, I present myself as the one who likes milk), or the object (= among all the different aspects of milk, I speak of the one I like)? It is not by chance that Jespersen apparently implies in addition some kinds of nuance in ranking, the object being defined as:[12]

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11. In a later reformulation, a general proportion was established between *syntactic ranks* and *semantic extension*: the more specific a word is, the more central it is in relation to its peripheral attributes, and thus the higher it may occur in rank (1 being the highest rank).

12. Compare the definition of Subject: "The primary word with which a verb is intimately connected as kind of adjunct, is called the subject of the verb". (Jespersen, 1927/1954, p. 7).

> *less intimately connected* with the verb (in the actual form this has in the sentence concerned) than either the subject or the predicative; if there are two objects the direct object O is more intimately connected with the verb than the indirect object *O.*
> (Jespersen, 1937/1969, pp. 137–138, and 140; italics are mine)

Thus, adopting a pure rank notation, a sentence like *I give Maria a book* could be represented as Figure 4.

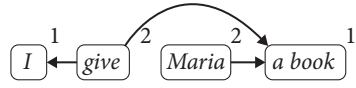

Figure 4. Speculative diagram of a sentence containing an indirect object modified by the verb

However, such a representation is speculative: the introduction of letters for symbolizing sentence members allowed Jespersen to skip the incumbency of a clear rank-parsing of these very items (→3). By the way, it is not clear why Jespersen did not conceive of the direct object as a modifier of the verb, thus as a tertiary, as a more intuitive representation would have suggested (Figure 5).

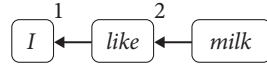

Figure 5. Speculative diagram of the object as a modifier of the verb (ternary)

Actually, he came quite close to this idea by suggesting that "what is the object of a verbal sentence [a nexus] is found […] by asking *Whom*, or *What* with the subject and verb of the sentence" (Jespersen, 1937/1969, p. 138), thus implying that an object somewhat *depends on* the other two units. This could have left unchanged the idea that the subject is the most specified term,[13] but in turn would have radically

13. An analogous remark was made by Paul Diderichsen in his review of *Analytic Syntax*: "the rank of a member is not to be indicated in a nexus just as well as in a junction […]. It appears to me that it would be a definite advantage to take one more step in this direction and abolish the concept of "rank in nexus" altogether […] Furthermore, by abandoning "rank in nexus" a troublesome incongruity in the system will be avoided: in a junction a tertiary will normally be an "adverb" […]; in a nexus this cannot be so, because, strictly speaking, the denomination tertiary (3) contains nothing but the fact that the member in question determines a secondary (2), and if one wants to call *furiously* a tertiary […] it would seem necessary to use the same denomination for an object, which also "determines" the verb. Jespersen, however, prefers to call the object a primary, thus obscuring the clear and unambiguous meaning of his own category of rank by confusing it with the distinction in traditional grammar between "substantival, adjectival, and adverbial members". (Diderichsen, 1939, pp. 201–202).

gone against the correspondence between word-class series and ranks such as "substantive = primary" (→2.2).

2.2.2 *Predicatives*

The same holds true for the Predicatives, which are treated as sorts of "fuzzy" specifications for subjects, like a kind of appositions: in the case of a logical relation between subject and predicative, "if one of the two words connected by *is* is more special than the other, it becomes by that fact alone subject" (Jespersen, 1937/1969, p. 135). Such an approach dates back to Jespersen's early work, *Sprogets logik* (1913), in which the subject is defined as "the most specified [notion], that which can be spoken of for the fewest individuals, whereas the predicative is that which, compared to the other, is more general and can be spoken of for a greater number of individuals" (Jespersen, 1913, p. 56; my translation). According to this principle, the subject would be a primary term, whereas the corresponding predicative a secondary:

> [I]t seems equally certain that in "this rose is red" the predicative *red* is a secondary, just as in "a red rose". […] In nearly all cases in which a subject and a predicative are connected by means of *is*, the meaning is not to assert complete identity, but rather that the subject belongs to, *i.e.* forms a part of, the class denoted by the predicative.
> (Jespersen, 1937/1969, p. 135)

On the one side, his rejection of the idea that such sentences express identity clearly allows Jespersen to analyse them also on the basis of a headed dependency, that is, in terms of ranks. On the other side, however, the rank parsing cannot be so easily carried out, as this will conflict with the claim that both verbs and predicatives are secondaries: since no secondary can modify another secondary, a linear solution such as *the rose* (1) ← *is* (2) ← *red* (2) is invalid (→2.1). Let us take an example from Jespersen, namely the sentence "All is vanity", which raises some doubts about which term is the most specific, *i.e.* the *head* of the construction. The solution proposed was to regard *All* as the subject, and the parsing proposed was thus S–V–P. However, this issue was rather skipped by Jespersen: his notation, labelling the three items as "P" (predicatives), "V" (verbs) and "S" (subjects), allowed him to avoid the cumbersome question of having them properly rank-parsed, even more so as the direction of the dependence (*headedness*) between verb and predicative is left completely unaccounted for. A reconstruction on a rank-base is thus a matter of speculation. In conformity with the general indications given, the sentence should be rank-parsed as in Figure 6.

Ultimately, Jespersen recognized that the analysis of predicatives was problematic, "for if extension is made a criterion, and if there are cases in which the extension is equal, this means that we cannot decide which is subject and which predicative"

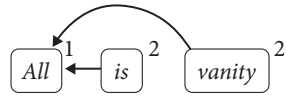

Figure 6. Speculative diagram of the sentence *All is vanity*

(Jespersen, 1060, p. 136). This basically means that in these cases, the semantic criterion for finding the *head* fails and the rank-parsing remains undecidable.

A specific example of such ambiguity was put forward (ibid.): *The only man who knew the secret was Tom*. This was symbolized either as "S(212(S^{c}VO))VP" or "P(212(S^{c}VO))VS", thus by assuming the whole word group *The only man who knew the secret* either as subject or predicative:

the	*only*	*man*	*who*	*knew*	*the*	*secret*		*was*	*Tom*
	S/P(2	1	2(S^{c}	V		O	))	V	P/S

Figure 7. Symbolic representation of alternative selections of a subject and a predicative

N.B.: '/' stands for alternative solutions and the raised "^{c}" for a connective element (relative pronoun) (→3). As it appears from this example, Jespersen's notation introduces the symbols for sentence-members and parts of speech ("S", "V", "P") as constituent-markers and thus seems to deal with nominal/verbal phrases, which would point towards a constituency-based approach. In our opinion, however, they should rather be assumed as labels for the nodes, whose extension is defined through the use of round brackets, much like in Gladkij's model (Gladkij, 1966). The principles that should be kept in mind in this case are (1) to follow "the sentence or word-combination that is to be analyzed word for word" (Jespersen, 1937/1969, p. 5) and (2) to have both junction and nexus rank-grounded. Multiple interpretations of the direction of dependences implicated in the example are thus possible, depending (1) on which item is assumed to be the predicative and (2) on the direction between verb and corresponding complement (subject or predicative). Assuming (1) that *man* is the predicative and *Tom* the subject (a proper name being more specific than a specified common noun) is the subject and the and (2) that the predicative modifies the subject, the structure can be visualized as Figure 8.

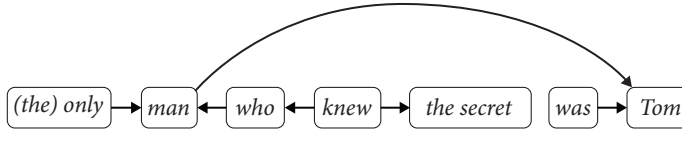

Figure 8. Speculative diagram of problematic predicative

A pure rank-parsing of the sentence should take into account that the predicative *man* would then be primary in relation to its own "circumstants" (*only*, *who*), but *secondary* in relation to its subject *Tom*.[14] Moreover, it is an open issue whether the verb has to be understood as a secondary in relation to the subject (as represented above) or to both the subject and the predicative, as it would be reasonable to conceive, since the verb is said to be a secondary for both subject and direct object. In this case the representation would be Figure 9.

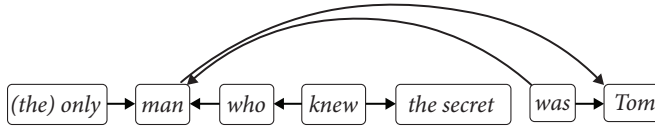

Figure 9. Speculative reinterpretation of Figure 8

At any rate, this kind of problems was rather eluded by Jespersen's model by the adoption of the alphabetic formulas "S", "V", "O", "*O*", which evidently marks the units of a nexus, instead of the standard rank notation "1", "2", "3", which preferably holds for junctions.

2.2.3 *Verbs: Life-givers or trouble-makers?*

Since the treatment of the verb in Jespersen's model is particularly problematic in relation to *ranks*, it is worth examining in greater detail. Actually, for Jespersen the centrality of the verb has always gone undisputed: from a general point of view, the verb is "the central point: on this everybody has always agreed. The verb is the chief life-giving element in the most usual type of sentence" (Jespersen, 1937/1969, p. 121).[15] Yet, one major issue concerns the articulation of the category of verbs as such, for a continuity is established between finite verbs, "verbids" (such as the infinitive and participles, *i.e.* those forms that are on the crossroads between verbs and substantives; cf. Jespersen, 1924, pp. 86–87) and even converted verbal forms (called "nexus-substantives").

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14. Such possibility was however contemplated: for instance, the notation for a secondary which is primary in relation to another connection is 2/1 (cf. Jespersen, 1937/1969, Chapter 3.2, p. 9; Chapter 3.9, p. 12–13).

15. However, Jespersen adds also that "it would be totally wrong to say that the existence of a finite verb was a *conditio sine qua non* of a normal sentence" (Jespersen, 1937/1969, p. 121), since one has to take account of particular constructions such as verbless combinations (nominal sentences) and dependent nexus (such as nexus objects like *I found the cage empty*, later interpreted as a sort of predicative, see Jespersen, 1937/1969, p. 42). On the whole, these considerations resemble those made by Tesnière (cf. Tesnière, 1966/2015, Chapter. 48, §§ 11–12).

The verb functions as a *relay* for the syntactic connection itself. Yet, despite having recognized its importance, Jespersen never did what Tesnière did, *i.e.* assign to the verb the definitive role of *root* (Hudson, 1980, p. 180). Actually, he explicitly placed the verb at the centre of the sentence (cf. "we may say that S, O and *O* are the fixed points in an ordinary sentence, placed round V as the centre", Jespersen, 1937/1969, p. 122),[16] but he only recognized the Subject, Object and Indirect Object as *primaries* in rank structure, being the semantic nucleus of the sentence, whereas, as we have seen, the finite verb is always said to be *secondary*.

We thus face a paradoxical treatment of the verbal element. On one hand, the "life-giving power" (cf. Jespersen, 1937/1969, p. 122) of complete syntactic structures truly coalesces, as it were, into verbal forms, yet in a gradual way. Finite verbs are said to be infused with it to the highest degree, followed by infinitives, gerunds, nexus substantives and agent nouns (ibid.). It follows that: (a) a certain overlapping between these categories is always possible (particularly between infinitives and participles, see Jespersen, 1937/1969, p. 148); (b) verbids are often treated as proper verbs. On the other hand, such life-giving power, although typically "coalescing" into verbs, does not pertain to verbs as such or to their meaning,[17] nor even to words in themselves; it is rather said to ultimately depend on the combinations of words linked together (Jespersen, 1924, p. 115), which in turn depend on *ranks*. From this point of view, Jespersen is forced to undo what he did before: verbs and verbids cannot belong to the same category, since they do not syntactically behave in the same way (cf. Jespersen, 1924, p. 100).

The paradoxical treatment of verbs, which lie at the semantic core of sentences even while being functionally ranked as secondaries, is ultimately due to an ambiguity in Jespersen's rank model – an issue which is deeply connected with his problematic claim that nexus too can be reduced to ranks. In fact, as a conjunction between two more or less specialized ideas (or junctions), a nexus could hardly be interpreted as a specializing structure, since it rather combines (already specialized) ideas. Even in the case of standard logical predication (which, as we have seen, Jespersen tried to reject), a *copula* doesn't specialize the meaning in the same way as junction does, namely by an additive hierarchy of modifiers.

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16. Such a claim is even more far-reaching, since Jespersen tries to show that the verb V, *lato sensu*, plays the role of intermediate unit linking subject S, predicative P, object O and indirect object *O*, which can be "reached only through the medium of V or its substitutes" (Jespersen, 1937/1969, p. 122). This idea allows him to distinguish between possible *vs*. impossible syntactic combinations (like S–O, without verb; or V–*O*).

17. See: "it is to be noted that the distinction between verbs ad substantives has nothing to do with such ideas as activity and change". (Jespersen, 1911/1962, p. 356).

However, Jespersen never came to terms with the idea that rank structure only applies to junction – an objection which was actually raised by Western (1934); on the contrary, he felt confident enough to counter it (cf. Jespersen, 1937/1969, p. 123), by suggesting that there is indeed a difference in rank structure between junction and nexus, namely an *inversion in the direction of determination*, also responsible for phenomena of cross-category shifts from verbs to substantives. Those units that in junction are specified, and occur as *primaries*, in nexus are rather said to *specify the idea contained in the verb*, which should thus be regarded as primary. Such an inversion, plainly admitted by Jespersen yet never effectively adopted, seems to reverse all his previous claims: it implicitly acknowledges the verb as a root. In the light of this last statement, the nexus "I like milk", previously symbolized as *I* (1) ← like (2) → *milk* (1), should now be symbolized contrariwise

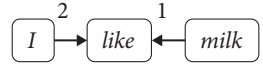

Figure 10. Revised diagram of the analysis of *I like milk* with the verb as primary

Compare Jespersen's own words:

> If a subject and an object (direct or indirect) are termed primaries and thus compared with and coordinate with primaries in a junction, it is because they denote comparatively definite and special notions, whereas the notion expressed by a verb is less "substantial" and therefore must be called secondary in comparison with S, O, *O*. But *the relation between primary and secondary is not the same in a nexus as in a junction*. There is this fundamental difference that while in a junction a secondary serves to make the primary more definite, more special, than it is in itself, this is not at all the case in a nexus. We may even with a certain degree of justification say that the notion expressed by a verb is made more definite by the subject […]. It is even more true to say that an object "serves to make the meaning contained in the verb more special" […]. This specializing power is especially evident with verbs of general import […]. If the specifying power of the different ranks were not in this way the reverse in a nexus of what it is in a junction, we should not easily understand the shifting found especially with nexus–substantives.
>
> (Jespersen, 1937/1969, p. 124)

This solution, being in open contradiction with the standard characterisation of verb as secondary, does represent an alternative parsing method, but has its own disadvantages and can hardly be assumed as a definitive one.

Given all these issues, it may be said that although Jespersen did successfully develop a dependency-oriented model, he could not flesh it out consistently. In fact, a major hindrance stands in the way: the dependency between ranks is *always*

qualitatively the same, *i.e.* a directed semantic determination. This can hardly cover the differences between predication and subordination, as well as the discrepancies between syntactic roles and parts of speech. Indeed, there cannot be a fixed correspondence between the structure of ranks and the structure of phrase members (subject, verb, object, etc.). This problem was somehow mirrored in the formalization adopted in *Analytic Syntax*: in this work Jespersen was forced to split the notation into two main sets of symbols, namely Capitals, denoting the members of the phrase which mostly occur in nexus, and Numerals, denoting the lexical items, mostly occurring within junctions, according to their actual rank-position.[18]

3. Jespersen's notation

Jespersen's system of syntactic formulas (1937), which could have been developed in connection with his earlier "antalphabetic" notation for phonetic analyses (Jespersen, 1889; see Rischel, 1989, p. 48), aims to match each item of a sentence with a corresponding symbol denoting its function, following "the sentence or word-combination […] analyzed word for word" (Jespersen, 1937/1969, p. 5). The chain is thus rewritten by a string of symbols, usually given aside or below *grosso modo* each lexical item. See for instance the example in Figure 11 (Jespersen, 1937/1969, p. 83)

Brother Juniper, forgetting everything except the brother's wishes,
S(1 1 2(Y O p1(1^2 1))
hastened to the kitchen, where he seized a knife, and thence directed
V p 1 $2(3^c$ S V O & 3 V
his steps straightway to the wood where he knew the pigs to be
$O(S^2$ 1) 3 p 1 $2(3^c$ S V $O(S_2$ I)
feeding.

Figure 11. Analysis of a sentence, with word for word symbolic representation

As can be seen, the practical method of notation is mostly imprecise since it does not allow an immediate and exact matching between items and symbols, nor a general glimpse of the defining-defined relations (the rank structure). This holds especially true as the seven sets of symbols provided are not just restricted to units, but give account also of particular usages, functions and nuances of the units themselves, and even of their extension (for a thorough presentation of Jespersen's notation, see Nelson Francis, 1989, pp. 89 sqq.):

18. See also Paul Diderichsen's remark: "the principle is to characterize the single members of a junction by their "rank", while the members of a nexus are denoted by the more specialized functional categories of traditional grammar". (Diderichsen, 1939, p. 201).

- Capitals stand for parts of speech ("S" = Subject, "V" = Verb, "O" = Direct object, "*O*" (italicized) = Indirect object, "P" = Predicative, "I" = Infinitive, "G" = Gerund, "X" = Nexus substantive, "Y" = Participle, "R" = Recipient, "Z" = whole sentence);
- Small Letters stand for prepositions (simple or composed), connectives (simple or composed) or the "dummy version" of the corresponding parts of speech (for instance, "lesser verbs", such as the periphrastic future-form of English in *Will he come*, are symbolized "vSV"; "lesser subjects" as in *it rains* are symbolized "sV"), but they include also indexes which normally modify the "value" of the connected unit (such as "^{a}" and "^{p}" for active and passive constructions, "^{c}" for connective such as relative pronouns, "^{n}" for negative constructions or negation particles, "^{q}" for quantifiers, "^{r}" for resultative objects; a subscripted cross "$_{x}$" for reciprocal construction, and "^{m}" for non-further specified modifications);
- Numerals stand for *ranks* (indexed numerals stand for units whose rank-value has been modified, whereas fractions mark split-units;[19] a raised zero stands for latent units; finally, subscripted numerals serve to mark that two or more units of the same kind occur within the same sentence);
- Brackets have multiple uses, which are not all explicitly declared. For instance, round brackets "(" and ")" are said "to explain the item immediately preceding" (Jespersen, 1937/1969, p. 7), further explicating the internal structure of the preceding unit, but in doing so they also mark its *boundaries*. For instance the sentence "We were tremendous friends" is symbolized "SVP(2(3)1)", since the predicative-chain is further analysed in its components, the adjective "tremendous" (thus a secondary term) derived from an adverb (thus a virtual tertiary) and governed by the primary "friends". As a matter of facts, round brackets are something like *rewriting marks*, since they establish the *identity* between what precedes and all that is bracketed. Curly braces "{" and "}" describes the internal articulation of just *one item*, thus its usage it circumscribed to morphological analyses. Their functioning differs from round brackets, as they do not rewrite, but *overwrite* the corresponding item (cf. Jespersen, 1937/1969, p. 7: "Amo puellam" which is symbolised "{SV}O", since *amo* includes the verbal base *am-* and the subject expressed by the morpheme *-o*). Square brackets "[" and "]" are used to signalize extrapositions, which often implies an inverted word-order, or appositions, which resemble incidental expression and can thus be identified unambiguously (cf. "Browning, the poet" = 1[1]). As for round brackets, they mark the boundaries of the corresponding chain, so that they may include more than one item. Finally, angle brackets "<" and ">" have no

19. In this case, "lesser units" and fractions partially overlap, since the sentence *Will he come* could be also symbolized as "½ V S ½ V".

proper syntactical value, but rather a pragmatic or rhetorical utilization as they symbolize the speaker's aside;
- a set of punctuation marks is given for denoting different kind of sentences, such as "?" for question, "*!*" (italicized) for request, "!!" for wish and "!" for exclamation;
- a set of abbreviations is provided for marking different languages
- finally, a set of "Auxiliary signs" is introduced basically for covering remaining phenomena, such as coreferentiality ("*" and another correlated "*"), compounds ("+"), coordination ('&') and even metalinguistic usages such as alternative analyses ("/"). Furthermore, a quite unique symbol ("§") is introduced to stress the connection of the unit to the "whole idea" (Jespersen, 1937/1969, p. 8) conveyed by the sentence or phrase within which it occurs. Its application is however rather obscure;[20]
- a set of abbreviations is provided for marking different languages – another metalinguistic shortcut that has no direct syntactic relevance.

Such heterogeneous notation was presented by Jespersen himself in a quite sketchy way, which suggests an on-going stage of theorization rather than a closed, consistent inventory of symbols. This could be due to the fact that he intended to devise a flexible tool that could be adapted or expanded as needed, as can be clearly seen in the case of composite words and pragmatic/rhetorical markers, which haven't any direct impact on syntactic structures.

Our task is now to test the consistency of Jespersen's formalized model by analysing it in the light of the five definitional attributes of a dependency theory (Mazziotta & Kahane, 2017, pp. 119 sqq.):[21]

1. the *connection basedness* (→3.1) prescribes that syntagmatic relations are identified and encoded by specific elements (for instance, the 'edges' in a dependency tree);

---

20. For instance, the sentence *He gambles, and what is worse, he drinks* is symbolized "S V & [S_2^cVP§] S V" (cf. Jespersen, 1937/1969, p. 8). This shall be understood as two coordinated sentences of form subject-verb (*he gambles* and *he drinks*), connected by the connective *and* ("&") and a third sentence which serves as an apposition. In this case, since the apposition consists of a whole sentence, the "§" is used, suggesting that the sentence is something like an incidental. Therefore, *what is worse* is analysed into four elements: *what* being a second Subject ("S2") serving as a connective, *is* as the Verb and *worse* as the Predicative, plus the index stressing such rhetorical autonomy. "§" is thus redundant, and ultimately non-pertinent.

21. See also Mazziotta, this volume, Chapter 4, Section 4; Imrényi & Vladár, this volume, Chapter 5, Section 3.1.

2. according to the feature of *binarity* (→3.2), "a connection always involves exactly two words" (Mazziotta & Kahane, 2017, p. 119);
3. the feature of *headedness* (→3.3) implies that connections occur between a "governor" and a "subordinate" (Tesnière, 1966/2015, Chapter 2, § 1–3; see Mazziotta & Kahane, 2017, p. 120);
4. the requisite of *node-to-word mapping* (→3.4) prescribes a one-to-one proportion to occur between words, the formal units of the model (for instance, the 'nodes' of a dependency tree) and the symbolic items they are represented by; thus, only words can be encoded by nodes;
5. finally, *flatness* (→3.5) prescribes the absence of any embedded, cyclic structure; this basically means that "dependents that have same governor are not hierarchized" (Mazziotta & Kahane, 2017, p. 120).

Moreover, since in Jespersen's model dependences occurring between syntactic units (and thus between symbols) are *not* visualized by any means, but rather left implicit in the symbols themselves, we will convert the original notation into the graphical conventions we have applied so far, by introducing arrows (for directed connections), lines (for undirected connections), boxes (for lexical items or words) and exponents (for ranks). This should ease the visualisation of the vectorial aspect underlying Jespersen's theory.

3.1 Connection-basedness

The symbolic convention adopted by Jespersen does not allow the connections in themselves to be properly visualised: yet the connection is the ground idea implied by the very notion of *ranks*, as we have seen in all examples adduced so far. A lexical unit occupying rank 2 is automatically recognized as connected to a unit belonging to rank 1, and possibly with a unit belonging to rank 3, and so on. The existence of a function occurring between two units is thus conveyed by the symbols utilized for expressing the rank, so that the notation "21" always implies a (directed) connection occurring between 2 and 1, thus 2 → 1. This holds true for ranks, since subordination always implies such directed connection, but also for other symbols, such as Subject, Verb, Object and so on: in this case, the existence of the connection is simply presupposed, whereas its direction remains an issue to be cleared (→3.3). *Connection-basedness* seems to be validated by Jespersen's model.

3.2 Binarity

Implicitly, all connections occur between two items. This can be seen as a corollary of the principle of (semantic) *importance* or "*specialisation*", occurring between word and word as well as between word and word groups. In general terms, a function is only contracted by two units (Figure 12a) even if one of them may in turn be formed by a connection occurring between other units (Figure 12b)

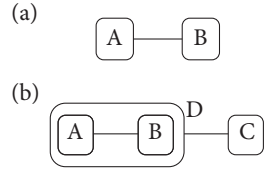

Figure 12. Diagrams of binary relations

However, such constructions are still binary. Moreover, a word group like the one labelled "D" and formed by the connection between A and B is still said to be analysed (at least ideally) in terms of ranks, so that there is always a word within a word group that attracts the government, even if it can be difficult to ascertain which one. In general, in Jespersen's model, it seems to be possible to resolve such complex constructions by diverging the connection between C and D to head within D (*in casu*: B), as in Figure 13 (the dashed line represents a reformulated connection).

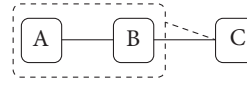

Figure 13. Breaking-down of constituent D (see Figure 12)

This is the basic operation allowing a syntagmatic structure to be converted into a dependency-tree (Gladkij, 1966; Kahane 2001, p. 4). We will discuss this possibility dealing with *flatness* (→3.5).

A peculiar case that could raise some doubts in relation to *binarity* is coordination. Apparently, in "Peter and John", the conjunction *and* contracts two non-headed connections, symbolized as follows: "S_1&S_2". As in all cases concerning connectives, which represent both the connection and one of the items connected, *and* could very well be a simple label for coordination, as in Figure 14.

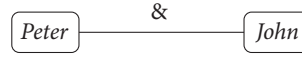

Figure 14. Proposed diagram of coordination as a binary relation

Yet this would conflict with Jespersen's ideal requisite of having all lexical items annotated. Another clue concerning the "flickering" status of coordination-connectives is provided by Jespersen himself:

> Combinations like *Peter, John and Mary came* should be symbolized "$S_1\&^0S_2\&S_3V$", where "$\&^0$" means that there is no *and* expressed. But no symbol is required for such cases of coordination as *He is often there* SV33 with two tertiaries.
>
> (Jespersen, 1937/1969, p. 113)

In the first case, apart from the latent unit (→3.4), the dependences should be visualized as in Figure 15 (always assuming the verb as secondary). No connections between ternary terms are implied, as the two conjunctions *and* (whether lexicalized or latent) are only contracted between subjects.

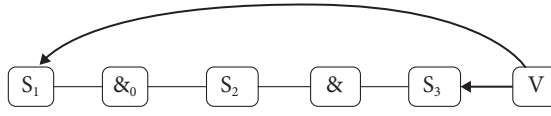

Figure 15. Diagram of a coordination with more than two conjuncts

The second case could be visualized as Figure 16a, implying a connection between ternary terms. Actually, the two tertiaries could be connected to the verb separately without any harm, despite the claim of a coordination occurring between the two adverbs, and this could be solved without a connection between ternary terms to ensue (Figure 16b).

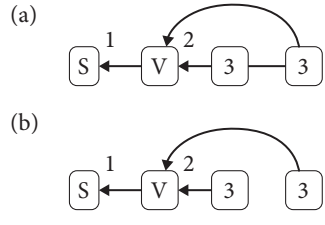

Figure 16. Alternative diagrams of simultaneous modification of a verb by two ternaries

If this is true, Jespersen's model may validate binarity. At any rate, since a coordination was said to occur in this case but not so in similar cases, this kind of dependency constitutes an open issue in Jespersen's model.

3.3 Headedness

Whatever may be said about the paradoxes and inconsistencies involved in Jespersen's "rank-parsing", namely, above all, the issue concerning *primaries* in nexus and junction, it is quite clear that the very idea of ranks implies that of a connection, and more precisely a *directed* one. Such directedness can of course be suspended in case of coordinated units, which imply a non-headed connection, yet it still holds for that very reason. As difficult it may be to find a *head*, the direction of the connection is always assumed to be present, at least ideally, in both junctions and nexus. No further proof seems to be necessary.

3.4 Node-to-word mapping

Jespersen's notation does make the reading quite cumbersome, as the matching between items and symbols is not always 1: 1. This applies particularly to the rendering of articles, latent entities, negative or passive verbs, genitive constructions and of course to the analysis of word-groups, which will lead us to the last feature, *flatness*. Let us take some examples.

In Jespersen's notational system, articles (being them definite or indefinite) are not considered to form distinct lexical elements (words) and are consequently merged with the corresponding substantive, as forming a single unit.[22] This however does not amount to say that they are left out of account: they are not mapped *because* are considered to be on a different level. See →2.1: no further examples are needed.

Composite verbs, as well as negation particles, are considered in the same way as articles: actually, Jespersen explicitly stated that "such combination […] as *the man*, *a man*, *has taken*, *will take*, *is taking*, etc. (generally also *to take*), even *can take*, are reckoned as one unit" (Jespersen, 1937/1969, p. 5) so that "sometimes the analysis has not been carried out to the bitter end" (Jespersen, 1937/1969, p. 5, note 1). Yet he did not use the morphological criterion implied in this choice: he rather spoke of "practical convenience" (Jespersen, 1937/1969, p. 92; cf. p. 91, § 28.3). So, in a sentence like "The man who killed Jaurès was not punished" (Jespersen, 1937/1969, p. 65), the verbal element "was not punished" is reckoned as a single unit (node) and symbolized accordingly "V^{bn}", thus as a verb ("V") in its passive form ("^{b}") and in a negative state ("^{n}"). We can thus assume that, in this regard too, negation and passive are considered morphological elements, and not lexical items.

---

22. This seems to suggest a morphological rendering of articles, as was for instance the case of Hjelmslev's analysis.

We will come back to this example, and to the following one too, when we deal with the rendering of word groups (→3.5).

As for genitive constructions, called "genitival adjuncts", let us take the following example: "His poor mother's heart" (cf. Jespersen, 1937/1969, p. 10). This junction was symbolized as "$1(1^2\,21)^21$", as the genitive particle modifies not just the rank of *mother*, to which applies, but the rank of the whole group *His poor mother* altogether. Such junction can be visualized this way (Figure 17).

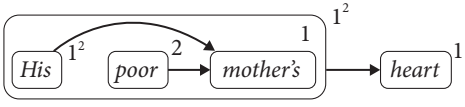

Figure 17. Proposed diagram of an embedded genitival adjunct

Therefore, there is no one-to-one proportion between symbols and lexical items: round brackets specify the extension of the primary unit composed by a whole word-group (*his poor mother*) and turned into a secondary by the genitive[23] which, however, applies to the sole word *mother* and thus is *not* symbolized as a raised ^{2}. Thus, the trait "node-to-word mapping" is not validated, as the existence of a noun phrase is suggested: indeed, the first "1" in the notation "$1(1^221)^21$" does not correspond to any lexical item, but to a whole group.

That being said, since the genitive only attaches to *mother*, which is actually marked as the only true primary of this group, *mother* can implicitly be assumed as the *head* of the construction, *i.e.* the true "relay" for the dependence directed to *heart*. A quite consistent way to flatten this type of construction would be to assign *his* to rank 2 and *mother's* to rank 1^2, as follows:

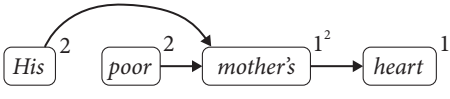

Figure 18. Diagram of a flattened genitival adjunct

Such a solution seems to be implicit in the construction, even if it can be brought to light through conversion. At any rate, this example leads us to a major issue in Jespersen's model, *i.e.* the treatment of word groups. The adoption of round

23. This treatment is similar to that of Tesnière, who "took the preposition to be a dependent of the noun inside a split nucleus" (Osborne, 2013, p. 265). At any rate, the notation proposed by Jespersen is ambiguous, since in most cases the raised index ^{2} *does correspond* to the genitive particle, cf. "John's old hat" $1^21(21)$ or – as Jespersen explicitly states – "simply 1^221" (Jespersen, 1937/1969, p. 10).

brackets in order to specify the internal organization of word groups, as well as the superscript "[2]" as a group modifier, entails a progressive complication in the symbolic apparatus that goes beyond simply word mapping: in this respect, it is not a matter of *word-to-node mapping* anymore, but of *flatness*.

3.5 Flatness

The last trait is surely the trickiest to check. We have seen above that there is a substantial degree of ambiguity in the way Jespersen treats word groups, as well as in the way he analyses the hierarchy of ranks within a junction or a nexus. Indeed, he admits that

> the group, whether primary, secondary or tertiary, may itself contain elements standing to one another in the relation of subordination indicated by the three ranks. The rank of the group is one thing, the rank within the group another. In this way more or less complicated relations may come into existence, which however, are always easy to analyze from the point of view developed in this chapter.
>
> (Jespersen, 1937/1969, p. 102)

This means that, at least ideally, he acknowledges a stratification in the treatment of word groups. The very graphical convention adopted, namely the use of round brackets, could be interpreted as a stratification of levels of analyses. Our opinion, however, is that brackets rather mark the extension of a group (phrase) and that the symbol which marks the syntactic role played by the whole group corresponds to the role of the *head* of that group. Thus, a conversion of the group-notation into a dependency-tree (→3.2), by transitivisation (Kahane, 2001, p. 3), seems to be possible – and even suggested by Jespersen himself. This could prove that Jespersen's model is quite close to Gladkij's syntactic trees.

Let us analyse the following two examples: "*Curious little living creatures*" (Jespersen, 1937/1969, p. 9) and "*John's old hat*" (Jespersen, 1937/1969, p. 10). Both of them were analysed by initially admitting the embedding of one or more word-groups, resp. 21(21(21)) and $1^2$1(21), and then they were reformulated without resorting to any sub-structure (Figure 19):

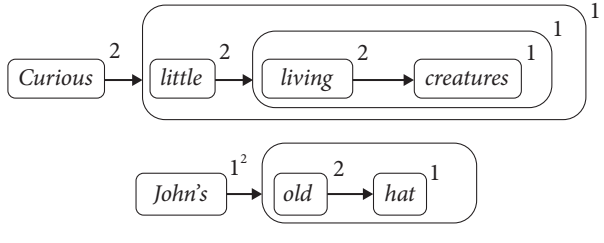

Figure 19. Proposed diagrams of embedded structures

The first junction "shows that *living creatures* is a primary in relation to both the preceding adjectives, *little living creatures* in the same way with regard to *curious*" (Jespersen, 1937/1969, p. 9), yet "no great harm is done by simply writing 2221" (Jespersen, 1937/1969, p. 9). As for the second junction, Jespersen states, it can of course be symbolised as "$1^2$1(21), or simply $1^2$21" (Jespersen, 1937/1969, p. 10).

The difference may appear slight, yet it quickly turns out to be a matter of principle. This means that the previous structures are said to be equivalent to the following ones:

The first set of diagrams (Figure 20) clearly resembles an ICA model, whereas the second set (Figure 20) is by far closer to dependency. What is important is that Jespersen clearly stresses the *mutual convertibility* of those formalizations, somewhat anticipating Lecerf's positions (cf. Lecerf, 1961). Therefore, in Jespersen's eyes no information is lost in the transition from the first set to the second set of structures, and vice versa. Let us take one last junction, and then we will consider two nexus.

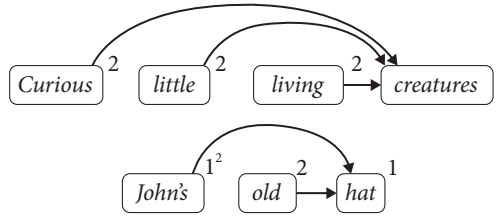

Figure 20. Diagrams of flattened structures

An old man with one foot in the grave is symbolised as follows: "212(p2^{q}1p1)". In this case we deal with two prepositions ("p"), which contract a headed connection with the corresponding substantive ("A") in conformity to the general principle according to which "the word governed by a preposition is a primary" (Jespersen, 1937/1969, p. 32), thus p → A. The symbolization can be visualized as Figure 21.

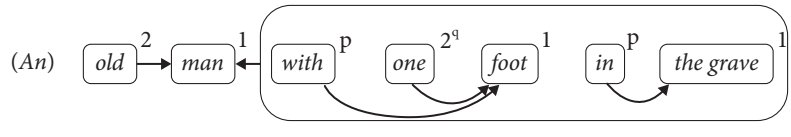

Figure 21. Representation of a constituent containing two prepositional governments

It shall be noted that *one* is a secondary serving as quantifier (2^q). By the way, nothing is said about a possible coordination occurring between *foot* and *the grave*, both primaries within the word-group (which in turn is a secondary in relation to the primary of the whole junction, *man*). Assuming the principle discussed above

(→3.2), according to which the dependency connecting the governonr and the word-group can be rewritten as a dependency occurring between the governor (*in casu*: *man*) and the *head* of that group (here: *foot* and *the grave*), the whole structure could be reformulated as in Figure 22. This conversion simply requires *foot* and *the grave* to be ranked as primaries playing the role of secondary (1^2) in relation to *man* (1). Moreover, if we do not consider the possible coordination between them (1^2——1^2), the word-group would now be resolved, in conformity with Jespersen's own suggestions, validating *flatness*.

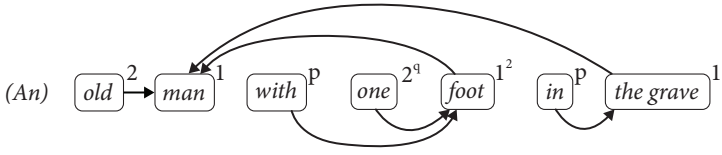

Figure 22. Speculative flattened reinterpretation of Figure 21

Finally, let us consider two nexus: "We met the kind old Archbishop of York" (Jespersen, 1937/1969, p. 12) and "The man who killed Jaurès was not punished" (Jespersen, 1937/1969, p. 65), respectively symbolized as "SVO(2212(p1))" and "S(12(S^cVO))V^{bn}". According to the word-groups signalized by the notation, assuming the following parsing "V = 2", "S = 1", "O = 1", and dropping once again the open question of coordination, both nexus are represented in Figure 23.

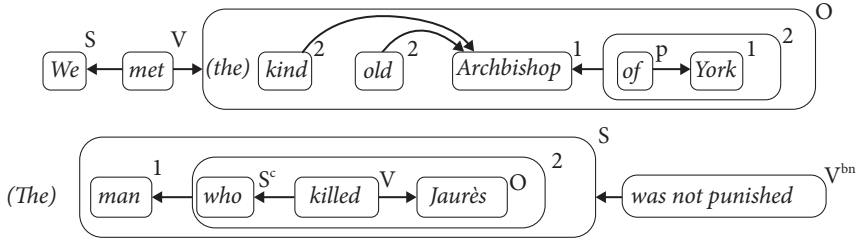

Figure 23. Proposed diagrams of embedded nexus

We can appreciate the flattened structure of the first nexus considering (1) that Object is said to be a primary in relation to a standard S–V–O construction, and (2) that the only primary within the word-group that can take on such syntactic function is the unit *Archbishop.* By transferring the function of Object to such a unit, which would then be ranked 1, the whole structure can be reconfigured accordingly (Figure 24).

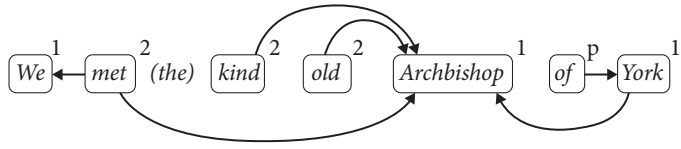

Figure 24. Diagram of a flattened nexus (I)

It shall be noted that, in order to be flattened, the unit *York*, within the prepositional group, takes on the rank-value of that very group, becoming 1^2.

As for the second nexus, the flattening is more complicated by the presence of a connective subject S^c (personal pronoun *who*). No indications concerning ranks of connectives are given by Jespersen. However, once again, the link between proper subject (S) and connective subject (personal pronoun: S^c) seems to be implicit in the very notation, so that a connection between the two could be inferred without any harm, by assuming that the connective subject is semantically closer to the proper subject (*the man*) and takes on the rank-value of the word-group it belongs to (*who killed Jaurès*), becoming 1^2 (Figure 25).

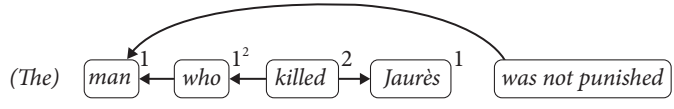

Figure 25. Diagram of a flattened nexus (II)

Still, if one sticks to the pure rank notation without regard to any indication of syntactic roles ("S", "V", "O", etc.), the issue of how to properly connect the three potential primaries (*man*, *who* and *Jaurès*) remains open: indeed, a coordination between the two "pure" primaries (*man* and *Jaurès*) could not be excluded. This, however, remains a problem stemming from the hybrid notation, rather than from the functional model of ranks: the very existence of a separate symbolic notation for nexus ("S", "V", "O", etc.) and for junction ("1", "2", "3", etc.) and the effort to reduce both those structures to ranks are two plainly conflicting claims. Jespersen's theory could validate flatness, yet this trait has to be brought to light by applying a conversion, even if on the base of suggestions and ideas which were explicitly given by Jespersen himself (yet never adopted consistently). Thus, dependency seems to be encoded in Jespersen's theory, but somehow lies dormant.

4. A case of critical reinterpretation

In the Thirties, Jespersen's model was clearly something like an obliged reference for linguists and countrymen such as Louis Hjelmslev (1899–1965), Paul Diderichsen (1905–1964) and Knud Togeby (1918–1974). Indeed, in his *Principes de grammaire générale* (1928), Hjelmslev carried out a long review of Jespersen's theory of *ranks* (cf. Hjelmslev, 1928, Chapter 2, §§ 29 sqq.), acknowledging him as having established a purely functional theory of subordination, by limiting the number of possible complements to three.[24] However, its major drawback is that, although having tried to restrict the interferences of logic to a minimum (→1), it is still *too logical*, as it fails to build upon a proper linguistic ground. Hjelmslev himself takes on the task of providing an intralinguistic foundation, by completely separating ranks and parts of speech (Hjelmslev, 1928, p. 128). However, his reformulation is not *syntactic*, but rather *morphological* (Hjelmslev, 1928, pp. 161–162).

The first step was to take account of the core notion of *function* provided by Jespersen (Hjelmslev, 1928, p. 122), by which Hjelmslev understood the faculty of some elements to combine only with (and through) some other elements (Hjelmslev, 1928, p. 127; specifically speaking, the faculty of semantemes (or bases) to combine only through given morphemes; cf. Hjelmslev, 1928, p. 123). Thus, subordination essentially entails a function. Yet, if the latter is conceived in proper logical terms, there would be no limit to the number of possible adjuncts, given the recursive principle according to which "an adverb remains an adverb even if it is combined with an adjective; […] Yet, given a chain of notions, a unit that characterizes a tertiary unit cannot be tertiary itself. It has to be quaternary" (Hjelmslev, 1928, p. 134, my translation), and so on for quinary terms, etc. Therefore, a non-extralinguistic criterion must be provided to limit the number of possible adjunctions and to establish a closed, not purely recursive inventory of pattern schemes. This criterion is found by Hjelmslev in the very concept of *government* (French "rection"), *i.e.* the directed connection occurring between two items such as a verb or a preposition and a case (Hjelmslev, 1928, pp. 138–139). Government is further broken down into

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24. As a matter of fact, Jespersen thought of expansions to quaternary, quinary terms, etc., as possibilities. Yet this assumption was somewhat dulled by the fact that "though a tertiary word may be further defined by a (quaternary) word, and this again by a (quinary) word, and so forth, it is needless to distinguish more than three ranks, as there are no formal or other traits that distinguish words of these lower orders from tertiary words. Thus, in the phrase *a certainly not very cleverly worded remark*, no one of the words *certainly*, *not* and *very*, though defining the following word, is in any way grammatically different from what it would be a tertiary word, as it is in *certainly a clever remark*, *not a clever remark*, *a very clever remark*". (Jespersen, 1924, p. 96) The core mechanism relies upon three terms, whereas all other terms are said to be recursive occurrences of the same mechanism.

two features: (1) *dependency* (the information conveyed by the function about the two connected items)[25] and (2) its intrinsic *meaning* (the information conveyed by the function about itself).

In the Latin expression *dabo fratri librum*, a connection occurs between *dabo* and *fratri*, as well as between *dabo* and *librum*, which Hjelmslev represents as Figure 26 (Hjelmslev, 1928, p. 138):

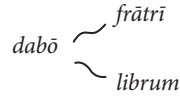

Figure 26. Hjelmslev's diagram of the analysis of *dabo fratri librum*

However, these connections do not properly occur between words, but between grammatical elements such as the verbal base and the case morphemes (resp. dative and accusative); nor are such connections of the same order: the indirect object relation, marked as "verb + dative", is said to be closer than the direct object relation, marked as "verb + accusative". In both cases, the government does not just express the idea of *dependence* (1), but also conveys the different *nuances* that this idea can assume (2). This subtle distinction provides the basis for a rather obscure and still semantically oriented tripartition of government (see Graffi, 2001, p. 192), which is divided into:

1. *pure government* (or *concord*),[26] in which the morpheme of the governed term indicates the simple syntactic connection, without further characterizing it (Hjelmslev, 1928, p. 140). Pure government is further articulated into:
2. *simple concord*, in which the morpheme of the governed term does not involve the meaning of the corresponding lexical base, functioning as a purely syntactical index (as for grammatical gender, for instance; cf. Hjelmslev, 1928, pp. 143, 146);
3. *complex concord*, in which the information conveyed by the morpheme of the governed term does not just signal the syntactic link, but also that the "part of the meaning of the connected terms is identical", as for the grammatical case,

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25. Cf. the definition of *dependence*: "A term is governed by a verb or a preposition: this basically means that this term represents a complement for the meaning of the verb or of the preposition, namely that from the point of view of meaning the relation between the verb (the preposition) and this term is closer than the one between the verb (the preposition) and the other terms of the same chain" (Hjelmslev, 1928, p. 138, my translation).

26. These terms translate the original French expressions *rection pure* and *concordance* (cf. Hjelmslev, 1928, p. 142).

person, number and article (cf. Hjelmslev, 1928, pp. 142 and 147). Ex.: Lat. *homo currit* 'the man runs'.

4. *complex government*, in which the information conveyed concerns not just the pure syntactic connection, neither the shared meaning, but the connection itself. This is said to be the case of the object relation for verbs and prepositions, or the government of adverbs by the corresponding verb (Hjelmslev, 1928, p. 147).

In the next step, Hjelmslev distributes *government* onto *ranks*, for which the following correspondences are observed: (a) within simple concord, the primary term is always governing, whereas the secondary term is always governed. Tertiary terms are always indifferent; (b) within complex concord, the primary term and the secondary term can both be governing or governed, depending on the circumstances (this means that there's no general way to discriminate between primary and secondary terms within complex agreement); tertiary terms are always indifferent, since the other terms can in no way impose their index on them; (c) within complex government, primary terms can be governing or governed (for instance: primary *hominem* is governed by secondary *videō*),[27] secondary terms are only governing (cf. Hjelmslev, 1928, p. 152: *videō hominem* or *parler lentement*), whereas tertiary terms can be both governing and governed (cf. Hjelmslev, 1928, p. 151; governed: Fr. *parler lentement* 'speak slowly'; governing: *certainly not* in the chain *a certainly not very cleverly worded remark*). The following table is thus set up:

Rank: / **Function:**	**1**	**2**	**3**
Simple concord	only governing	only governed	neither governing nor governed
Complex concord	both governing and governed	both governing and governed	neither governing nor governed
Complex government	both governing and governed	only governing	both governing and governed

By picking up the distinctive features of each rank, Hjelmslev finally puts forward the following general definitions:

- a primary term is a term that is governing in simple concord;
- a secondary term is a term that is governed in complex concord and governing in complex government;
- a tertiary term is a term that is indifferent in any kind of concord (cf. Hjelmslev, 1928, p. 153).

27. In this case, Hjelmslev adopts Jespersen's conception of the verb as secondary (whereas subject and object are primary terms) without further thought.

By this last step, Hjelmslev's morphological rearrangement of ranks is complete, yet it is far from being as immediately applicable as Jespersen's proposal was. Apart from an incomplete mapping of parts of speech connected to government, no real clues are given about how the various kinds of government are supposed to be identified in concrete analysis: for instance, we are told that number, person and case belong to complex concord whereas gender belongs to simple concord, and that ranks ultimately depend on government itself; yet an operational criterion for identifying it is missing, as the distinction rests mainly upon subtle (if not obscure) semantic considerations.[28] However, the basic ideas of Hjelmslev's approach are clear enough and have been further carried out in later works: the centrality of the very notion of *function*, and the pre-eminence of morphology.

Functions are said to lie at the core of language itself: they do not just bring units (called: *functives*) together, they constitute them in such a way that any unit or "object", whatever its extension may be, is conceived as an *intersection of bundles of dependences* (cf. Hjelmslev, 1961, p. 23).[29] From this perspective, any linguistic item, be it lexical, syntactical or morphological,[30] always presupposes one or more specific underlying functions. As a matter of fact, it is not by chance that one of Hjelmslev's major foci at the advent of the Forties was to establish a general typology of functions – an utterly abstract apparatus which was devised in *Prolegomena to a Theory of Language* (1961, p. 41) and whose scope was to secure the very epistemological premises of language sciences. Within such theoretical frame, the autonomy of syntax (as well as the appropriateness of notions such as "subject", "predicate" etc.) is resolutely denied (cf. Hjelmslev, 1928, pp. 154 and 160; 1961, passim).

Even if Hjelmslev's own reformulation of *ranks* was later abandoned, his morphology oriented dependency model still tapped the principles given in 1928. This can be fully appreciated in an example given in *La catégorie des cas* (1935–1937), in which the bundle of syntagmatic functions governing a sentence such as *rosa est pulchra* 'the rose is beautiful' is clearly represented in Figure 27 (Hjelmslev, 1972, p. 52).

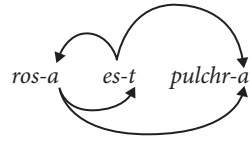

Figure 27. Hjelmslev's morphosyntactic diagram of the analysis of *rosa est pulchra*

28. Criteria for this were supplied and discussed later, in the paper *La notion de rection* (Hjelmslev, 1939/1971b).

29. Cf. similar claims found in Hjelmslev (1961, p. 23; 1970, p. 8).

30. This of course holds true for the phonological layer too.

In the example, case government is visualized by means of arrows occurring above the sentence, whereas other morphological government (namely person, number and gender) is noted below the sentence.

To discuss how these ideas were fully outlined in glossematics clearly goes beyond the scope of this paper. It is worth mentioning, however, that the lively debate between the members of the Linguistic Circle of Copenhagen (mostly Togeby, Hjelmslev, Uldall, Diderichsen) in the Fifties, focused precisely on how the traditional syntactic terminology could be interpreted in the light of glossematics' cumbersome apparatus of functions (cf. Sørensen & Spang-Thomsen, 1970, pp. 167 sqq.). Hjelmslev's radical redefinition of Jespersen's original terms *junction* and *nexus* (cf. Sørensen & Spang-Thomsen, 1970, pp. 130 sqq.); his resolute claim that sentence members are only variants (and not invariants, whose identification is the goal of analysis) and that syntactic functions always have a morphological base, occurring inside or outside specific syntagmatic units or their parts (thus being defined respectively as "homonexual" or "heteronexual", cf. Hjelmslev, 1938/1971a; Graffi, 2001, Section 5.2.5);[31] the progressive refinement of the notion of "rection" (cf. Hjelmslev, 1939/1971a)[32] as well as the problematic definition of "catalysis", conceived as a methodological operation consisting of the interpolation of latent material within syntagmatic chains making possible an exhaustive functional analysis (cf. Sørensen & Spang-Thomsen, 1970, pp. 139 sqq.; Hjelmslev 1948/1971c): all these issues were concretely discussed (cf. Sørensen & Spang-Thomsen, 1970, *passim*). On the whole, however, it can be assumed that glossematics deals with constituents only in a second stance, since the analysis of constituents presupposes the analysis of the corresponding dependencies that establish the former (cf. Graffi, 2001, Section 7.3.3).

31. This claim relies on the general conception that government (as a unilateral syntagmatic function of the type "determination") is contracted by *categories* of units, whereas single units mostly contract "constellation" (*i.e.* a kind of function describing free, unconditioned occurrence).

32. It could be worth quoting his idea of government (*rection*), given in 1939: "The notion of government involves by definition the idea of an orientation or a definite direction: government is a logical, irreversible movement going from a governing to a governed term" (Hjelmslev, 1939/1971b, p. 155, my translation). Moreover, in the very same article Hjelmslev explicitly evokes Jespersen's rank terminology (p. 156).

5. Concluding remarks

As anticipated, aspects of dependency in Jespersen's theory of syntax are not self-evident: indeed, they coexist along with more constituency oriented elements. In order to disentangle them and to thematise them properly, an interpretative operation is required: this can be done by converting (flattening) the syntactic notation proposed and by settling in one way or another those ambiguities that afflict Jespersen's model. Such manipulation is far from being external or arbitrary, as it can rely on suggestions, ideas, reformulations and alternative renderings explicitly discussed by Jespersen himself. Thus, dependency *can* be properly highlighted as an unavoidable characteristic of Jespersen's approach. This is even more so if Jespersen's legacy is taken into account, as Hjelmslev's own thorough interpretation clearly shows. From a very general point of view, the distinction between nexus and junction is more likely connected with constituency, whereas ranks are more clearly aligned with a dependency oriented approach. In Jespersen's view, the latter is undoubtedly more important and far-reaching than the former, as both junction and nexus were said to be ultimately reducible to ranks, which were at the basis of his ongoing efforts to discover the dependence patterns of word combinations.

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CHAPTER 8

The Russian trail

Dmitrievsky, the little drama metaphor and dependency grammar

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L. Tesnière is not the first inventor of dependency grammars. In fact, a "climate of opinion" can be formed without any direct contact in time and space between linguists who do not know each other but came to similar views because they met the same problems and were dissatisfied with the Subject/Predicate scheme of classical grammars. A comparison of L. Tesnière and A. Dmitrievsky is proposed here to reconstruct the multiple ways which led to the idea of dependency grammars, around the technical obstacle of impersonal syntactic structures.

> As far as linguistics is concerned, the revolutions have not consisted until now in a change of insight, but in a change in the center of interest itself.
> (Jean Stéfanini, 1994, p. 30, my translation)

By dint of looking for precursors of any linguistic theory, one would end up believing that the challenge of this endless quest is a sort of competition for a "copyright", especially when the forerunner belongs to the same *national* culture as the discoverer.

Thus, the Czech linguist E. Hajičová (1996, p. 266) thinks that L. Tesnière was "influenced" by the Prague Linguistic Circle in his idea of considering the verb as the center of the sentence. Similarly, the Russian linguist V. Khrakovsky (1983, p. 116) notes that the idea of the "little drama", the most famous metaphor of Tesnière's *Elements of Structural Syntax* (1959), comes from the Russian grammarian and pedagogue Aleksei Dmitrievsky (1856–1929), whose writing Tesnière could have been familiar with during his scientific missions in Leningrad in the 1930s.[1]

1. L. Tesnière, as a Slavist, carried out several scientific missions in Leningrad in 1926, 1929 and 1936. He had frequent contacts on this occasion with L. Scherba (see Tesnière, 1938?/1995b, p. 412, and Khrakovsky, 1983, p. 116).

https://doi.org/10.1075/slcs.212.09ser

In France, on the other hand, the most widespread image of Tesnière is that of the isolated innovator:

> The most innovative option of Tesnière is undoubtedly to have, when still very young, felt the need to break with the Aristotelian logic renewed by the grammatical tradition of Port-Royal. As such, he questions the canonical division of the sentence into a subject and a predicate […].
>
> (Preface of Madray-Lesigne & Richard-Zappella, 1995, pp. 9–10, my translation)

It seems to me that if trying to reconstitute a conceptual connection has any interest, it is not in the futile seeking for the ancestor of the trend of thought, but in the reflection on the fact that a "climate of opinion"[2] can be formed without any direct contact in time and space. It is within the frame of a questioning on the history of ideas in Europe (both Western and Eastern) that Tesnière and Dmitrievsky will be compared here.

Unlike the diffusionist hypothesis, which rejects the possibility of multiple inventiveness and posits that an invention can only be transmitted by imitation and contact, I propose here to examine the fact that researchers without any link between each other can reach conclusions that are identical or very similar, because they have read the same books, or they share the same "climate of opinion", or that they reject the same thesis, because they find it unsatisfactory. It is to the reconstruction of this climate of opinion that this article is devoted, around the history of the metaphor of the "little drama", symptom of a discussion at the source of dependency grammars.

2. "Climate of opinion", a term often used by Konrad Koerner (1976, p. 690) and taken up from Carl Becker (1932, p. 5), is much more flexible than the constraining frameworks of T. Kuhn's "paradigm", less pejorative that "doxa" in Roland Barthes, broader than "trend of thought". It allows not to decide *a priori* what will be a "mainstream". But it has the disadvantage of presupposing a contemporaneity (like the "Zeitgeist" in Goethe), whereas the thesis that I will defend here is that there can be a community of thought without any direct contact in space and in time. For lack of an alternative solution, however, it is this term that I will use here provisionally. The comparative approach makes fertile the "axiomatic" approach claimed by Pierre Swiggers (1982, pp. 29–30), consisting of identifying "theorems" allowing to "confront and compare several linguistic theories from the point of view of their presuppositions". However what remains to be found is an appropriate term for the object created by this comparison.

1. "Plato's theorem", object of stigmatization

The comparative orientation of this paper should, it seems to me, shed some light on an often debated question in the history of linguistic theories: is there continuity or discontinuity between the different ways of dealing with the science of language in general, and with syntax in particular?[3]

Let us take as a starting point the difference between two ways of analyzing the structure of the proposition: a binary structure of constituents in subject-predicate (henceforth "*S/P*"), derived from Plato (*The Sophist*)[4] and a relational structure of dependency (henceforth "*aRb*"), in other words the opposition between the syntax of constituents and the syntax of dependency.

Is the historical but complex transition from *S/P* to *aRb* analogous to an "epistemological break", or is it another way of looking at the same thing, or a shift in center of interest, to use J. Stéfanini's formula? (See Stéfanini, 1984, p. 78).

All that can be noticed, at a first stage of discussion, is that *aRb* has not reversed, nor made *S/P* impossible. The *aRb* design cohabits, in the teaching of syntax, with the *S/P* design, without ever being able to "falsify" it. A striking asymmetry is also worth noting: while all advocates of *aRb* explicitly oppose *S/P*, the contrary is not true.[5] There is thus a dominant model "by default", an evidence not called into question, and another one, essentially protesting against the latter, claiming novelty. From Plato to Martinet, a long majestic march marginalizes any alternative.

We will go in search of a notion to account for what connects Dmitrievsky and Tesnière; the spirit of neither time nor place concord, yet they have a common adversary: the use, felt as undue, of the model of Aristotle's logic in syntax.

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3. On the difficulties of using the notion of "paradigm" in the history of linguistic theories, cf. Sériot, 1995.

4. The expression "Plato's theorem" is borrowed from Sylvain Auroux (1996, p. 25). On the metaphysics of substance and accidents, at the origin of the division of judgment in Subject and Predicate, as well as on the divorce by non-explicit mutual consent between logic and grammar in Russia, cf. Sériot, 2000.

5. For example, the article (signed by N. Arutiunova) "chleny predlozhenia" ['members of the proposition'] of the *Lingvisticheskii enciklopedicheskii slovar'* (Iarceva, 1990) considers only the structure S/P, without referring to the alternative model of dependency; it is a model of constituents, where the key term is *sostav*: group, phrase, syntagma. "We distinguish the main members of the proposition: the subject and the predicate, and the secondary members: the determinants, the complements and the circumstants. The first distinction reveals two groups: the group of the subject and the group of the predicate, connected to each other by a predicative relation. The subject group, in the simplest cases, corresponds to the subject of judgment and the theme of the message (*soobschenie*), the predicative group to the predicate of the judgment and the rheme of the message. Thus, in the groups of the proposition, it is the logical function and the communicative function that are primary [*pervychnye*]".

If we try to reconstitute the case of the "little drama", according to what a quick and superficial investigation allows us to uncover, we find that the essential aspect which the dramatic metaphor reveals is a notable shift of emphasis from noun to verb, from *picture* to *action* (see Stankiewicz, 1974).

In 1759, the German linguist and pedagogue J.-B. Basedow (1724–1790) very traditionally considers the sentence to be a judgment linking a subject and a predicate, in the manner of Girard's grammar (*Deutsche Grammatik*). Nonetheless, in 1774, in his *Elementarwerk*, the sentence becomes the image of an *action*: "Abbild einer Handlung, mit Täter, Gegenstand und weiterem Beteiligten" ['Image of an action, with agent, object and further participants'] (the word *Handlung* 'act, action' is to be noted here). What happened between these two dates? The author's evolution of thought or some external event? Basedow, in any case, bridges the gap between Girard (who used notions like objective, terminative, etc.) and the interpretation enunciated, much later, according to *actants* (in French: *actantielle*).[6]

In the fourth volume of J. Grimm's *Deutsche Grammatik* (1822–1837), we find in the section entitled "Verbalrection" a certain number of characteristic notions of a theory of dependency, in particular the fact that the complements are dependent on the verb ("vom verb(o) abh(ängiger) acc(usativ)"), while the circumstants are not. Note that Grimm deals with the grammatical subject in the terminology of ("vom verb(o) abh(ängiger) nom(inativ)"), thus abandoning any hierarchy between cases (quoted after Maxwell, 1987, p. 569).

The dramatic metaphor seems usual, including in France as early as the 19th century. It is often linked to what D. Samain called the "Indo-Germanic myth", that is to say this idea, already found in Humboldt and then, more decidedly, in Steinthal, that the Indo-European sentence would present a "dynamism" (key-term) which would be lacking, for example, in agglutinating languages (Samain, 1998).

Bréal, in his 1897 *Essay of Semantics*, considers that the passive *construction* derives from a reflexive form. According to him, there is a difficulty in creating an Indo-European passive. Not that there it would be more difficult to understand *I am struck* than *I strike*.

> The difficulty came from the organization of our languages, which is in contradiction with the passive idea, the Indo-European languages presenting the sentence in the form of a little drama, where the subject is always acting. Even today, faithful to this plan, they say: "le vent agite les arbres ['the wind shakes the trees'], […] la fumée monte au ciel ['the smoke rises to the sky'] […]".
>
> (Bréal, 1897, p. 86, my translation)

6. See the fundamental work on the history of syntax in Germanic countries by Glinz (1947, p. 32), and, more specifically, Baum (1976). For Russia, see Vinogradov, 1958, and Comtet, 1997.

Similarly, for Jespersen, in *The Philosophy of Grammar*, "A junction is like a painting, a nexus like a process or a drama" (Jespersen, 1924, p. 115; see also Cigana, this volume, Chapter 7, Section 2.1). He makes similar remarks in *Essentials of English Grammar*: "A junction is like a painting, a nexus is like a drama or a process" (Jespersen, 1933, p. 95).

We can finally mention Sechehaye (*Essay on the logical structure of the sentence*, 1926):

> We interpret the phenomena whose beings are the theater, and the relations between themselves or with us like a sort of drama where some beings act and others sustain [*subissent*] or, to say this better, where the same beings are seen, according to the circumstances, as acting or sustaining. Everything in the spectacle that the world offers us is animated by our sympathy. (p. 49–50, my translation)

In Sechehaye, linguistic categories have a semantic (or even ontological) foundation. The little drama naturalizes the semantic hypothesis, which, for him, underpins the grammatical categories.

> The category of the process is the result of a dynamic and, so to speak, dramatic conception of the spectacle that the world offers us […]. (p. 55, my translation)

From these authors we note the explicit relation between the structure of the proposition and the notion of *action*, or *activity*, which some of them reserve for Indo-European languages only, while the others make it a general property of any language. In fact, there is more than representation in the metaphor of the drama: there is the *dynamics* of the subject/object relationship, the opposition between active and passive. It is an implicit anthropology of human relationships that is revealed in this metaphorical set. Let us say in this first approach that the metaphor of the drama is a topos of the time, almost commonplace.

2. Tesnière, reader of Humboldt

Tesnière develops the "little drama", but seems to neglect the ideological context in which this metaphor appeared: if he also opposes dynamism and statism, it is in another sense: not as verb and noun, but as syntactic functions and parts of speech.

Yet, it is of utmost importance to take metaphors seriously, which are not mere rhetorical ornaments of a statement. It is in the field of *chemistry* that Tesnière finds his inspiration and his justifications:

> § 6 It works the same way in chemistry, where the combination of chloride Cl and sodium Na produces a compound, sodium chloride NaCl, or table salt, which is a completely different substance and presents totally different characteristics from chloride Cl on the one hand and sodium Na on the other hand.
>
> (Tesnière, 1966/2015, Chapter 1)

We identify here the very terms of "holism", so common in the years 1930–1960, later called "emergentism", and which are based on the principle that the whole is more than the sum of the parts. But we must remember that the philosophy of natural sciences was fashionable in the time of Humboldt, when any intellectual, even a linguist, devoted himself to physics or experimental chemistry, less, in fact, to discover new facts than to look for speculative models. The notions of *structure, system, organization*, synonyms at the time, find their source in this philosophy.

Another discreet allusion made by Tesnière should draw our attention: it is a reference to Humboldt and to an organicism operating on the axiological opposition between the "living" and the "dead". Indeed, if the connection gives the sentence its "organic and living" character, it is because it constitutes its "vital principle" (Chapter 1, § 8):

> § 9 To construct a sentence is to breathe life into an amorphous mass of words, establishing a set of connections between them.
>
> § 10 Conversely, understanding a sentence involves seizing upon the set of connections that unite the various words. (Chapter 1)

See also note 3 (Chapter 1, § 3) with the metaphor of the *living natural environment*:

> It is moreover by way of pure abstraction that we isolate the word from the sentence, the latter being the natural environment in which the word resides, like a fish in water. That is why the dictionary – which is the result of work that involves taking segments of linguistic reality and separating them from their natural habitat – is inevitably a dead entity.

Or Chapter 22, § 14:

> The nucleus is ultimately the elementary syntactic entity, the fundamental material of the structural frame of the sentence; it is in a sense the constitutive *cell* of the living organism that is the sentence.

Tesnière insists that this notion of connection, "most often purely interior," corresponds to W. von Humboldt's "*innere Sprachform*, the interior form of language," (Book A, Chapter 1, §12). He pays tribute to Humboldt, "a first-class linguist, with the intuitions of a genius, […], friend of Friedrich Schiller and Goethe, as a mind far superior to that of Bopp, who never rose beyond the level of a good specialized technician." (note 6, p. 5). The fundamental point here, in this cavalier attitude towards the "technician", is that the "fertile notion of innere Sprachform" makes it possible to counter the fact that

> linguistics, under the influence of morphologists, has established, as its Euclidian postulate, that it would be concerned only with facts of language perceivable in terms of concrete form, that is, with facts that have an exterior form. This postulate has amounted to the a priori negation of the notion of *innere Sprachform*, since *innere Sprachform* is by definition interior to language. (note 5, p. 5)

This anti-morphological stance, critical of a reduction of the analysis to the "technique", surprisingly reminds one of Jakobson's arguments, constantly reiterated in his negative judgments on the "blindness" of "positivists" (see Jakobson, 1929/1988, pp. 54–55). But above all it leads us to the path of a whole background, which we could call ideological, of the history of linguistic thought, taking its origin in German romanticism and then in Steinthal and his explicitly anti-logicist attitude.

Finally, let us note another aspect of Tesnière's thought in relation to Humboldt,[7] i.e. the theme of the reflection of a specific culture in language:

> §12 For each language, there is therefore an optimum number of categories. This number is a function of the complexity of the civilization that needs to be expressed and it constitutes an equilibrium that is attained automatically thanks to the mere functioning of the language. (p. 42)

By claiming the autonomy of syntax in relation to logic and psychology, Tesnière fits perfectly into the currents of his time (see §§ 18–21, page 35). Yet his treatment of the relationship of categories and functions is highly contradictory. On the one hand, he makes a particularly clear distinction between the categories ("static and inert element") and the functions ("dynamic and living element") (page 42), that the relations between the violent Alfred and the unfortunate Bernard will make clear:

> §3 Take for example the sentence *Alfred hits Bernard* (Stemma 6). If we consider the categories, we observe that *Alfred* and *Bernard* belong to the noun category, and *hits* to the verb category. But if we only consider them from this point of view, these words teach us only that there is a person named Alfred and a person named Bernard and an action of hitting. They teach us nothing about the organic bond that unites the three elements when they are isolated in a sentence.
>
> §4 If, however, we take their functions into consideration, we observe that *Alfred* fulfills the function of subject, *Bernard* that of object, and *hits* that of the verbal node. From this point of view, everything becomes clear: the connections are established, the inert words become a living organism, and the sentence takes on its meaning.

7. In Tesnière's time the theories derived from Humboldt were very little known and quoted in France. It was necessary to accept a great marginality to refer to them. Probably only a linguist who was both a Germanist and a Slavist could feel familiar with this intellectual world.

In his typological perspective, Tesnière emphasizes that "categories vary considerably across languages, whereas functions always remain more or less identical" (Chapter 25, § 7). In other words, using Tesnière's terminology (*ib*., §10), we can say that the static, morphologically-based syntax distinguishes languages, whereas the dynamic, "living" syntax, which uses functions, is universal. Now, if the dynamic syntax refers to the *internal form of the language*, it is no longer very clear how the latter could be at the same time specific to each language.

Tesnière defines function by dependency (a term which itself is never defined), or, more precisely, in any function he sees a complementation. However, his terminology is hybrid, because the syntactic function is defined at the same time, or in addition, in *another dimension*, by what we would now call the "semantic role": the first actant is the subject, the second actant is the object of the active verbs or the agent of the passive, and the third actant is the beneficiary. We will see that this semantic definition of complements clearly opposes Tesnière and Dmitrievsky.

Tesnière, like the former opponents of the S/P scheme, reduces the predicate to being only one element of the sentence (and no longer the totality of what is said of the subject). In so doing, he removes all privilege from the subject, which is nothing more than one of the actants. But by conferring on the subject a determinate semantic role, he is inconsistent with his own program of separation of syntax and semantics.

Tesnière follows the Humboldtian line of the verb as the center of the proposition, but he goes further than Humboldt, who keeps the dual relationship S/P. For Humboldt, the verb is the basis of the synthesis that any proposition forms. Thus, the verb is fundamentally different from all other parts of speech, since it is the only one with the capacity to "realize a synthesis as a grammatical function":

> All the other words of the sentence are like dead matter lying there for combination; the verb alone is the centre, containing and disseminating life. Through one and the same synthetic act, it conjoins, by *being*, the *predicate* with the *subject*, yet in such a way that the being which passes, with an energetic predicate, into an action, becomes attributed to the subject itself, so that what is *thought* as merely capable of conjunction becomes, in *reality*, a state or process.
>
> (Humboldt, 1836/1988, p. 185)

Humboldt considers the verb essentially in its syntactic function, i.e. in its function of connection between the subject and the predicate, whereas the grammatical tradition considered morphological properties above all (such as the capacity to express time). Moreover, this function, which was primarily syntactic, had already been emphasized in the grammar of Port-Royal, which defined the verb as "a word whose principal use is to signify the affirmation, that is, to shew that the discourse in which this word is used is the discourse of a man who not only has a conception

of things, but moreover judges and affirms something of them" (Arnault & Lancelot, 1676/1753, p. 91).[8]

On this precise point (it is undoubtedly the only one), Humboldt does not deviate from the *Grammar of Port-Royal*, according to which the verb is *vox significans affirmationem*, polemically against the old, morphological and semantic, definition of *vox significans cum tempore* (as in Aristotle).

> The verb of itself ought to have no other use but that of making the connexion, which we make in our minds, between the two terms of a proposition.
>
> (1676, p. 79, 1753 p. 92)

But if for Port-Royal it is clear that the proposition is the expression of a judgment, Humboldt takes care to distinguish the logical notion of judgment from the grammatical notion of proposition, or sentence, thus preparing the way for the "divorce" of grammar and logic, proclaimed by Steinthal (1855). Humboldt even refers to the categories of subject and predicate as "purely logical".[9]

It seems to me that Tesnière is struggling between a Humboldtian conception and the modern tendencies of his time. He is a link in the chain of discussions in syntax, not an isolated innovator or solitary genius.

3. Dmitrievsky and anti-nominativism

What was Tesnière doing in Leningrad during his three scientific missions, and what did he find? For the time being, without having been able to consult Tesnière's personal archives, one can only trust what he himself says in the *Elements* or in his published activity report:[10]

> Sent on a scientific mission to the USSR in 1936 and having bought some Russian grammars there, I had the joy of discovering that the idea for the stemma had germinated there independently. The earliest grammar with stemmas that I found was that of Ušakov, Smirnova, and Scheptova, *Uchebnaia kniga po ruskomu iazyku* 'Manual of Russian', Moscow-Leningrad, Gosizdat, 1929, 3rd part, pp. 6–7, and 4th part, p. 5. I was told that MM. C. Barxudarov and Princip, students of Prof.

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8. On the relationship between verbocentrism and the notion of dynamism, cf. Gasparov, 1995; on the "ideology of Life", cf. Gadet & Pêcheux, 1981.

9. Humboldt, 1827, pp. 68–69, quoted after Graffi, 2001, p. 25.

10. These points of the report are astonishing: in the middle of the Marrist period, he has no difficulty in finding traditional grammars in bookshops. In full Stalinist terror (1936!), he does his shopping … This silence deserves to be noted and meditated.

> L. Scherba, had utilized the stemma from 1930. And I found stemmas again in *The Grammar* of Kriuchkov and Svetlaiev, Moscow, 1936, pp. 6 and 7.
>
> (Tesnière, 1966/2015, p. 8)[11]

> One of the external characteristics of the method I advocate is the representation by 'stemmas' of the structural schemas that subsist behind the linear appearances of the spoken chain. I am very much expecting, from an educational point of view, the application of this method, which the Russians have practiced in primary school for several years. (Tesnière, 1938?/1995a, p. 408, my translation)

But he makes a restriction, which supplies an important clarification for our purpose:

> One should note that while the fundamental idea is the same, the details of its application are different. Russian linguists express the opposition between the subject and the predicate in their stemmas, a conception of the sentence that I take for grammatically erroneous (see below, Chapter 49, §2 sqq.). Therefore, the stemma appears, at least in the grammars I know and have just quoted, only in a very fleeting and transient way, as the demonstration of a principle. It seems to me that these Russian authors have neither recognized the practicality, which seems obvious to me, nor foreseen all the developments to which the stemma can lead.
>
> (Tesnière, 1966/2015, p. 8)

As it is difficult to believe that as scrupulous a scientist as Tesnière deliberately silenced his discovery in Leningrad of nineteenth century linguists engaged in questioning the S/P relationship, it is clear that the hypothesis of a first-hand knowledge of Dmitrievsky by Tesnière lacks substance.

This is why I will stick to the hypothesis of a *climate of opinion*, or, even more programmatically, of a *current of thought*. The preceding chapter was necessary to understand how both Tesnière and Dmitrievsky are, each in his place and time, impregnated with Humboldt's thinking.

Aleksei Afanasevich Dmitrievsky, a teacher of Russian in the secondary schools of Korocha, a city in the south of Russia, was close to the linguistic ideas of the Khar'kov school (A. Potebnia). Given his positions in grammar we can relate him to the current of "Slavophile linguistics".[12] Shortly after a group of teachers of the University and high schools of Frankfurt had conceived, in 1817, the project to

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11. It should be noted that the connection between the notion of dependency and the theory (or metaphor?) of the valency is developed in the USSR at the same time: "One can call syntactical valency (*valentnost'*) the property that a word has to manifest itself [*realizovat'sja*] in a particular way in the proposition and to enter into particular combinations with other words "(Kacnel'son, 1948, p. 132, cited by Kibardina, 1985, p. 181).

12. On "slavophile linguistics", see Gasparov, 1995; on Dmitrievsky, see Khrakovsky, 1985.

create a grammar of German "completely free from the chains of Latin grammar",[13] in Russia the Slavophile linguists proposed in turn not to "put on the glasses of the foreigners" (understand Latin and German grammars) to study the Russian language.[14]

From his pedagogical experience, Dmitrievsky brings a contribution to the analysis of the structure of the proposition by putting forth a bold and radical solution to a problem which, at that time as well as now, caused much ink to flow: "impersonal constructions". In a readily polemical tone, he clearly refutes a position that could be called *reductionist*, which consists in bringing impersonal constructions down to the binary structure of the categorical judgment, one way or another. At the origin of these attempts at normalization one finds the presupposition that the Subject-Predicate structure is, for any proposition, not only the dominant prototypical scheme, but also the general model, or even the only possible form. Such a principle once admitted, when one meets with propositions which, like impersonal propositions,[15] are devoid of subject, the only possible solution is to claim that the absence of a subject is only apparent and to develop any procedure whatsoever to reconstruct the missing term (Berrendonner & Sériot, 2000b). It is a long line of thought that is thus taking shape, in authors as different as Port-Royal and Steinthal.

Dmitrievsky explicitly opposes any paraphrastic tinkering, whether it is realized in scholarly discourse (Buslaev, 1818–1897) or in school grammars of his time (Govorov, Milovidov), consisting for example of giving a reference value to the third-person morphological features displayed by unipersonal verbs (Buslaev in 1858 thus analyzes the *-t* in *svetaet* 'it is clear', as does Becker (1827) for the *-t* of Latin *volat*.)[16]

Unlike Tesnière, Dmitrievsky does not confuse syntactic function with word class (or *part of speech*). He is much more engaged in a practical struggle against the dualistic or dichotomous logical conception of sentences, against the "duumvirate", which he proposes to replace with the "decemvirate" of syntactic functions (Dmitrievskii, 1877b, p. 19).

Yet, Dmitrievsky and Tesnière alike are pedagogues fighting against heavy dogmas, full of innovative ideas but little listened to in their lifetime.

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13. On *Frankfurtische Gelehrten Verein für die deutsche Sprache*, see Hiersche, 1979, p. 24.

14. This expression belongs to K. Aksakov, 1855, p. 8. On slavophile linguistic views of K. Aksakov, see Sériot, 2003.

15. On the problem of the subject in impersonal constructions in Russian, see Guiraud-Weber, 2002.

16. See Hiersche, 1979, p. 26.

In the years 1860–1880 in Russia (the time of the "great reforms" of Alexander II) the idea that the subject can be found not only in the Nominative but also in an oblique case started spreading. At the root of this conviction is the great productivity of impersonal sentences in Russian, providing an unavoidable counter-example to the dogma of the necessarily binary character of the proposition (model *S/P*).[17]

What is at stake in the discussion of impersonal structures is the notion of *completeness* of the proposition (and thus that of "complete thought"): is there something missing in impersonal sentences? Are they defective?

Dmitrievsky's struggle against "Nominativism" leads to a radical questioning the notion of subject and its link to the Nominative case. By his relegation of the subject to the rank of "complement like the others", by the explicit hierarchy which he establishes between the verb (only "main member of the proposition") and the complements ("secondary members"), Dmitrievsky prepares the way to the delineation of the proposition, the last step before the graphic representation popularized by Tesnière, but used at the end of the 19th century in Germany (Rousseau, 1995, p. 76 sqq.) and Russia (Tesnière, 1966/2015, p. 8).

> The predicate is the absolute ruler, the Tsar of the proposition.[18] If there are in the proposition, besides him, other members, they are strictly subordinated to him (*podchineny*), and it is only from him that they acquire their meaning and their importance; if there is no other member, even a subject, the predicate alone expresses thought and constitutes a complete proposition. In other words, the proposition itself is nothing else than the predicate, either alone or with other members.
>
> (Dmitrievsky, 1877b, p. 23, my translation)

The fundamental operation realised by Dmitrievsky as by all the defenders of the *aRb* structure is what one can call the "downscaling of the subject" (Figure 1):

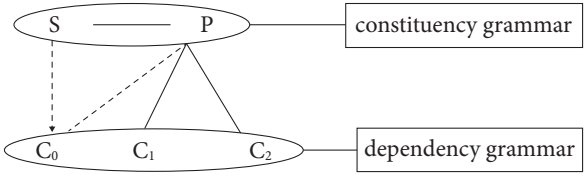

Figure 1. Dmitrievsky's "downscaling of the subject"

17. It was not until 1883 that Fr. Miklosich's major book *Subjektlose Sätze* appeared in Vienna in German, the thesis of which is that the so-called "impersonal" structures are "sentences without a subject", *i.e.* with a single member. This position was violently rejected by many grammarians at the time. See Fici-Giusti, 2000.

18. This supremacy of the predicate had been a cliché of grammars for about a century. See: Meiner, 1781, p. 127: "The predicate is the most noble part of the sentence, since the whole sentence unfolds from it" (quoted by Hiersche, 1979, p. 27).

But by changing the status of *S*, which ceases to be a "main member", it is the nature of *P* that changes as well. *P* is no longer one of the poles of a relation, it becomes the center, or pivot, of a relation. It thus acquires a double status, which it did not have before: both a *term* (the verb in Tesnière) and a *relation*, whereas the grammars of constituents radically differentiate the term (verb) and the vertex of the relation (VP).

The question asked by Dmitrievsky is how to link the parts of speech with the syntactic functions – which he names "members of the proposition" (*chleny predlozhenia*), in the Russian way, inspired by the terminology of the Abbé Girard (*membres de phrase*), passed to Russia through his German commentators (*Satzgliedern*).

Dmitrievsky takes the parts of speech for granted; what he calls into question is the relation between grammatical categories (cases) and functions.[19] He relies on the great variety of verb agreement in Russian to regard that each verb has its own complementation system.[20] He does not make any reasoning based on semantics. Only the pattern of agreement counts. This is a morphological-based syntax. For example, Dmitrievsky distinguishes:

- the intransitive verb: a verb with "complement in the Nominative": *svischet solovei* 'whistles (the) nightingale';
- the predicate with complement in the Dative: *zhal' mne* 'woe unto me ';
- the predicate with complement in the Instrumental: *zapakhlo dëgtem* 'it smells tar'.

There are still many problems that Dmitrievsky has not solved, such as the verbs that Tesnière calls *divalent*. Dmitrievsky considers that *chitaju knigu* ['(I) read (a) book (Acc.)'] is a verb with a complement in the Accusative, but he says nothing of the difference between the complements in *solovej poët pesnju* ['(the) nightingale sings (a) song'].

His arguments are often based on empirical obviousness:

> Is it not obvious from these examples that for a predicate the nearest complement is the subject, for another it is any of the complements, which is as important for the latter as the subject for the former? The subject thus plays a role as secondary in the proposition as the complement.
>
> (Dmitrievsky, 1877b, pp. 29–30, my translation)

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19. On the relation between cases and functions in the grammatical literature in Russia, the bibliography is huge. The most famous work, which relies much on the Russian linguistic production of the second half of the 19th century, is R. Jakobson's "Beitrag zur Allgemeinen Kasuslehre" (1936, repr. 1971). For a summary on this question outside the Russian domain, see Serbat, 1981.

20. On the invention of the notion of complement, see Chevalier (2006).

The fact that the predicate has the main role in the proposition allows Dmitrievsky to broaden the scope of the concept of "verbality" (*glagol'nost'*) and "conjugality" (*spriagaemost'*), and the term "metaphorism" of language [*metaforizm iazyka*] that he coined[21] corresponds very closely to Tesnière's *transfer* (in French: *translation*). For example, when a noun without a verb takes a predicative function, it receives a "verbal form, or conjugability, and thus has the mark of the present" (e.g.: *Zemlja – planeta* ['(The) earth (is) (a) planet']).

Finally, the very fact of insisting on the rather different forms of predicate brings water to his mill in his refusal of the logical conception of the proposition, which "reduces and impoverishes the notion of predicate" (Dmitrievsky, 1878a, p. 49).

Dmitrievsky does not ignore the counter-argument of the agreement of the verb with the subject in Russian; on the contrary he devotes a long development to it. It should be noted first of all, according to him, that the agreement (*soglasovanie*) is not the same thing as dependency, which he calls governing (*upravlenie*): the dependency takes its sense from the notion of complement, notion still very recent, which implies the much more fundamental one of *completeness*: at what point can one consider that a proposition is completed?[22]

The subject is governed by the predicate, even if there is often agreement of the verb with the subject:

> The subject, being governed by the predicate (*pod upravleniem skazuemogo*), often exerts itself an influence on it, which is expressed in the agreement of the predicate with the subject. (Dmitrievsky, 1878a, p. 45, my translation)

But Dmitrievsky's main argument is that the agreement is not a general rule. He gives many counterexamples:

(1) *Prishli Ivan s Petrom.*
came Ivan with Peter
'Ivan and Peter came.'

(2) *Mnogo soldat ne vernulis' Domoj.*
many soldiers.GEN.PL not came.back home
'Many soldiers did not come back home'

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21. Dmitrievsky, 1878d, p. 79.

22. Let us recall that for Priscian (in a tradition that goes back to Dionysius of Thrace), "oratio est ordinatio dictionum congrua, sententiam perfectam demonstrans" ['a proposition is a combination of coherent words, expressing a complete thought'], Priscian: *Institutiones grammaticae II*, 4.15, quoted by Graffi, 2001, p. 113. But Priscian does not explain what a coherent combination of words is, nor a complete thought.

> The agreement of the predicate both with the subject and, often, with the complement does not mean that there is pre-eminence of the subject, much less of the complement, but that the flexional predicate functions with all of its attributes necessary to attract the secondary members: by appearing with its marks of person, of kind, of number and even of cases, it opens its arms, one can say, so that the secondary members closely associate (*primykanie*) with it.
>
> (Dmitrievsky, 1877b, p. 31, my translation)

The subject is thus a variety of complement, without any semantic definition:

> The complement answering a question in the Nominative is called subject, or nearest complement (*blizhaishee*); the one which answers a question in the Accusative without preposition is the direct complement, the one which answers a question in all the other cases or in the Accusative with a preposition is an indirect complement.
>
> (Dmitrievsky, 1880, p. 14, my translation)

Dmitrievsky fits perfectly into the anti-logicist trend that runs throughout the nineteenth century in all the European countries, using, more or less explicitly, psychological concepts. It is from this whirlwind of vitalist, energetic and dynamic metaphors that the one which concerns us here was born: the "little drama".

Before going further, it must be emphasized, that the word *drama* in Russian, as in English, designates any theatrical plot, and does not have the connotation of something "dramatic" or "tragic" that it has in French. This point should be taken into consideration in this discussion of Tesnière's sources of inspiration.

Let us take a close look at the extracts in which Dmitrievsky develops his metaphor of the drama.[23]

> The grammatical proposition states thought at the very moment of its process, it represents [*izobrazhaet*] in front of us the very movement of thought. Thus we can say that the proposition is a drama, a representation of thought by means of a word, which is like an actor of this scene that is thought. On the contrary, logical thought is like the epic of thought, it considers its process once accomplished, as the epic is the story of an accomplished event. It is true that logic also considers thought in a dual way: actively, as it happens in the forms of judgment and deduction, and passively, as it happens in the forms of representation and concept, but both in the past, as something given. The proposition, on the other hand, represents thought as something that gives itself (*nechto dajuscheesia*) by means of the word, it is thus the flesh of the flesh of thought, the plastic of thought.
>
> (Dmitrievsky, 1877a, p. 12, my translation)

23. Dmitrievsky's original Russian texts can be found online on the CRECLECO website (Center for Research on Comparative Epistemology of Central and Eastern European Linguistics): http://crecleco.seriot.ch.

We see that he resumes the tripartition of the Grammar of Port-Royal between *conceiving*, *judging* and *thinking*, but by doubling it with an opposition between logic and grammar.

He thus addresses the notion of complement:

> The complement represents the medium[24] in which appears the characteristic (*priznak*),[25] designated by the predicate. This medium, this circle in which, as it were, the characteristic-sensation[26] turns, is constituted by the objects (*predmety*) which, by their respective positions and their respective relations, produce the characteristic-predicate, in the same way as characters of a scene, through their reciprocal play and their common interpretation of a drama, give the viewer a clear notion (*predstavlenie*) of the idea that permeates the dramatic work.
>
> (Dmitrievsky, 1878c, pp. 75–76, my translation)

It is the same metaphor that he adopts about the definition of the circumstants:

> If the complement represents before us the circle of objects from which the characteristic-sensation appears, expressed by the predicate, the circumstant draws for us the situation (*obstanovka*) in which the characteristic-predicate appears in the speaker. If the objects which constitute the complements recall the characters of a scene for a spectator, i.e. the idea which is expressed by the predicate, the circumstant represents the scene itself, on which the drama of the thought expressed by the proposition is played out. Any dramatic work, regardless of the talent of the artists playing it, recreates human life adequately in front of the audience only when it is played on a stage specially constructed for that piece, that is to say in the situation in which the facts and events of human life represented on stage have taken place in real life.[27] The facts and events of real life cannot take place outside time and location. This is why the arrangement of the scene when the play is performed fully contributes to the illusion of the spectator, representing before

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24. We move here from the metaphor of theatrical *representation* (in the mode of *copy*) to that of the *medium* (that is to say, of *participation*, or of *Life*, once again), as we have seen in Tesnière.

25. I translate, for lack of anything better, *priznak* by 'characteristic', a term that should subsume 'quality', 'property', 'attribute', that is to say all that the predicate brings, or does to the subject, i.e., the "accidents". We always fall back into Aristotelian metaphysics, whatever the meritorious efforts to get rid of it.

26. The insistence, constant in Dmitrievsky, that it is the sensation (the word *vpechatlenie* can have this meaning, and not only that of *impression*) which is at the base of our thoughts strongly recalls Condillac and the school of thought of the *ideologues*. If this were to be confirmed, it might be a confirmation of Aarsleff's (1982) thesis on the close connection between Humboldt's thought and the school of the *ideologues*.

27. I think that the expelled semantics here comes back with the metaphor of realistic drama and the problematic of *reflection* (at this time it is the peak of realism in Russian literature).

> him, in conformity with reality, not only the place and its extent, in which life is performed on stage (fulfilling the conditions of space), but also the time, within the framework of which the events in question have taken place, the time of the day, the season, the century itself (fulfilling the conditions of time).
>
> (Dmitrievsky, 1878d, p. 75, my translation)

In a review article, even more controversial than the previous ones which he had published in the same review *Filologicheskie zapiski* (1878e), published in Voronezh, he takes up the obsessive problem of impersonal structures to undermine the binary model of the proposition.

After rejecting the idea that impersonal propositions (which he calls *odnochlennye*: one-member, or monorems) can correspond to an archaic state of the language, then recalling that they are, on the contrary, a "living testimony of the whole history of the language" (p. 16), and that their use, far from decreasing, increases with time (p. 17), he states his fundamental thesis: the two-member propositions are only a special case of a unique type of proposition at all, centered on the verbal predicate, and which corresponds, according to him, to what A. Potebnia calls the "minimum of the proposition".

Dmitrievsky presents an extremely clear, simple, and radical model of any proposition of the Russian language.[28] For him, the (only) "main member of the proposition" is the (verbal or nominal) predicate, the "secondary members" of the proposition are called the "complements", and what in traditional grammar is called the subject is relegated to the rank of complement in the same way as the direct complement and the indirect complement, even if it can be said that it is the "main complement" (p. 18).

Much more clearly than Tesnière, Dmitrievsky distinguishes the semantic level and the syntactic level. Thus, in the propositions *sobaka laet* ('the dog barks'), *ucheniki shumjat* 'the pupils make noise', *sobaka* 'dog' or *ucheniki* 'pupils' are cause, culprit, or author of the action expressed by the predicate, but not of the predicate itself. Dmitrievsky has formulas of a daring modernity:

> By whom is the predicate predicted: by the subject or the speaker? And if one 'says' or 'predicates' about the dog […], is it not more logical to call 'the dog' […] not subject but predicate, and 'barks' […] not predicate (*skazuemoe*) but predicating (*skazujuschee*)? (p. 18, note 1, my translation)[29]

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28. He is careful to point out that this model is not necessarily applicable to all languages.

29. The Russian term *skazuemoe* seems to be a calque of German *das Ausgesagte*, but with this particular subtlety of being a passive present participle: "the-being-asserted", and not a past participle passive: "what-has-been- asserted" in the perfect aspect, which would be *skazannoe*.

The act of barking has been caused by the desire of the dog, and not of the subject, to bark: thus it is not the subject who does the action, for "a subject cannot bark" (*ibid*., note 2).[30] This is an important difference with Tesnière, for whom the first actant necessarily fills, at the same time, the function of the subject.

The educational talent of Dmitrievsky gives him a taste for spun metaphors. Thus, always in controversy with his opponent Milovidov, for whom in 'the dog barks' it is 'the dog' which is the central point of the proposal because he is 'the author of the action', Dmitrievsky extends the proposition by adding "complements": *sobaka laet na vora* 'the dog barks at the thief'. In this case, "the thief is not less, if not more, responsible for the action of barking". In *ucheniki shumjat bez uchitelja* ['students make noise in the teacher's absence'], it is not good for students to make noise, but the teacher is not innocent either to have left his students unattended; and if *ucheniki shumjat pri uchitele* ['students make noise in the presence of the master'], he is even more responsible (p. 18). Even at the semantic level, the "responsibility for action" is diluted between actants: "a court recognizes not only the perpetrators of the crime, but also the receivers and accomplices" (p. 19).

Dmitrievsky possesses, in my opinion, a remarkable intuition about a scheme of propositional structure that will be developed a century later, for example in the *lexis* scheme of A. Culioli (see Culioli, 1981), allowing a fine typology accounting both for the nominative structure and the ergative structure, and giving elements of reflection on the notion of syntactic completeness. The only thing that counts here is the syntactic schema of complements that gravitate, with equal importance, around the verb. Unlike Tesnière, he can thus explain that the Russian *pomoch'* or German *hilfen* are followed by the Dative, while in French *aider* is a direct transitive verb. This acceptance of the arbitrary (even if he does not use this word) of the verbal complementation is very different from the "formalism" of K. Aksakov.

In 'Ivan was bitten by a dog at Peter's house', Dmitrievsky shows that the same judgment can receive a large number of grammatical realizations, depending on the point of view of the speaker.

> It follows that the subject is not the main member of the proposition, but one of the protagonists-complements, certainly the first of them, only not in a causal sense, but in time and space, representing itself to the speaker-observer as previous and closer. The principal responsible for the predicate [is not the subject

30. Obviously, Dmitrievskij has a philosophical culture which he does not mention. Note in passing that the famous aphorism "the concept of dog does not bark" is a commonplace of philosophy which, contrary to a common idea, does not belong to Spinoza. The latter, in the Scolia of Proposition 16 of *Ethics, I*, only opposes the constellation of the dog and the dog that barks (1956, p. 330), which does not have an obvious relation to the anti-Platonic content of the aphorism in question, which may be attributed to the cynic Antisthenes.

> but] the speaker and his individual psychic nature. That is why the proposition is called proposition and not judgment. The proposition merely presents the fact of thought, either alone (proposition with one member), or by indicating its factors (proposition with several members), to which it refers indifferently, objectively.
>
> (1878e, p. 22, my translation)

We can see how Dmitrievsky fits perfectly into the great psychologist movement of the second half of the 19th century in grammar, which spreads throughout Europe at the very moment when logicians claim their autonomy by separation with, precisely, psychologism. Grammatical thinking in Russia is no exception.

Dmitrievsky represents a step on the long and difficult path of the discovery and elaboration of the concept of dependency, with the peculiarities of the Russian material (the impersonal propositions in particular) and the agreement of the predicate to another case than the Nominative. A grammarian whose working language and object language both include cases thus does not have the same attitude to the morpho-syntactic relation as one who works with an analytic language.[31]

4. Conclusion

The story of the little drama is actually anecdotal, and the search for paternity of this metaphor is not interesting either. What matters is the capital upheaval represented by the introduction of the notion of "complement" in the structure of the proposition, and consequently the beginning of "divorce", another famous metaphor, coming from Steinthal this time, between logics and grammar. This "divorce" has been accomplished on the side of logicians (Frege, for example) in the name of anti-psychologism, whereas among linguists it is the use of psychologism that has allowed the "liberation from the yoke of logicism". But it is the same rejection, for both of them, of the S/P scheme of the proposition that has made it possible to move to another one, based on the primacy of relations on the terms: *aRb*, or, more precisely, *f(x,y)*, that is, function/arguments.

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31. On the relationship between the linguist's mother tongue and the type of metalanguage used in the description of a language, cf. the article of Zaliznjak-Paducheva, 1964. One of the theses of this article is that it is "natural" (p. 7) that Russian linguistics has developed models of dependency syntax and that American linguistics has given preference for syntax models of constituents. The conclusion is that, in a second step, it is useful to apply to one language the categories developed for another. But the authors do not ask why the logic-based models of constituent syntax originated with Greek and Latin grammarians, who spoke case languages. The fact that dependency syntaxes are better adapted to the description of inflectional languages is also highlighted by Maxwell (1987).

We have seen the interest of the comparative method, which makes it possible to reveal phenomena to which we would be blind in an unidirectional illumination. Tesnière and Dmitrievsky are two links in the chain, two stages, two different episodes, with no direct link with each other but advancing in the same direction.

Dmitrievsky goes, on some points, much further than Tesnière, because he radically rejects the function of subject and thus the very notion of the subject, whereas Tesnière assimilates the function of subject and first actant, and, despite his denials, creates a confusion between syntax and semantics. But the price to be paid for this extreme radicalism is very high: a total relativism of syntactic functions, reduced to being only complements to an indifferent case.

In fact, a fundamentally anthropological question is at the root of these syntactic quarrels: what is the relationship between language and thought? Are humans, who speak different languages, the same or are they different?

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Index nominum

Index rerum

Was Tesnière the founding father of dependency grammar or merely a culmination point in its long history? Leaving no doubt that the latter position is correct, *Chapters of Dependency Grammar* tells the story of how dependency-oriented grammatical description developed from Antiquity up to the early 20th century. From Priscian's Rome to Dmitrievsky's Russia, from the French *Encyclopaedia* to Stephen W. Clark's school grammars in 19th century America, it is shown how the concept of dependencies (asymmetric word-to-word relations) surfaced again and again, assuming a central place in syntax. A particularly intriguing aspect of the storyline is that even without any direct contact or influence, authors were making key breakthroughs in similar directions. In the works of Sámuel Brassai, a Transylvanian polymath, and Franz Kern, a German grammarian, the first dependency trees appear in 1873 and 1883, respectively, predating Tesnière's stemmas by several decades.

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