

Function words in the history of Dependency Grammar from Antiquity to Tesnière

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This paper surveys ancient grammatical descriptions of two classes of function words (henceforth “FWs”): prepositions and conjunctions. My objective is to assess the extent to which FWs were described in terms of dependency from Antiquity to Tesnière. Tesnière put much emphasis on the use of prepositions and conjunctions. I will focus on these two classes of invariable words only, thus abstracting away the specific issues related to other FWs (determiners, pronouns, auxiliaries, etc.). In this introduction, I provide a working definition of *dependency* and I enumerate the authors and theoretical trends I study in the sections that follow.

Early Western grammatical descriptions and linguistic theories can be regarded as dependency-based: Latin grammarians of the Middle Ages, hugely influenced by Priscian’s interpretation of Greek grammar try to describe hierarchical relations between the parts of speech (Luhtala 2020). The same drive continues from the Renaissance to the 18th century (Colombat 2020; Kahane 2020). It would not be an exaggeration to state that *dependency* has been an important concept that is present uninterruptedly from medieval attempts to describe language to most recent efforts (see Imrényi and Mazziotta 2020). However, the concept itself is “highly volatile” (Percival 1990: 29). Equivalent terms appear in different languages and are used by numerous scholars, who generally do not define the concept. Moreover, semantic and morphological criteria are much more commonly adopted than syntactic ones. The comparison of ancient descriptions with one another should rely on a stable definition of what *dependency* is. Such a definition is somewhat arbitrary, but it provides a common ground for the evaluation of different theories. Here, I will adapt Mazziotta’s (2020: 138-140) approach, in which the concept of *dependency tree* is broken down into its basic attributes. These attributes help distinguish between prototypical constituency trees and prototypical dependency trees. The defining attributes I retain are: *word-to-node mapping*, *connection*, *binarity* and *headedness*. Each of these attributes can be explained by comparing the two diagrams in Fig. 1.

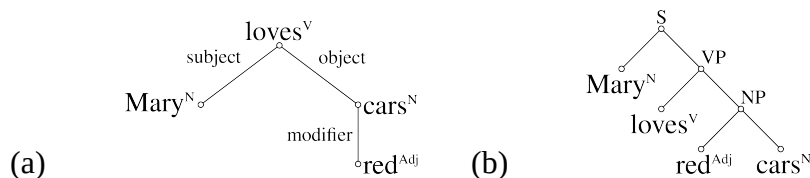


Fig. 1. – Dependency trees (a) and constituency trees (b) compared.

1. **Word-to-node mapping** (or *node-to-word mapping*) is achieved when each word corresponds to a node, and *vice versa*. This attribute holds in the dependency tree (Fig. 1a), but not in the constituency tree (Fig. 1b). In the latter, some nodes correspond to phrases.¹ Consequently, in a dependency tree, a connection can never hold between a word and a group of words, but rather connections always occur between words. In constituency analysis, in contrast, words can be connected to constructions (in Fig. 1b *loves* connects to VP, and *red* and *cars* connect to NP).
2. **Connection** corresponds to the fact that in dependency analysis, the rationales for grouping words rely on syntactic relations rather than part-whole relations. In dependency trees, syntactic relations are primary constructs that can be assigned a grammatical label (in Fig. 1a, the term *subject* labels a connection rather than a node). In contrast, the relations between the nodes of a constituency tree are part-whole relations that always express the same contents (in Fig. 1b, units corresponding to lower nodes are parts of those represented by their upper nodes). In a constituency tree, grammatical relations are indirectly derived from the hierarchy of the nodes.
3. **Binarity** means that nodes of the tree are grouped pairwise. In a classical dependency tree, the smallest grouping are binary connections between nodes. In a sense, constituency trees and dependency trees are binary, since a stroke is always drawn between two nodes.
4. **Headedness** refers to the fact that each pair of words has a clearly identified head/governor (both terms are used as synonyms in this paper). In Fig. 1a, this hierarchy corresponds to the relative positions of the words of each connected pair: the governor is placed higher on the plane than its dependents. By contrast, in the constituency tree (Fig. 1b), heads are encoded indirectly, by the correspondence between labels on intermediate nodes and terminal nodes (N/NP, V/VP).

In this paper, I use the attributes above to analyze ancient descriptions of FWs. My aim is to identify the main concepts and discussions that seem important from the perspective of dependency syntax and to compare authors who make use of different terms and theoretical frameworks.

¹ Most of the time, word-to-node mapping correlates with **flatness**, flatness being the strongest element of contrast between dependency and constituency. The dependency tree in Fig. 1a consists of three layers of nodes, whereas the constituency tree in Fig. 1b consists of four. Since in the majority of cases the word-to-node mapping of dependency entails flatness, this study abstracts away the flatness attribute, and focuses on the mapping only.

However, it should be noted that, until the first speculative grammars, grammarians do not focus on abstract relations between words. It would be anachronistic to extrapolate genuine dependencies from the semantic and grammatical relations highlighted in ancient grammar – see Swiggers 1997: 81-82 on this kind of fallacy with regard to Apollonius Dyscolus’s *Syntax* (see also Sec. 1.2). Rather, the attributes need to be interpreted as general characteristics: a *connection* is a (possibly classified) relation between linguistic units, and *headedness* simply means that there is some directionality in the relation.

My survey focuses on selected *milestones* that extend from the first Western² conceptions of language to Tesnière’s *Elements of structural syntax* (2015[1966]). The selected authors and theoretical trends correspond to prominent steps in the development of the dependency-based ideas about FWs. I will proceed chronologically (Tab. 1 provides a summarized view of the progression). Section 1 explores the definition of *conjunction* and the development of the distinction between *conjunction* and *preposition* in Greek philosophy and grammar. Section 2 focuses mainly on the development of morphosyntactic argumentation in Latin grammar of the Middle Ages and the Renaissance. Section 3 describes the emergence of syntactic conceptions emanating from the ever-rising interest in modern languages: from the French grammaticography of the 17th to the 18th c. to early diagramming conventions and the grammatical distinction between coordination and subordination, which was firmly defined in 19th c. school grammars. Section 4 summarizes Tesnière’s ideas about FWs, and compares his stance to those taken by previous scholars.

Greek philosophy and grammar	4th c. BC to 2nd c. AD
Priscian	fl. 500 AD
Modists	12th - 13th c.
Humanists	15th - 16th c.
General grammar and <i>Encyclopedia</i>	17th - 18th c.
School grammar and diagrams	19th c.
Tesnière	20th c.

Tab. 1. – Brief chronology

In all those sections, I investigate the grammatical conceptions in what appears to be the most fitting order, rather than in a fixed parallel progression.

2 My focus is set on the Western tradition, I discuss neither the Arabic (see Owens 1988) nor the Indian tradition (see Raster 2015) in this paper.

1 First definition of the word classes: FWs from Greek philosophy to *tekhnê*

Greek scholars define two classes of FWs: *sundesmos* and *próthesis*, which roughly correspond to the modern classes of *conjunction* and *preposition*. Stoic philosophers (Section 1.1) initiated the debate, before it was further developed by grammarians (Section 1.2).

1.1 Philosophical definitions of the Stoics

As Lallot (1997: vol. 1, 21) explains, Aristotle (384–322 BC) uses the term *sundesmos* to identify non-significant units (close to mere sounds or syllables) that “unify the multiple”, and make it possible for the discourse (*logos*) to be understandable. Chriti (2011: 508) points out that Neoplatonic commentaries on Aristotle (Ammonius 175-242 AD) extrapolate that conjunctions and prepositions are not significant by themselves, but hold significant units together:

For just as the planks of a ship are properly speaking its parts, while bolts, sail-cloth and pitch are also added to hold them together and for the unity of the whole, in the same way in the sentence conjunctions, articles, preposition and adverbs themselves fill the job of bolts, but they would not correctly be called parts inasmuch as they cannot be put together and on their own produce a complete sentence. (Ammonius, *On Aristotle's "On Interpretation"*, CAG IV 5, 1 2.20-1 3.6, Busse, transl. Blank, *apud* Chriti 2011: 509)

The stance is a logical one, but the main idea is that FWs are connective units. The dependency concept of *connection* is present: in a sense, some words actually *are connections* between other words and propositions. Such a conception is further developed by the Stoics in the 3rd c. BC (Lallot 1997: vol. 1, 26). They define conjunctions and prepositions (“prepositive conjunctions”) as links between propositions. Stoics identify a list of conjunctions. They also note that the logical relation of those propositions depends on the conjunction at use. They make no distinction between coordinators and subordinators, but they distinguish between ways of combining truth-conditions: the equivalents of *if* and *since* express different entailments between a first and a second proposition; *and* “complicates” and *or* “disjoins” the propositions (in such cases, Diogenes Laertius reports no specific statement about hierarchy).

From the perspective of the defining attributes of dependency, only the presence of a connection holds, in the form of FWs themselves, since they function as connections. For some conjunctions, headedness holds to a certain extent if one considers that the logical entailment between propositions can be interpreted as such, but the fact that some conjunctions express a logical union or alternative does not fit this model well. Some nodes are not words, since the focus is on propositions rather than words, hence word-to-node mapping does not hold. As far as binarity is concerned, the fact that FWs are seen as connections implies that the relation involves three

linguistic units (the connective unit and both connected propositions). Therefore, it is a ternary relation.

1.2 Greek grammar

The distinction between conjunctions and prepositions is fully established by Aristarchus of Samothrace (217–144 BC) (Lallot 2019: 387). Despite their paradigmatic approach, that mostly focuses on words in isolation, Greek grammarians pay attention to the context in which FWs are used to elaborate on the difference between conjunctions and prepositions.

Conjunctions. Dionysios Thrax’s (c. 170–c. 90 BC) *Tekhnè* and Apollonius Dyscolus’s (c. 110–175 AD) *Syntax* and *On conjunction* apparently elaborate on the Stoic legacy (Swiggers 1997: 42-45), with differences that pertain more to the philosophical grounding than to the description of the relation in which conjunctions are involved. In a famous excerpt, Dionysios states that conjunctions “show the void of the expression” (*Tekhnè*, Ch. 20, ll. 2-3; transl. by Swiggers and Wouters 1998: 4). According to Swiggers and Wouters (1998: 9) the term *void* should be interpreted in an Aristotelian perspective: contrarily to nouns and verbs, “conjunction do not correspond to any object in reality or any state of affairs”: they correspond to the logical thinking about the world and “fill the void”, thus allowing the expression of semantic relationships between utterances (Swiggers 1997: 42-45).³

Dionysios’s acknowledgment of the cohesive power of conjunctions should not be interpreted from a syntactic perspective. However, a hint of syntactic considerations manifests itself in the way Apollonius deals with “disjunctive” conjunctions in his treatise *On conjunction*. Those conjunctions act as links between utterances, despite their disjunctive meaning. This distinction can be considered as the subtle premise of an independent syntactic reasoning (Dalimier 1990: 11). Other than that, I can see no development that would be relevant from a dependency-based perspective.

Prepositions. Apollonius’s *Syntax* clearly distinguishes prepositions from conjunctions. The description is focused on word-order complexity and the distinction between composition and juxtaposition. Originally, linguistic units that can either behave as bound morphemes (prefixes) or as independent words pose a classification problem. Apollonius suggests that such a behavior is

3 Lallot’s interpretation of the same excerpt differs (1998: 231-241): he prefers the word *implicit* instead of *void*. To him, conjunctions are segmental units that overtly express the meaning of a relation which, without them, would remain implicit. E.g., causality is implicit in *There is light; it is daytime*, but it becomes explicit if a conjunction is used: *There is light because it is daytime*. According to Swiggers (oral discussion), such a contrastive approach relies on comparisons that are alien to Dionysios’s thinking, and is not even necessary when one takes into account the Aristotelian legacy.

specific to the class of prepositions (*próthesis*).⁴ Case constraints are hardly studied, and the notion of *regime* is completely absent (Donnet 1967; Lallot 1997: vol. 1: 27; vol. 2: 288, n. 39). Following Dionysios (*Tekhnè*, Ch. 18), Apollonius highlights that prepositions can be used with any part of speech (Lallot 1997: vol. 1, 35) and that they hold no consistency by themselves (*Syntax*: 1,26).

In my understanding, Greek grammarians see prepositions as secondary words: Apollonius states that they must be used with another word – thus forming a binary group with it. From a morphological as well as a semantic point of view, they are *dependent* on the word they accompany. However, no connection is acknowledged. The connective status of prepositions themselves and the hierarchical relation between the preposition and its context are not described.

2 First debates on hierarchy: Latin grammar

Early Latin grammars stand close to the Stoic description. The extant books of Varro's (116–27 BC) *De lingua latina* do not contain the terms *conjunctio* and *praepositio*, but rather the term *copula* (8, 3, 10), associated with the verb *iungere*: Varro gives an example of *et*, used to conjoin nouns, and notes that *et* is indeclinable and can be used to link two words of any class (Colombat 2019: 412). In my opinion, Varro's explanation is a bit too short to warrant a firm conclusion, but it seems to lean toward the idea that conjunctions connect words rather than propositions. That idea will fuel the debate on the status of coordinated terms (henceforth “conjuncts”) for the centuries to come.

Ax (2011: 123-128) notes that Quintilian's (35–96 AD) knowledge on the development of the parts of speech classification is correct (and corresponds to what is related in Section 1). The author explains Aristotle's characterization of *sundesmos*, as a third part of speech between nouns and verbs. Quintilian prefers to call this class “binding terms” (*convinctiones*), adding that it was further refined into the concepts of *article* and *preposition*.

For the purpose of this paper, late Latin grammar is much more interesting. I will sketch the main advances by focusing on two major milestones: Priscian's books 17 and 18 (Section 2.1) and the reinterpretation and developments that occurred later on, by a group of university masters historically named *Modists* (Section 2.2). I will conclude this section by presenting the ideas of the Renaissance grammarians (Section 2.3).

4 The idea that forms that can be used as prepositions and as prefixes belong to the same class will persist for centuries (Auroux 2019: 395).

2.1 Priscian

Of the late Roman grammarians and early medieval ones, Modists from the 12th and 13th centuries and their precursors only retain Donatus (f. 350 AD) and Priscian (fl. 500 AD) (Covington 1984: 4). Of the two, only Priscian actually deals with syntax in his books 17 and 18, overtly mentioning Apollonius, who greatly influenced his views (AG 2010: 15-19). Indeed, Priscian inherits the assignment of prepositions and conjunctions to different parts of speech from the previous tradition and manages to elaborate well-pondered criteria to support the classification – see Swiggers and Wouters 2015.

Prepositions. Priscian defines criteria to distinguish between classes of indeclinable words (AG 2013: 21-34). Most importantly, AG explains that his description points toward a conception of prepositions in terms of *transitivity*: prepositions allow for the transition from one *persona* to another, whereas conjunctions join two “substances” (i.e. nouns) or “accidents” (i.e., in this context, verbs) (2013: 23). In the sample sentence *in hostem vado* ‘I go toward the enemy’, the preposition *in* expresses a transition from one person to another, by the mediation of the verb. Priscian retains from Apollonius his focus on the distinction between separate prepositions (*appositio*) and bound prefixes (*compositio*). He also successfully describes the morphological relationship between prepositions and oblique cases: prepositions are bound to oblique cases, hence to a certain kind of semantic and syntactic relation to the verb – according to AG, semantics and morphosyntax remain entwined in Priscian’s views.

Conjunctions. By contrast, conjunctions only join two units that share the same status (“substances” or “accidents”), but they express no such transition between substances. Moreover, although definitions vary from one passage of the *Ars* to another, Priscian’s contributes to the description of conjunctions by showing that they can link any pair of words of the same class rather than only propositions (Baratin 1989: 50-53; Colombat 2013: 15-16). Baratin mentions the example *et pius et fortis fuit Aeneas* ‘Aeneas was pious and strong’, which contrasts with uses of other conjunctions that link propositions (e.g. *si* ‘if’). Although it must also be stressed that a conjunction connects an element to something else irrespective of any syntactic hierarchy (AG 2013: 30), the logical contrast between *et* and *si* could be seen as an early insight supporting the distinction between coordination and subordination (Baratin 1989: 53). Nevertheless, as illustrated in the next sections, this distinction will take centuries to actually emerge (Sec. 3.2).

In conclusion, Priscian's description marks a progress toward a more accurate word-to-node mapping in the case of conjunctions, and, in the case of prepositions, a stronger focus on more grammatical criteria justifying the hierarchy between prepositions and the elements they connect. As I will show in the next subsection, the issue of identifying the heads of the connections became prominent in late medieval discussions.

2.2 Peter Helias's *Summa super Priscianum* and the Modists

Although it was overshadowed in the following centuries, the Modistic model that developed during the 12th and 13th centuries is a very interesting step in the history of grammar, especially from the perspective of dependency grammar. Modists greatly contributed to the distinction between logic and grammar (Chevalier 1968: 50; Rosier-Catach 1981), a tendency already present, but not overtly stated from a grammatical perspective, in Peter Abelard's (1079–1142) works (Covington 1984: 11). Descriptive grammar treatises by Alexander de Villa Dei (b. c. 1170) and Evrard of Béthune (d. 1212?), which consist of a contemporary alternative to the Modistic approach, are actually more widespread but less original. In this section, I will mainly focus on the Modists, since their views on FWs are especially interesting, and I will mention the influence of descriptive grammar in the Renaissance in the next section (Sec. 2.3).

According to Luhtala (2020: Sec. 4.2), Peter Helias's (c. 1110–a. 1166) *Summa super Priscianum* condenses many of the new developments of syntactic theory on the basis of Priscian's. Peter Helias's treatise is a highly popular textbook that presented the views further elaborated by Modists. In particular, Peter says that *constructions* need to be correctly built, but can consist of incomplete sentences (Luhtala 2020: 42). Phrases such as *in domo* 'in the house' are constructions. This conception leads, in the Modistic approach, to a common method to deal with both variable and invariable words, all of them being similarly important for the completeness of constructions (Rosier-Catach 1981: 60-61). Covington cites Martin of Dacia's (c. 1250/60–1304) *Modi significandi* to argue that:

The first principle that the modistic syntacticians had to establish was that it in fact made sense to describe all constructions (and not just many or most constructions) as linkages joining two and only two words. (1984: 42)⁵

Covington's main thesis is that the Modistic model is largely dependency-based. The Modists describe all constructions as headed groupings of two words, through the development of Priscian's

5 See Martin's related excerpt in Covington 1984: 67.

theory of transitivity and binary concepts such as *primum/secundum* and *dependens/terminans* (see Luhtala 2020: 49-51 for a summary of Covington 1984). In my terms, word-to-node mapping, connection, binarity and headedness are all mostly achieved in the Modistic program – although they struggle with some constructions (Covington 1984: Ch. 5), such as the ablative absolute and coordination (see below on the latter).

Alongside that conception of *construction*, the notion of *government* is also further developed with respect to Priscian. Peter Helias takes a further step toward a more syntactically oriented description, by positing that “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” (Luhtala 2020: 44, paraphrasing *Summa* 1051, 24-26). Thus, for the Modists, a word governs another word by constraining its form (case) and by needing it in order to build a complete construction.

Prepositions. These two important breakthroughs allow for a debate on the hierarchical position of prepositions. Several possibilities emerge. Peter Helias insists that prepositions govern their object (Covington 1984: 16-18).

If someone objects that by this criterion the preposition does not govern the oblique case form because it does not bring the oblique into the construction, but rather the oblique brings the preposition into the construction, I say that this is false; the preposition does bring the oblique into the construction. For when I say ‘I turn my face away from him’, the ‘I turn away’ signifies separation, and the preposition also signifies separation but does not specify from what. Therefore it necessarily brings with it an oblique case form by means of which the separation can be made definite. Hence the preposition has to govern the oblique case (Peter Helias, *Summa*, p. 155, *apud* Covington 1984: 16)

The argumentation is mostly semantic (cf. the “separation can be made definite”) and morphological (the preposition has to govern the oblique case). However, the fact that the “oblique case form” is made necessary by the preposition refers to constraints on the presence of words in a construction, which is more syntactically grounded. This opinion contrasts, for instance, with that of later scholars:

[In Radulphus Brito’s (c. 1270–1320) views, the] preposition should be treated as a modifier of its object, rather than a *medium construendi*. It is not perfectly clear whether he holds that the preposition–object relation is itself a *constructio* or something else [...]. Thomas Erfurt [fl. 1300], however, explicitly lists the preposition among types of noun modifiers that

participate in *constructio intransitiva personarum*⁶ (*Grammatica speculativa*, p. 292)” (Covington 1984: 43)

Covington highlights that the directions of the dependency connections in Modistic views differ from some modern views (e.g. that of the Meaning-Text Theory, “MTT”) for ontological reasons – the noun (substance) “exists” before the preposition.

For ontological reasons the Modistae have treated the subject as prior to the verb and the prepositional object as prior to the preposition (which they consider to be a modifier or marker), while modern dependency grammarians, appealing to morphological government and strict subcategorization as supplementary criteria, have generally treated the verb and the preposition as the heads of the two respective constructions, though the issue is far from settled [...]. (Covington 1984: 59)

In my opinion, the fact that the identification of the governor becomes a relevant descriptive issue at that time is even more important than the descriptive point of view itself. What emerges from the excerpts above is that as soon as the objective is to determine the lattice of connections in a sentence, the issue of the hierarchy between FWs and referential words emerges. That is crucial with respect to the dependency attribute of headedness.

Conjunctions. Medieval grammarians keep the Priscianic distinction between: 1/ conjunctions that link two substances, two accidents or two unordered clauses; 2/ conjunctions that imply a logical ordering of the propositions (Colombat 2013: 17-21). The Modistic debate seems to be mostly centered on coordination, such as in *Socrates et Plato currunt* ‘Socrates and Plato run’. On the one hand, the homogeneity of the conjuncts (words, phrases or sentences of the same types, and with the same inflection) gradually becomes highlighted in the descriptions, from Peter Helias onward. On the other hand, the Modist Thomas Erfurt overtly states that the conjunction is a *third* element (Colombat 2019: 416). Since the conjunction is considered a word, its position in the construction system must be described with respect to those two homogeneous elements. Covington suggests that Modists cannot integrate the coordinating conjunction *et* [“and”] into their syntactic framework (1984: Sec. 5.1). To illustrate this, Covington mentions Boethius of Dacia (1240/50–1277 or later), who argues that the relation between the conjunction and the other words is not syntactic (*constructio*), but rather semantic. By extrapolating this view and Radulphus Brito’s stance, Covington concludes that one possible Modistic solution is to analyze coordination in a way that is similar to Tesnière’s: conjuncts depend on the same governor, but the relation that unites them is not

6 I.e., in Thomas Erfurt’s theory, a construction that contains two words that pertain to the same referent (e.g. *Socrates albus* or *a Socrate*). A *constructio transitiva personarum* contains two words that pertain to two different world-objects (e.g. *filius Socratis*). See Covington 1984: 37-38.

a directed connection (cf. Section 4). Elaborating on the notion of *transitivity*, Radulphus Brito adds that conjunctions are referentially dependent on their conjuncts, but, paradoxically, he considers that the plural of the verb is not a grammatical, but a rhetorical device (Covington 1984: 90-91). Incidentally, Covington (1984: 87-88) also notes that Martin of Dacia conceived the group formed by the conjuncts and the conjunction as a single unit, thus leading to an imperfect word-to-node mapping from my perspective.

I fully agree with Covington's comparison with Tesnière. The debate on coordination in the early dependency-based system of the Modists reveals an important issue that has yet to be solved: a symmetrical relation such as coordination is difficult to frame in a model that only posits binary headed connexions (see Section 5).

2.3 Renaissance grammar

The tradition quickly rejects the Modistic legacy and terminology (Covington 1984: 120-126). In the Renaissance, early humanists focus on the correct use of the cases. The concept of *government* mostly returns to a morphological grounding (Colombat 1997: 104). However, even if the delicate system of the Modists is lost at the time, significant theoretical debates on the topic of FWs still arise.

Prepositions. Chevalier (1968: 92-93) highlights that, in Despauterius's (c. 1480–1520) conception, the preposition becomes a key piece of the hierarchical structure. Colombat (1998) claims that this description is inherited from Alexander de Villa Dei and is associated with a paradigm shift: in the 15th and 16th c., morphosyntactic description begins to focus more on the use of case by itself rather than in terms of government by the verb. Despauterius organizes his *Syntax* following this principle. While redefining the notion of *government*, and tidying up the related terminology, Despauterius establishes that only conjunctions cannot govern (1531[1509]: iv). The major implication of his theoretical stance is that prepositions are viewed as (morphological) governors:

Despautère (1537, f. 3v^o) établit définitivement le principe du régime de la p[réposition] repris par Ramus et Sanctius. De ce fait, la p[réposition] devient, au même titre que le v[erbe], un élément régisseur majeur [‘Despauterius definitively establishes the principle of the governing preposition, followed as well by Ramus and Sanctius. Accordingly, the preposition becomes, similarly to the verb, a major governing element.’] (Colombat and Rosier 1998: 158)

Colombat (1998: 24-27; 2020: 70) explains that Guarinus (1374-1460), whose grammar remains verb-centered, adopts two descriptions of prepositions: 1/ *a* and *ab* [“by (means of)”] can be considered as a mediation (*mediante*) between the verb and the complement (i.e. intermediate

words); 2/ other prepositions are simply present or not. Not much is said about how they combine with cases, which seems to imply a conception of prepositions as words that are of lesser importance for the analysis of the sentence. Criticizing the latter analysis, and going a step further than Despauterius, Sanctius (1523-1601) insists that the ablative absolute is not governed by the verb, but rather by an implied preposition (Chevalier 1968: 352; Colombat 2020: 77), thus leading to a conception that promotes the preposition as the main element of independent phrases. The ablative absolute, understood as a prepositional phrase, does not depend on the verb, but stands as an independent structure in the sentence.

Although the Modistic views did not survive in the Renaissance, the urge to define the structural position of both the preposition and the prepositional phrase remains prominent at that time. The main debated questions could be summarized as follows: 1/ do prepositions form a node between the verb and the noun they accompany (this issue is directly related to word-to-node mapping)? 2/ given that prepositions govern the associated case, do they depend on the verb or do they form a standalone additional “root” (a dilemma that is directly related to headedness)? Both questions clearly are dependency-based.

Conjunctions. In Despauterius’s views, conjunctions cannot govern. However, he evokes a morphological constraint of similarity: “conjunctions want identical cases, and also want identical moods” (1527, transl. according to Colombat 2019: 417). Conjuncts are words, and have the same inflections. According to Colombat’s review of the discussions in the Renaissance (Colombat 2013; 2019: 417-419), it seems that most of the debate is centered on the status of conjuncts: are they words, phrases or complete utterances?

Some scholars favor one of these three possibilities. For Linacre (c. 1460–1524), conjuncts are *clausulas* [“phrases”] (1524). In his *De causis linguae Latinae* (1540), Scaliger, in a critical way, considers that the conjunctions link two *orationes* [“utterances”] – his view is shared by Sanctius and Scioppius (1576-1649). Vossius (1577-1649) suggests that non-sentential conjuncts are virtual *sententias* [“sentences”]; to him “Cato was a good senator and farmer” corresponds to: “Cato was a good senator” + “Cato was a good farmer”. On the other hand, early grammars of vernacular languages opt for a more flexible definition (Colombat et al. 2019: 419-421): such is the case in French grammars – Palsgrave, *Lesclarcissement de la langue françoise* (1530), Meigret, *Le tretté de la grammere françoëze* (1550) and Estienne, *Traicté de grammaire françoise* (1557) – and English grammars – Bullokar, *Bref grammar for English* (1586) and following descriptions.

Another slight advance on this topic is the gradual categorization of the word *que* [“that”] as a conjunction. Previously, partial equivalents of *que* had been mostly overlooked. Dionysios’s *Tekhnè*, mentions *hóti* [“that”, “because”] with respect to its causal value only (Lallot 1998: 256). The Latin tradition ignores *quod* [“that”, “because”] as a conjunction in most grammars (lists in Baratin 1989: Ch. 3 hardly contain *quod*). Most grammarians do not include *quod* in their lists of conjunctions until the end of the Renaissance, as they consider it as a pronoun with the value of *et id* [“and it”]. At this time (Colombat 2003: 24-26), lexicographers such as Perotti (1429-1480) and Robert Estienne (Furno 2003: 33) begin to categorize *quod* as a conjunction, but grammarians such as Sanctius dismiss it. His followers (e.g. Scioppius, Vossius and Lancelot) keep interpreting *quod* as a pronoun rather than a conjunction. *Que* is more and more categorized as a conjunction by the end of the 16th and the 17th century (Colombat et al. 2019: 423).

All in all, scholars struggle to integrate conjunctions in their system. They remain special units that behave more like links than words. The syntactic status of the conjunction remains unclear, as well as the status of conjuncts and combined clauses. From my perspective, the uncertainties about their statuses pertain to imperfect word-to-node mapping and lack of headedness. Units bound by conjunctions can either be words (in this case, conjunctions link flat structures) or phrases and even clauses or utterances (in this case, conjunctions link non-flat structures). Additionally, no hierarchy is clearly defined between them.

3 Toward a more syntactic description: the influence of modern languages

In the 17th century, the focus on vernacular languages made it obvious that different languages make use of different surface-syntactic devices to express syntactic relations. Issues related to the hierarchical status of FWs and of the units they bind together are clearly prominent in French grammaticography of the 17th and 18th centuries (Section 3.1), and the distinction between coordination and subordination finally appears in school grammar and diagrams in the 19th century (Section 3.2).

3.1 General Grammar and the Encyclopedists

French grammaticography of the Enlightenment established a clear hierarchy for the prepositions and initiated a better treatment of subordinate clauses.

Prepositions. Wallis (1616-1703) insists that the traditional notions of *case*, *gender*, *moods*, etc. inherited from Latin grammar are not useful to describe English syntax properly. To him, the syntax

of nouns relies on prepositions (Chevalier 1968: 485-487; Vorlat 1975: 27, 405-406). Auroux (2019: 397-398) explains that the *Grammaire générale et raisonnée* (1676) handles cases and prepositions in the same chapter. Less emphasis on inflection leads to a true emancipation from Latin grammar, and thus a less morphologically driven description of languages such as French and English, which are more analytical. Because they are autonomous words, prepositions become clearly more important than cases (this conception culminates in the *Encyclopédie*; Colombat 1981).

In the article “Préposition” of the *Encyclopédie méthodique*, Beauzée distinguishes between languages that make use of cases, languages that make use of prepositions and languages that make use of both. According to Auroux (2019: 399-400) *preposition* indeed becomes a fundamental word class in the 18th c., on a par with verbs, nouns and adjectives – thus prefiguring the concept of *prepositional phrase*. This conceptual prominence is closely linked to the syntactic status of the preposition. Kahane (2020: 124-127) demonstrates that Buffier (1661–1737), through a semantic definition of government, views prepositions as governors of their object (Buffier 1709: 104-106). The same idea appears in Dumarsais’s (1676–1756) article “Construction” in *Encyclopédie* (1754: 84, *apud* Kahane 2020: 124-127). According to Kahane (2020: 91-93), Nicolas Beauzée (1717–1789) elaborates on similar conceptions (“Préposition” in *Encyclopédie*, 1765: Vol. 13: 301). The following excerpt from Beauzée’s article “Régime” is of utmost importance:

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 [*in*]; 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*. (1765: Vol. 14, 6, transl. Kahane 2020: 92, with a minor correction)

Kahane suggests that Beauzée’s analytical decomposition is similar to a Gladkij tree (Gladkij 1968), i.e. a dependency tree that acknowledges subtrees (Fig. 2).

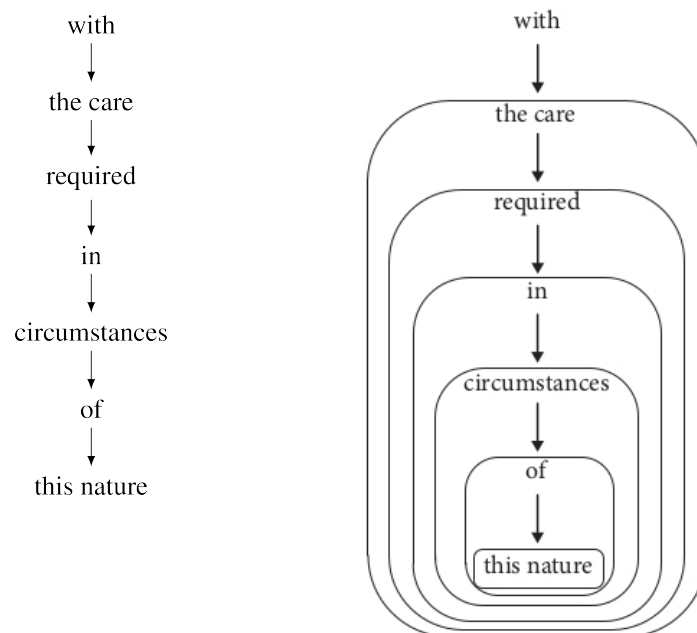


Fig. 2. – Kahane’s diagrammatic transpositions of Beauzée’s analysis
(Kahane 2020: 92; with a minor correction)

Beauzée uses the terms *grammatical complement* and *initial complement* to qualify word-to-word relations (with the exception of determiners).⁷ He also states that “the complement is complex when it is expressed by several words; the first of these words, according to the analytical order, modifies immediately its antecedent, and is itself modified by the next word [in the analytical order]” (Beauzée 1765: Vol. 14, 6, my transl.). Consequently, prepositions are alternatively depicted as heads (“*x* is the grammatical complement of the preposition”) or as dependents (“the preposition is the initial complement of *x*”). Such an analysis satisfies all attributes of prototypical dependency (word-to-node mapping, connection, binarity and headedness), and corresponds to the dependency tree on the left in Fig. 2. However, Beauzée acknowledges subtrees in addition to word-to-node mapping: he introduces a difference between *initial* and *total* complements, as well as a difference between *grammatical* and *logical*. Total and logical complements are complex units, corresponding to subtrees and depicted as bubbles on the diagram on the right in Fig. 2.

Conjunctions. At this time, the description of the complementizer *que/quod* is also greatly improved through the concept of *proposition incidente* [lit. “incidental clause”] (Raby 2018: Ch. 4). The second edition of Port-Royal’s *Grammaire générale et raisonnée* (1676) suggests that *qui/que*

⁷ The term *complément grammatical* [“grammatical complement”] is used for content words that can receive inflection, such as nouns, whereas the term *complément initial* [“initial complement”] is used for prepositions, that come first in the analytical order.

["who", "whom", "that"] (Raby 2018: Ch. 4, Sec. 2.1) are hybrid units that function more or less as pronouns and/or as conjunctions. They are classified as relative pronouns, but three different roles are defined: 1/ combined pronouns-conjunctions that bind the *proposition incidente* to an antecedent represented by the pronoun; 2/ pure conjunctions; 3/ pure pronouns. In constructions such as *je vous dis que vous avez tort* ["I tell you that you are wrong"] (1676: II, 9, *apud* Raby 2018: Ch. 4, Sec. 2.1), *que* only functions as a link between clauses and does not behave as a pronoun at all.

Raby demonstrates that, through the *Grammaire générale et raisonnée* and the *Logique ou l'art de penser* (1662), the pronominal status of *que* continues to obfuscate the description: *que* (and Lat. *quod*) still has a somewhat ill-defined antecedent (an implied noun), even when used as a pure conjunction. The hybrid status of the relative pronoun opens up new perspectives with respect to how clauses are connected. Raby insists that Port-Royal's logical conception of clausal hierarchy leads to a definition of *complex sentences* as the combination of several propositions. Such combination of propositions expresses one single judgment that is not equivalent to subordination (2018: Ch. 4, Sec. 2.2). Nevertheless, the notion of *proposition incidente* ["incidental clause"], opposed to *proposition principale* ["main clause"] hints at a specific hierarchy between clauses. The hierarchy is a logical one in the *Grammaire générale et raisonnée* (in sentences such as *I think that you are wrong*, *I think that* is the incidental clause, expressing an epistemic modality), and the focus is on the combination of ideas by an implied *and*.

From Buffier to Beauzée the description becomes more and more hierarchical, although still relying on semantics. To Buffier, some words are *modificatifs* ["modifiers"] of verbs and nouns: autonomous words (such as adverbs), prepositions (that govern their object, as explained above), and conjunctions. Conjunctions are "expressions that are used to mark the relation between words or sentences between which they form and indicate a sort of link" (Buffier 1709: 78, my transl.). In his view, the complementizer *que* is a "pronoun" (see above) that serves as a "sign of the modification that is added to the verb" (Buffier 1709: 83, my transl.). As a result, *que* is directly attached to the verb rather than to a possibly implied antecedent noun. Raby remains cautious about the status of the introduced clause. Nevertheless, I think it is safe to extrapolate, as Kahane does, that Buffier also "considers that the relative pronoun or the subordinating conjunction is the head of the subordinate clause [...]" (Kahane 2020: 109). Subordinating conjunctions and prepositions are handled very similarly by Buffier, as already observed by Chevalier (1968: 610). From a morphological perspective, Buffier states that "diverse prepositions govern the case of nouns, diverse conjunctions govern the mood of verbs" (Buffier 1709: 79, my transl.). Additionally, in

Buffier's system, clauses are not listed as modificatifs: it is clearly the conjunction that performs this function.

The dependency chain $V \rightarrow que \rightarrow clause$ is accepted in Dumarsais's article *Construction* (1754): in *je dis que les gens de bien sont estimés* ["I say that good people are esteemed"] the complementizer *que* is the "term of the action" *dis* ["say"], and the subordinate clause "explains" *que*. Generally speaking, "there are clauses that explain (Fr. *expliquent*) or determinate (Fr. *déterminent*) some word with which they consecutively enter the composition of a period". The way subordinate clauses depend on conjunctions is not elucidated: entire clauses modify conjunctions, but contrarily to Raby (2018: Ch. 4, Sec. 3.4), I think that the *que* + *clause* is considered a functional syntactic unit (its head being *que*) by Dumarsais. Beauzée elaborates on the view of his predecessors by stating the following:

The incidental clause, be it an explaining or a determining one, forms a whole, that is a logical part of the principal clause, with its antecedent. (1765a, vol. 8, 649)

An incidental clause is, in a complex clause, a partial clause that is used as a determining or explaining complement to another clause: this other clause is the main one, with respect to the incidental one that only is a part of it. Both constitute the total clause, which is a complex one. (1767: 29-30)

However, Beauzée stops short of considering conjunctions as parts of a clause (Chervel 1977: 81).

Therefore, according to some scholars, the complementizer can be a dependent of the verb and can also govern — in this respect, analyses do make use of binary directed relations. According to others, complementizers are not clearly part of the account of syntactic structures. The hierarchical status of clauses remains problematic because the identification of the head-word of secondary clauses is not clear. Clauses as dependents are considered as wholes, that are involved in part-whole relations. Consequently, word-to-node mapping is not perfect. The concept of *subordinate clause* in 19th-century school grammar, and, subsequently, Tesnière's system will inherit this problem.

3.2 School grammar in the 19th century

Although rare, the introduction of diagrams in grammatical handbooks is an important innovation of the 19th century. The use of diagrams forces grammarians to try and overtly define the status of FWs. I will illustrate two early diagramming systems: the one invented by the American grammarian Stephen W. Clark (1810-1901) and the one at use by the German grammarian Franz Kern (1830-1894). Since not much novelty is added to the analysis of prepositions during the 19th century, I will focus on diagrammatic treatments. Regarding conjunctions, the distinction between

coordination and subordination becomes prominent. I will account for this evolution and illustrate how diagrams handle it.

Prepositions. Even though Beauzée proposed an elegant analysis, diagrams clearly illustrate that each scholar chooses a descriptive solution that suits him. Fig. 3 is a simple example of Clark’s diagrams (Mazziotta 2020: 142); Fig. 4 is an example of Kern’s (Osborne 2020: 194).



Fig. 3. – Clark’s diagram of *The king of shadows loves a shining mark* (redrawn cf. Clark 1847: 23).

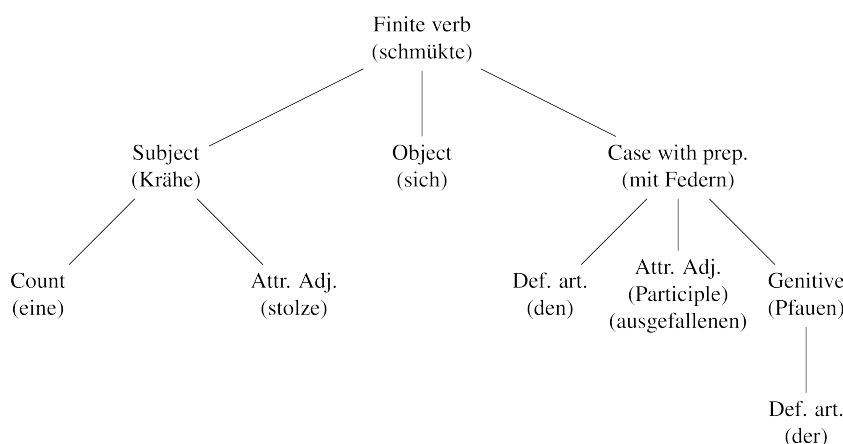


Fig. 4. – Kern’s diagram of *Eine stolze Krähe schmückte sich mit den ausgefallenen Federn der Pfauen* [“A proud crow decorated itself with the errant feathers of the peacock”, transl. Osborne 2020: 194] (redrawn cf. Kern 1884: 30, my transl. for grammatical labels).

In Fig. 3, words are represented by “bubbles” and relations between words are mostly expressed by conventional configurations of aggregated bubbles. For instance, *king* can be identified as the subject of *loves* because the bubble of the subject is always the first one from the left, with the verb to its right. Adjuncts are aggregated below the terms they are adjoined to (e.g. *shining* is placed below *mark*). Such diagrams generally feature word-to-node mapping (each word is a bubble) and binarity (most bubbles are recursively aggregated pairwise); the hierarchy of adjuncts corresponds to headedness. Connections are not expressed by discrete devices, except in the case of prepositions and conjunctions (Mazziotta 2020: 142-144), which is crucial to my point. Clark explains that prepositions “connect words by showing a relation” (1847: 97) and form a phrase with their object. They are words inside a construction but they also show a relation. In Fig. 3, the fact that there is a relation between *king* and *shadow* is expressed the preposition *of*. The configuration of the bubbles

expresses the double status of the FW: prepositions are aggregated below their governing terms, and to the left of their objects. My interpretation is that this system integrates the results of centuries of discussions. The graphical depiction shows why prepositions are so difficult to describe: they have had a hybrid status of words and relations since the Stoics and they form a group with their object (a word), which they introduce, but they are not autonomous. They are indeed involved in directed relations, with classical word-to-node mapping, but no independent connection is depicted. Besides, it is difficult to conclude that they are involved either in two binary relations or a ternary one.

Contrarily to Clark's, Kern's diagrams are very similar to modern dependency trees, but there are several differences with regard to FWs. In Fig. 4, The preposition *mit* ["with"] is grouped with its object *Federn* ["feathers"]. Osborne (2020: 197) considers this analysis exocentric. In my opinion the inflection of the word is more important to Kern than the preposition *mit*: he says that "verbal content can also be determined [...] by a case with a preposition" (1883: 16, my transl.); the expression "a case with a preposition" describes specific nodes in the tree. What is certain is that the preposition is associated with its object in a binary group, but no relation, nor direction is expressed. Furthermore, the binary group connects with other words as a whole, thus violating word-to-node mapping.

Conjunctions. The main breakthrough of this period is related to the distinction between subordination and coordination: the class of conjunctions becomes firmly divided into two subclasses. According to Odoul (2014), the distinction discretely occurs earliest in German grammar: Johann Bernhard Basedow (1724-1790) and, after him, Johann Jakob Bodmer (1698-1783), elaborate the distinction between *einführende* ["introducing"] conjunctions and *untergeordnete* ["subordinated"] ones. Odoul highlights that Bodmer adapts his French model (Gabriel Girard, 1677-1748) in an innovative way. Colombat et al. (2019: 430-433) also show that, in the German tradition, the distinction culminates with Carl Ferdinand Becker's *Deutsche Grammatik* (1830[1829]: § 152), which greatly influenced English grammar – Becker apologizes for the use of jargon, with terms such as *coordinative* and *subordinative conjunctions* (1830[1829]: viii). Becker categorizes conjunctions (as well as prepositions) as "relational words" (Becker 1830[1829]: § 1). He decomposes subordinate conjunctions into two conceptual parts: a demonstrative part, that is included in the main clause, and a relative part, that is included in the subordinate clause (§ 192). Although this analysis is close to the ones that generalize a pronominal analysis of the conjunction/complementizer, it shows that the conjunction must be considered a *part of a larger structure*. The description is not dependency-based at all, with regard to at least word-to-

node mapping (the conjunction has two roles and the combination between the conjunction and the clause is considered as a whole) and headedness (no head is identified). In the French tradition, the elaboration of the notion of *subordination*, inherited from Condillac's distinction between *incidental clause* and *subordinate clause*, leads to a separation of subordinating conjunctions from coordinating ones. Chervel (1977: 251-252) mentions Burnouf's (1775-1844) *Méthode pour étudier la langue latine* (1840-1841: 25) as the first work that makes use of the modern French terminology: *conjonction de coordination* and *conjonction de subordination*.

Diagrams clearly acknowledge the new classification. In Clark's system, prepositions and conjunctions are classified as *attendant elements*, i.e. "words accompanying a sentence without entering into its structure" (Clark 1855: 24; see Mazziotta 2016: Sec. 4). However, to Clark, prepositions and conjunctions behave differently: prepositions enter the structure they introduce (see above), whereas conjunctions do not. Clark distinguishes between two categories of *uses* of the conjunctions (Clark 1847: 97): they "connect words and phrases, similar in construction" and "introduce sentences". Those uses correspond, namely, to coordination ("compound sentences") and subordination ("auxiliary sentences"), even if Clark does not use these terms). In most diagrams, subordinate conjunctions are attached to two other words (Fig. 5), either by means of a stroke or by mere aggregation.

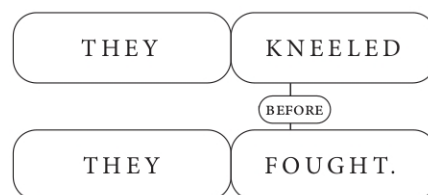


Fig. 5. – Clark's diagram of *They kneeled before they fought* (redrawn cf. Clark 1847: 29).

Coordinating conjunctions (Fig. 6; see Mazziotta 2016: 325-327) are handled similarly, but the bubbles they link are both connected to a single word they share a relation with.



Fig. 6. – Clark's diagram of *Temperance and frugality promote health, and secure happiness* (Clark 1847: 26).

These cases raise the same difficulty as previously highlighted: either the conjunction is involved in a ternary relation, or in two binary relations. On the other hand, Clark's diagram mostly satisfies word-to-node mapping, headedness and the idea of connection (although not necessarily graphically).

However, in the specific cases of subjectal or objectal subordinate clauses ("auxiliary sentences"), an additional bubble is added to the diagram, to represent the fact that the clause and the conjunction combined play the role of the subject or of the object (Fig. 7). In such cases, word-to-node mapping does not hold, but the relative positions of the conjunction and of the clause express a clearly-defined hierarchy.

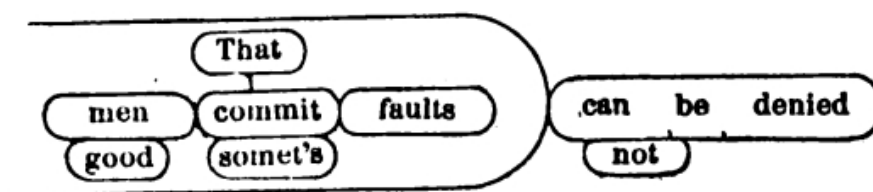


Fig. 7. – Clark's diagram of *That good men sometimes commit faults, cannot be denied*
(Clark 1855: 182).

Kern dissociates very strongly the treatment of the two kinds of conjunctions, following hierarchical criteria: coordinated clauses "are on the same level", whereas a subordinated clause "depends on the other" (Kern 1883: 27-28, my transl.). Kern uses the terms *koordinierende* ["coordinating"] and *subordinierende* ["subordinating"]. Both kinds of conjunctions are handled very differently. Subordinate conjunctions appears as "labels" on the strokes that connect subordinate clauses to their governor (not illustrated here; see Osborne 2020: 198), although Kern analyses such conjunctions as components of the clauses starting with them (1883: 17-18). Coordinating conjunctions appear (with or without trailing dots) between their conjuncts (Fig. 8).

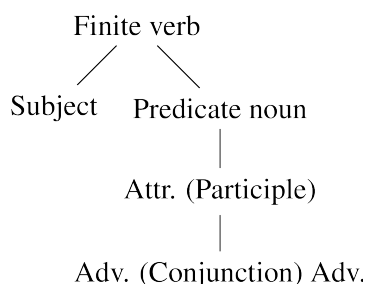


Fig. 8. – Kern’s diagram of *Das war ein schnell und glücklich beendigter Kriege* [“That was a quickly and happily concluded war”, transl. Osborne 2020: 202] (redrawn cf. Kern 1884: 34).

Words are abstracted away (cf. Kern 1884: 30).

The description of conjunctions suffers from the usual shortcomings: the conjunction is both a word and a relation, which complexifies diagrammatic conventions, but the distinction between a horizontal not-headed connection, and a vertical headed one is an important graphical advance that predates Tesnière’s diagrams (Osborne 2020: 209-211).

4 FW in Tesnière’s *Elements*

Tesnière states that relations must be understood as independent elements that actually unite two single words (2015[1966]: Ch. 1, § 5). Through a constant use of diagrams (“stemmas”), Tesnière defines a strongly dependency-based system. The prime kind of syntactic relation is *connection*, i.e. directed headed relations (2015[1966]: Part 1). Tesnierian connections correspond to various kinds of what we currently call *subordination*: attributive adjectives, complements of the verb, adjuncts, etc. Very similarly to Kern, Tesnière represents connections by strokes between an upper word (governor) and a lower word (dependent) (Fig. 9). Such representations satisfy the attributes of connection, headedness and binarity of dependency trees.

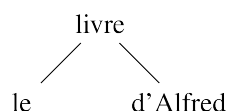


Fig. 9. – Tesnière’s simplified diagram of *le livre d’Alfred* [lit. “the book of Alfred”] (redrawn cf. Tesnière 1966[2015]: Ch. 21, § 11)

In Tesnière’s system, words either belong to the class of autonomous *constitutive* words or the class of *subsidiary* words (2015[1966]: Ch. 29). Constitutive words are verbs, nouns, adjective and adverbs, whereas subsidiary words are prepositions, conjunctions, clitic pronouns and articles. The extension of the latter class includes FWs. They are often semantically void (2015[1966]: Ch. 28 and 39) and they must combine with autonomous words to contribute to the structure of the sentence. Tesnière’s metaphor is very similar to the one developed in Aristotelian commentaries (Sec. 1.1): “constitutive words are the *bricks* of the sentence, whereas subsidiary words are merely the *mortar*” (Tesnière 2015[1966]: Ch. 29, § 9). Subsidiary words “pertain to functional syntax” (2015[1966]: Ch. 38). Regarding conjunctions and prepositions, Tesnière explains that they serve two purposes: 1/ coordinating conjunctions are *junctives*, i.e. tools that link constitutive words at the

same level; 2/ prepositions and subordinating conjunctions are *translatives*, i.e. tools that allow *transfer* operations (Fr. *translation*), by which words belonging to a specific word class acquire the distributional properties of another word class. Tesnière provides a genuine syntactic synthesis of some of the advances of the 18th and the 19th centuries. He classifies FWs into two classes: coordinative conjunctions in one class (cp. Sec. 3.2), and prepositions as well as subordinating conjunctions in the other (cp. Buffier’s stance, Sec. 3.1).

Coordinating conjunctions. Aside from *connections*, Tesnière defines *junctions*, i.e. non-directed symmetrical relations (2015[1966]: Part 2). The horizontal stroke interrupted by *and* in Fig. 10 expresses a junction between two words.

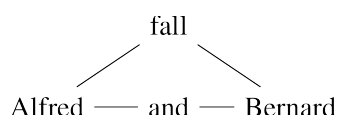


Fig. 10. – Tesnière’s diagram of *Alfred and Bernard fall* (redrawn cf. Tesnière 2015[1966]: Ch. 136, § 4)

Junction raises a recurrent issue: coordinating conjunctions are not easily distinguished from the relation of junction in the diagram. They are involved in a ternary or in two binary non-headed relations (Mazziotta 2014: 145-146). Tesnière does not bring much novelty in this respect. Similarly to Kern, he posits a clear distinction between headed and non-headed relations, which provides a formal argument for separating coordinating FWs from subordinating ones.

Prepositions and subordinating conjunctions. In Fig. 9, the preposition *d’* and the noun *Alfred* belong to the same node; their relation cannot be described in terms of normal Tesnierian connection. Although Tesnière’s definitions of word classes partially rely on semantics, the concept of *transfer* relies on syntactic properties: words “naturally” govern or depend on other words according to their word classes. Transfer supplements that connective potential by the means of FWs or inflectional morphemes that change the syntactic distribution of the word they introduce (the “source”). The example *le livre de Pierre* [“Peter’s book”] (2015[1966]: Ch. 151-152) illustrates this: *de* is a translatable, that makes *de Pierre* behave like an attributive adjective, despite the “source” *Pierre* being a noun. Tesnière insists that the operation must be complete before the phrase connects to its governor (2015[1966]: Ch. 157).

Prepositions and subordinating conjunctions behave similarly with regard to transfer. Subordinating conjunctions are translatives that transfer a complete “verbal node” (2015[1966]: Ch. 239ff) into a

noun, an adjective or an adverb: “If [...] the source is a verbal node with all its eventual subordinates – that is, an entire sentence – we say that the transfer is of second degree” (2015[1966]: Ch. 164, § 14). However, even if Tesnière firmly asserts verb centrality, subordinated clauses are considered as complete subtrees. In this respect, word-to-node mapping does not hold.

Tesnière does not adopt a flat analysis of the transfer operation: the group formed by the FW and its argument is considered as a syntactic unit that connects as a whole to a governor. According to Osborne’s interpretation (Kahane and Osborne 2015: liv-lvii), that handles flatness as a simple consequence of word-to-node mapping, Tesnière’s transfer is a clear violation of the latter. Additionally, there is a binary connection between the FW and its argument (represented by a T-like symbol in Fig. 11), but it is somewhat exocentric and no head is clearly defined. The notion of government that built up from Priscian’s to Beauzée’s analyses of prepositions is overshadowed by the notion of *transfer*: FW and inflection both behave like case markers. In much the same way, subordinating conjunctions have the same function with respect to clauses.

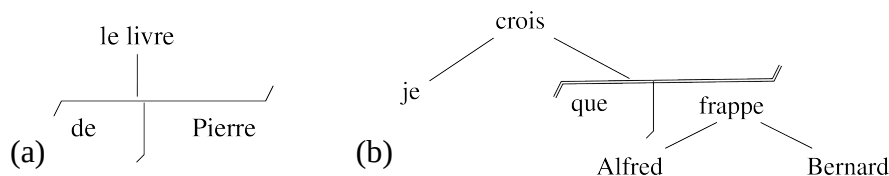


Fig. 11. – Tesnière’s diagrams of transfer: (a) *le livre de Pierre* [“Peter’s book”] (adapted from Tesnière 2015[1966]: Ch. 156), § 9; (b) *je crois qu’Alfred frappe Bernard* [“I think that Alfred hits Bernard”] (slightly modified from Tesnière 1953: 24).

5 Conclusion

The history of the description of FWs is not linear. Dependency issues emerged gradually but no definitive solution occurred. The concept of *dependency* (defined as a binary headed connection between words) has been gradually developed since early grammatical descriptions. However, FWs raise several major issues. The grammatical nature of FWs has long been recognized: they have, from the beginning, been conceived as relations between content words. Thus, the starting point of their history establishes the concept of *connection*, but not the one of *headedness*. The fact that FWs themselves are described as relations between two other linguistic units also results in the violation of binarity and word-to-node mapping.

Because of the typological nature of Greek and Latin, the association between prepositions and cases has naturally led to debates regarding morphological government. Genuine dependency-based

questions were soon asked about the hierarchy between prepositions and their associated nouns. All attributes of dependency appear in this question: “Do prepositions depend on the nouns or the other way round?” The question is grounded in dependency concerns, but a common answer remains to be found. Early diagrams by Clark and Kern, as well as Tesnière’s stemmas have attempted to formalize this difficulty by using specific conventions, but the directionality of the relation between the FW and the noun remains undefined. Current dependency-based approaches are not satisfied with such uncertainties, but no consensus has been achieved yet. As illustrated in this volume (XXXinternal linksXXX) MTT chooses that the preposition is the governor, whereas the Stanford Universal Dependencies (“UD”) project treats prepositions as dependent case markers (see Osborne and Gerdes 2019 for a critical review).

Conjunctions have long been treated as relations between equi-level units. Grammarians have been more interested in a classification of the types of logical relations between these units, than in unifying the description of conjunctions with that of other words. The issue whether conjunctions actually link words, phrases or complete sentences is debated with respect to its implication for logical relations. From the end of the Renaissance to the 19th century, the gradually increasing focus on complementizers contributes to developing a genuine syntactic description, and, consequently, a better understanding of the difference between coordination and subordination. In the case of subordination, the encapsulation of words in sentences linked by a conjunction remains prominent. Word-to-node mapping is not perfect, since sentences are referred to as wholes in most description. Although the French *Encyclopédie* strongly suggests the dependency chain $V \rightarrow que \rightarrow subordinate\ clause$, the status of conjunctions remains ambiguous in most descriptions: they are often considered both as words and as relations, thus obfuscating the binarity attribute.

Coordinating conjunctions have long been considered as the prototypical form of conjunctions in general, and difficulties in integrating them in a hierarchical system appear as soon as Modists try to model constructions as dependencies. It seems fair to admit that coordination is very difficult to model in dependency terms. Discussions on the status of the conjuncts occur (especially in the Renaissance), but the most interesting difficulties arise when the true nature of coordination is discovered and grammarians try to formalize it by means of diagrams. Kern and Tesnière strongly suggest that coordination must be represented orthogonally to other dependencies. Again, no consensus has been reached yet and coordination remains an important issue in dependency grammar: MTT and UD model it similarly to other dependencies (XXXinternal linksXXX), whereas some recommend keeping a revised Tesnierian approach that better acknowledges

hierarchical groupings (Mazziotta 2011, Kahane 2012), and structural parallelism (Osborne 2019: Chapters 10 and 11) of the conjuncts.

All in all, this historical survey has demonstrated why describing the behavior of FWs still remains such a crucial challenge for dependency grammar.

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