Chapter 7

Heads and history

Nigel Vincent
The University of Manchester

Kersti Börjars
St Catherine’s College, University of Oxford

This paper considers and compares the status of the concept of head within different grammatical frameworks (Minimalism, LFG and HPSG) and its relevance to our understanding of the mechanisms of change involved in grammaticalization. Our data is drawn from the developments of lexical prepositions into grammatical prepositions and complementisers in Romance and Germanic. We argue in favour of a non-derivational approach and in particular against accounts in which all developments are mediated through a chain of functional heads of the kind deployed in cartography and nanosyntax.

1 Introduction

Heads come in two kinds: lexical and functional. While the former are treated in a largely uniform way across theoretical frameworks, with the latter things are different. Functional heads have been reified as a core theoretical construct within Minimalism, where they abound particularly, but not exclusively, in the cartographic version, but have much less presence in a non-derivational framework like Lexical-Functional Grammar (LFG) and an even more reduced role in Head-Driven Phrase Structure Grammar (HPSG). The difference between the two kinds of heads also plays out in the diachronic domain. Nouns, verbs and adjectives often have consistent historical trajectories over centuries. Many of the nouns of modern English, for example, were also nouns a millennium ago in Old English even if they have undergone extensive phonological and semantic change in the
meantime. The diachronic profiles of items that realise functional heads are very
different, since, typically, they start out as full lexical words before developing
into a grammatical item. English will is a good case in point, having begun life as
a lexical verb meaning ‘want’ before becoming the temporal/modal marker that
it is today and, in some approaches, being assigned a structural position under a
node such as T or I. The key question then becomes: how do diachrony and syn-
chrony interact, and in particular how is the historical relation between lexical
and functional categories treated, in different grammatical frameworks? In the
present paper, we seek to compare and contrast LFG, HPSG and Minimalism as
models of (morpho)syntactic change. Our chosen dataset is the linked evolution
of prepositions and complementisers in a range of Romance and Germanic lan-
guages, but we hope and believe that the conclusions we will draw on the basis
of this evidence will extend both to other categories and to other languages and
families.

2 Grammaticalisation and category change

The phenomena that we will examine in this paper fall under the general heading
of grammaticalisation, classically defined by Meillet (1912: 131) as “l’attribution
du caractère grammatical à un mot jadis autonome [the attribution of a gram-
matical value to a formerly autonomous word]” and by Kuryłowicz (1965: 69) as
“the increase of the range of a morpheme advancing from a lexical to a gram-
matical or from a less to a more grammatical status”. We should be clear at the
outset that such definitions seek to identify a phenomenon or a mechanism of
change. Grammaticalisation is a descriptive label and not a theoretical construct,
pace the locution “grammaticalisation theory” that is to be found from time to
time in the literature, for instance in the positive reference by Haspelmath (1989:
318) to the “explanatory standards of grammaticalization theory”. There are two
properties which characterise such changes: the first is the fact that they recur
within the histories of unrelated languages. In our introduction, for example, we
cited the case of the English future auxiliary will, which derives from the Old En-
glish willan ‘want’. A similar shift is to be seen in the use of the Romanian verb a
vrea, etymologically the reflex of Latin velle ‘want’, to signal futurity, in similar
uses of the ‘want’ verb elsewhere in the Balkans (Albanian, Croatian, Greek), in
the Swahili future prefix -ta- originating in the verb taka ‘want’, and in parallel
developments in a number of other languages (Heine & Kuteva 2002). The sec-
ond property is the unidirectionality – or at least overwhelming asymmetry in
direction – of such changes; thus, we find many instances of volition verbs be-
coming future tense markers, but none of futures turning into verbs of volition (see Börjars & Vincent 2011 for further discussion and exemplification).

To the claimed existence of grammaticalisation there have been two broad classes of response. One is to deny its place as a special and separately identifiable category among the general processes of reanalysis that characterise morphosyntactic change (see amongst others Campbell 2001; Joseph 2001; Newmeyer 2001). The alternative is to accept that grammaticalisation exists and to seek to model it in theoretical terms. This, in very different ways, is what has been done by Heine et al. (1991), Roberts & Roussou (2003), van Gelderen (2011) and Traugott & Trousdale (2013), and it is within this latter class of approaches that the present paper also falls. A central issue then becomes the nature of the theoretical constructs that are assumed. Roberts & Roussou (2003), for example, operate within a framework which permits synchronic analyses involving movement upwards from a lexical head to a functional head but not downwards from functional to lexical – a principle of Universal Grammar (UG) which appears to mimic, and has been argued to explain, the directionality of change from lexical to grammatical but not vice versa implicit in Meillet’s and Kuryłowicz’s definitions. LFG and HPSG, by contrast, do not include movement within their theoretical inventories.

3 Prepositions and complementisers in diachrony

When it comes to categories and category change, prepositions are distinctive in two complementary, but as we will suggest connected, ways. From a synchronic point of view they appear to straddle the boundary between lexical items with their own semantic content – as in contrasting pairs such as on and off, under and over, to and from – and functional items such as the various ways of marking arguments of adjectives and verbs: proud of, convince someone of, keen on, rely on, similar to, give to or different from, differ from. (For more discussion in relation to a variety of languages, see the papers in Saint-Dizier 2006; Asbury et al. 2008; François et al. 2009; Cinque & Rizzi 2010.) At the same time there is also evidence that they all behave in ways akin to other functional items in acquisitional and pathological contexts. In this connection, the results of Froud’s (2001) study of an aphasic patient are particularly striking and have led some to conclude that all prepositions should be treated as functional heads. A different but related contrast is that between open and closed classes. Many languages are like English in having a group of typically monosyllabic items that have high textual frequencies, plus a more open class of polysyllabic and syntactically complex items such as across, behind, against, in front of, by virtue of and the like which share the distribution of, and may alternate with, the monosyllabic items.
Diachronic considerations complicate the picture even further: polysyllables may shorten into monosyllables as a result of sound change (over > o’er in some dialects); simple and complex forms may contrast (for vs against, behind vs in front of) and once independent forms may fuse or lose syntactic and semantic content (because < by cause, beside < by side, in light of, by virtue of). In the historical context, prepositions are also remarkable because of the sheer variety of their etymological origins. Whereas temporal and aspectual markers are, for the most part, derived from independent verbs, prepositions can emerge from a variety of categorial sources. Thus, among the items that we will consider in more detail below, the Swedish and Danish prepositions till and til ‘to, towards’, are descended from a noun meaning ‘goal’ and are cognate with the German noun Ziel ‘goal, target’. As such, in origin they were accompanied by nouns in the genitive as the case which typically marks nominal dependents. A trace of this can be seen in the final -s which survives in such fixed expressions as Danish til sengs ‘to bed’ and Swedish till sjöss ‘at sea’. A similar effect is to be seen with the Latin items causa ‘because of’ and gratia ‘thanks to’, which have clear nominal origins and are the only Latin adpositions to govern the genitive case. And with prepositions too, we find recurrent patterns developing independently within different languages. For example, the items hos ‘at, with’ in Swedish and Danish and French chez ‘at, with’ are both descended from nouns meaning ‘house, household’ (Plank 2015), and are often contrasted with the Swedish/Danish noun hus and the fact that Latin casa ‘hut’ has stayed as the usual word for ‘house, home’ in Italian and Spanish.

In other instances, prepositions may stem from independent adverbial particles which acted as specifiers for particular case forms. This is particularly relevant for the items on which we focus below. Thus, Latin ad ‘to, towards’, and the infinitival markers in Swedish att and Danish at, all descend from a Proto-Indo-European particle *ad ‘at, near’, hence the fact that the Latin preposition takes the accusative case, in origin used in a directional sense. By contrast Latin de comes from a particle meaning ‘down, away from’ and so occurs with the ablative, where the latter fuses earlier distinct locative and ablative cases (Vincent 1999; 2017).

In addition to nouns, particles and reduced complex structures of the behind type, prepositions may also derive from a range of non-finite verb forms, as with French pendant ‘during’ < Latin pendentem ‘hanging’, pres participle of pendere, English including, Italian presso ‘near’ < Latin prehensus, past participle of prehendere ‘take’, Danish blandt ‘among’ < blandet, past participle of blande ‘mix’, Sicilian agghiri ‘towards’ < ad jiri ‘to go-INF’. Similar in function to participles
and also possible etyma for prepositions are adjectives as in Italian vicino ‘near’ < Latin vicinum, or English near.

Complementisers exhibit a similar diversity of etymological sources including demonstrative pronouns as with English that, Swedish finite att and Estonian et, interrogative/relative pronouns as with French que (< Latin quid ‘what’) and Greek οτί; nouns as for instance Korean kes < ‘thing’ used with finite clauses; and verbs, especially verbs of saying, e.g. Yoruba kpé, Uzbek deb and Turkish diyə (Kehayov & Boye 2016: 870–874). As we shall see in what follows, they may also evolve from prepositions as in the case of French à and be linked to infinitives, and corresponding patterns elsewhere in Romance, Swedish infinitival att and Danish at, English to and German zu, Irish go and Basque -ela; with the exception of de and its cognates, all of these are derived from allative prepositions. Within the literature such patterns have led some scholars to postulate an intermediate category of “prepositional complementiser” (Borsley 1986; 2001; Kayne 1999 and see §7 below). In this context, too, the directionality property is evident in that, while a preposition may over time acquire complementizing functions, the reverse development is not attested.

4 Heads and diachrony across frameworks

The evidence of diachrony has figured very differently within the frameworks under consideration here. The fact of language change and its implications for general linguistic theory have figured as core issues within the Chomskyan tradition ever since the seminal work of Lightfoot (1979). By contrast, there has to date been relatively little work from a diachronic perspective within LFG – but see the contributions to Butt & King (2001) for some examples and Börjars & Vincent (2017) for a general overview – and virtually nothing within HPSG. And yet in different ways both these last-mentioned approaches have much to offer historical linguists. In the first place, the absence of an assumption of an innate UG makes them easier to reconcile with the historical datasets derived from usage-based approaches without giving up on the commitment to formal modelling.¹ Secondly, their less rigid approach to phrase structure and their readiness

¹As one of our reviewers reminds us, there is no inherent incompatibility between a belief in the existence of an innate UG and the assumptions of LFG and HPSG. And there are also a range of views within the Minimalist community as to what exactly is to be ascribed to UG. However, the fact remains that, as far as we are aware, no variant of Minimalism abandons UG in its entirety whereas within the HPSG and LFG communities there is general agreement that grammatical descriptions and explanations do not require the postulation of any innate components of language.
to recognise other dimensions of linguistic information makes them able more readily to accommodate linguistic diversity, including that which is the result of change (Evans & Levinson 2009: 475).

Let us begin then by comparing the types of category that are available within the different frameworks, with an eye particularly to the differences between the sub-types of non-lexical category since it is at that point that they most obviously diverge from each other. In this respect, Minimalism is in principle the most straightforward, since it presupposes a simple contrast between lexical heads (at least N, V, A; Baker 2003: 303–325) and functional heads. Constituency trees are always binary and consist of a head (lexical or functional) plus its complement; lexical heads are always dominated by one or more functional projections and typically move from a lower base-generated position to a higher functional one in the course of a derivation. The system is thus apparently strictly constrained, but in fact the restrictions in one part of the tree lead to considerable analytical freedom elsewhere, since the inventory of functional heads is large and seemingly unconstrained, particularly in the cartographic variant of the approach. And while some such heads have names at least which suggest a semantic basis – T(ense), Mod(al), D(et), etc. – others seem to be there only to facilitate the necessary movements or to provide an intermediate location for arguments but which do not have any overt phonological exponence, as with so-called “small” vP and nP. Moreover, all heads can in principle be empty or be occupied by silent items, so the possible analytical space is in practice quite unconstrained.

When it comes to LFG, the opposite state of affairs obtains. More basic types of category are available and there are no constraints barring non-binary or non-headed configurations. On the other hand the inventory of functional heads deployed is generally assumed to be very limited and null heads are wherever possible avoided. Table 7.1 sets out in tabular form the categories recognised within this framework.

In the most constrained versions of LFG, a functional category is postulated only when a feature comes to be associated with a structural position within a particular language, but there is no expectation that such categories are of universal validity (Kroeger 1993: 6–7; Börjars et al. 1999). Much of the work that is done by such categories in a model like Minimalism – for example in the domains of tense and modality – is instead handled within the f-structure (where “f-” stands for functional in a different sense!), which is parallel to the c(ontituent)-structure. The functional categories most commonly assumed are C, I and D, and

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2 A more constrained approach to categorial structure within a derivational framework is the Universal Spine explored in Wiltschko (2014). Lack of space forbids further consideration of this approach in the present context but for some discussion see Vincent (2018).
7 Heads and history

Table 7.1: Types of category in LFG

<table>
<thead>
<tr>
<th>Lexical</th>
<th>Functional</th>
<th>Non-projecting (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“full” semantics:</td>
<td>“weak” semantics:</td>
<td>may have</td>
</tr>
<tr>
<td>have PRED feature</td>
<td>no PRED feature</td>
<td>“full” semantics</td>
</tr>
<tr>
<td>projects to XP</td>
<td>projects to XP</td>
<td>does not project</td>
</tr>
<tr>
<td></td>
<td>“extension” of lexical category;</td>
<td>adjoins to X₀</td>
</tr>
<tr>
<td></td>
<td>functional co-head</td>
<td></td>
</tr>
</tbody>
</table>

on such a view the natural diachronic trajectory is for a structure like DP to gradually emerge or “grow”; definiteness first becomes associated with a category D and in due course with a particular structural position and hence as heading a DP where formerly there was an autonomous NP (Börjars et al. 2016). A different kind of construct within LFG is what, following Toivonen (2003), have come to be known as non-projecting words (notated X̂). Items in this class are of category X₀ but do not project to X’ or XP, they are marked as such in the lexicon and are head-adjoined to an associated and projecting X̂₀. Toivonen’s (2003) case study focuses on Swedish particles such as ihjäl ‘to death’ in the string slå ihjäl ‘kill’, lit. ‘beat to death’, where slå is of the category V₀, as is the whole string, but where ihjäl is a non-projecting P. As she demonstrates, the items that fall within the class of particles belong to a number of different categories – verbal, nominal, adjectival and prepositional – but what they have in common is that they adjoin to another item, to which in effect they cede head status. What Toivonen does not observe, but which is striking once the diachronic perspective is adopted, is that most if not all the items she categorises as non-projecting in this sense are themselves historically derived from full projecting categories or even phrases. The form ihjäl, for example, is a frozen version of the original PP i hel ‘in the land of the dead’.³

When we come to HPSG, beside full lexical heads stands the category of transparent head (Flickinger 2008), that is to say an item which determines the overall category of the phrase it heads but does not add any semantic content (in the sense defined below) of its own. A case in point is the English complementiser that, which heads and defines a CP, but does not contribute to the semantic representation of the clause of which it is a part. Such a concept is close to if not

³A reviewer points out that some recent work within Minimalism has adopted a similar notion of non-projecting words as a way of dealing with particles (see for example Biberauer 2017).
identical with the status the same item would have in an LFG or Minimalist account. More radical, however, was the suggestion by Pollard & Sag (1994: 44–46) that such items belong to a separate category of “markers”. In their account, a marker is “a word that is ‘functional’ or ‘grammatical’ as opposed to substantive, in the sense that its semantic content is purely logical in nature (perhaps even vacuous)”. Crucially, a marker is not a head. This concept, which conforms in many respects to traditional intuitions about such items, is not, however, the preferred option. Rather, there has developed within recent HPSG work the notion of a “weak” head, defined by Abeillé et al. (2006: 156) as “a lexical head that shares its syntactic category and other HEAD information with its complement”. Table 7.2 below summarises the various notions of head within HPSG, and Table 7.3 compares the inventory of category types and their properties within LFG and HPSG.

Table 7.2: Types of category in HPSG

<table>
<thead>
<tr>
<th>Full head</th>
<th>Transparent head</th>
<th>Weak head</th>
</tr>
</thead>
<tbody>
<tr>
<td>“full” semantics:</td>
<td>“weak” semantics:</td>
<td>“weak” semantics:</td>
</tr>
<tr>
<td>CONTENT feature</td>
<td>no CONTENT feature</td>
<td>no CONTENT feature</td>
</tr>
<tr>
<td>projects to XP</td>
<td>projects to XP</td>
<td>does not project</td>
</tr>
<tr>
<td>combines with XP</td>
<td>combines with XP</td>
<td>combines with XP (or X’)</td>
</tr>
<tr>
<td>contributes all but the CONTENT feature</td>
<td>contributes only MARKING feature; shares HEAD</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.3: Heads in LFG and HPSG

| | LFG | HPSG |
| | Lexical | Funct | Non-proj | Full | Full\textsubscript{transp} | Weak |
| lexical semantics | + | − | +/− | + | − | − |
| “borrows” lexical semantics | − | + | − | − | + | + |
| projects | + | + | − | + | + | − |
| combines with | XP | XP | X | XP | XP | XP (X’) |

With these concepts and categories in mind we can now ask what kinds of diachronic trajectories are predicted within the various systems and how these stack up against the empirical evidence.
5 Prepositions in the nominal domain

We start with the example of Swedish *till* and compare the way it can be analysed within the three frameworks under consideration in this paper. As noted above, this item begins life as a noun, so the categorial shift in the first instance is N > P. However, as the examples in (1) demonstrate, in the modern language it has acquired a range of functions.

(1) Swedish

   Oscar take.pst train.def to Stockholm
   ‘Oscar took the train to Stockholm.’

b. Oscar gav boken till läraren.
   Oscar give.pst book.def to teacher.def
   ‘Oscar gave the book to the teacher.’

c. Oscar sparkade till däcket.
   Oscar kick.pst to tyre.def
   ‘Oscar gave the tyre a kick.’

In (1a), we have the directional sense consistent with its etymological source in a noun meaning ‘goal’, in (1b) it marks a grammatical relation, and in (1c) it behaves as an adverbal particle. Within LFG, these three uses can be modelled as in (2). Here (2a) simply states that *till* is a full preposition with its own semantic content expressed via the pred feature and that it subcategorises for an item having the function obj(ect). The representation in (2b), by contrast, indicates its use to mark the grammatical relation of an oblique recipient, and (2c) is an example of a non-projecting word serving as a marker of dynamic aspect (Toivonen 2003: 142).

(2) a. till P (f pred) = ‘till <obj>’

b. till P (f pcase) = obl<recipient>

c. till P (f aspect telic) = –
   (f aspect dynamic) = +
   (f aspect durative) = –

Neither of the developments in (2b) and (2c), which are logically independent of each other, are possible until after the use of *till* as a preposition with a full semantics has emerged, so the diachronic sequence is N > P_{till} > P_{obl}/P. In other words, on this view, once we reach the P stage the change is not reflected in
the categorial head status of the item but in the kinds of f-structure that are associated with it and its projectability.

A complaint that is sometimes made about formal models by proponents of grammaticalisation theory is that these formal models cannot capture what is described as the “gradualness” of change because all they have at their disposal is a set of discrete categories (see for instance Haspelmath 1989: 330). The gradualness is more appropriately described as change in small steps, as argued by Roberts (2010). The analyses which we describe here do exactly that; they provide ways of capturing those stages between the prototypical categories that are characteristic of grammaticalisation, though as we will see, the steps here are described in functional and/or feature terms rather than through the use of a larger inventory of syntactic heads in the way that is characteristic of cartographic and nanosyntactic approaches.\(^4\)

Within HPSG, the full semantic use, or what Pollard & Sag (1994) call a “predicative preposition”, is modelled as in (3).\(^5\)

\[
\begin{bmatrix}
\text{prep-word} \\
\text{CAT} \\
\text{HEAD} \\
\text{prep} \\
\text{SUBJ} \\
\langle \text{NP} \_\_ \rangle \\
\text{COMPS} \\
\langle \text{NP} \ 2 \ [\text{acc}] \rangle \\
\text{CONT} \\
\text{allative-till} \\
\text{FIGURE} \ 1 \\
\text{GROUND} \ 2
\end{bmatrix}
\]

That is to say, it is a full independent head of the type \textit{prep-word} with an NP complement, where the \textit{CONT} feature is defined in terms of the semantic concepts of \textit{figure} and \textit{ground} (Tseng 2000; 2002). The grammatical use is also of type \textit{prep-word}, but in contrast to the allative preposition, it has no independent content value; the value for the whole phrase is instead derived from that of the NP complement (this use is referred to as “non-predicative” by Pollard & Sag 1994, and as “transparent” by Flickinger 2008, whereas Abeillé et al. 2006 describe it as a full head with “weak” semantics). This is illustrated in (4), where the values for the two \textit{CONT} features are shared.

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\(^4\)For further discussion of the gradualness question in the verbal domain, see Börjars & Vincent (2019).

\(^5\)The authors we refer to here use slightly different versions of the HPSG formalism without this affecting the general principles of the solutions. Our aim here has been to illustrate the points made by the different authors in a unified way rather than to side with any one of them on detail.
In that sense, the preposition is semantically “transparent” but preserves its head status and the constituent is accordingly still a PP. As Table 7.3 illustrates, in HPSG, there is also a third analysis possible, namely that of a “weak head”. This is the analysis proposed for the use of the preposition in French illustrated in (5) (Abeillé et al. 2006: 150), but it is not clear whether it would also be applicable to the Swedish example in (1c). The relevant feature matrix is provided in (6).

(5) French

a. Des bijoux ont été volés.
   DE.DEF.PL jewel.PL have.PRS.3PL be.PST.PTCP steal.PST.PTCP.PL
   ‘Jewels were stolen.’

b. De sortir un peu plus te ferait du bien.
   DE go out.INF a little more you do.COND.3SG DE.DEF.M.SG good.SG
   ‘Getting out a bit more would do you good.’

(6)

\[
\begin{bmatrix}
\text{weak-head} \\
\text{CAT} \\
\text{MARKING}\[2]
\end{bmatrix}
\begin{bmatrix}
\text{HEAD} \\
\text{de} \\
\text{comps} \\
\text{CONT} \[
\end{bmatrix}
\begin{bmatrix}
\text{CAT} \[2]
\text{HEAD noun ∨ verb} \\
\text{CONT} \[
\end{bmatrix}
\]
\]

In (6), de(s) is no longer of type prep-word, but of a separate type weak-head. Characteristic of this type is that it shares the value for its head feature with its complement, which means that these features, such as inf on the VP complement in (5b), are visible for external selection. This in turn means that it transmits nominal properties if attached to a noun and verbal properties if attached to a verb. Such prepositions are dubbed “minor” by Van Eynde (2004) and “non-oblique” by Abeillé et al. (2006). This is also the analysis Tseng (2002) proposes for the complementiser that in English. The role of weak heads within the overall descriptive apparatus of HPSG is similar to that of non-projecting words in LFG in that they do not project, though as shown in Table 7.3, they differ with respect to semantic content. Both these systems are thus significantly different from Minimalism,
where heads must always project. In diachronic terms, the development is then captured in HPSG from N to “full” P head and thence to either a transparent or a weak head or indeed, as here, to both.

The examples in (1) instantiate a well-known difficulty in synchronic descriptions of prepositions, namely how to model the formal identity beside the functional differences, and accounts such as those set out in (2), (3) and (4) achieve this goal by retaining the syntactic category P while associating it with different sets of morphosyntactic and semantic content. An alternative way to proceed is to postulate a separate category for the grammatical marker, in particular the functional head K, which licenses the associated NP or DP. K in turn can be realised either as a case-inflection or as a preposition. This solution has been strongly advocated in recent work within the nanosyntactic variant of Minimalism – see for example Svenonius (2008) and Roy & Svenonius (2009). Such an approach offers a way to capture the functional equivalence of till in an example like (1b) and the dative case in the equivalent in a language like Latin, through the structural difference between the preposition and the case marker is not as straightforwardly captured. In the present context, it is to be noted that this case-marking function of prepositions is itself the outcome of historical change. Items like Swedish till, English to and French à start out as semantically full expressions of direction and acquire this secondary role over time. The same goes for prepositions like English of and French de in their role as marking the argument of nominal head in expressions like the king of England or le roi de France. Within Minimalism such shifts can be seen as involving a change from P to K, whereas once again, in HPSG and LFG, the change is in the information associated with the argument of P rather than in the category itself.6

6 Prepositions in the verbal domain

Prepositional items may also develop in the direction of taking verbal complements. In this section we examine three contrasting circumstances within Germanic and one further one in Romance. The Germanic developments are summarised in (7).

(7)  

a. English: to develops both as a preposition and as an infinitival marker.  
b. German: zu derives from the same etymon as English to (< PIE *do ‘to, ‘toward’) and also has both prepositional and infinitival functions.

c. Swedish and Danish: the infinitive marker *att/at also derives from a PIE locative particle *ad ‘to’ but in this instance, unlike English and German, there is no homophony between infinitive marker and preposition, either because, as with Swedish *åt, the preposition has an independent phonetic development or because, as in Danish, the prepositional usage does not survive.

All these developments are instances of the cross-linguistically recurrent diachronic cline (8) identified in Haspelmath (1989).

(8) allative preposition > purposive marker > infinitival marker

At the same time, there are significant structural differences between the individual Germanic languages under consideration here. German *zu cannot be separated from the verb and hence the grammaticality difference between (9a) and (9b).

(9) German

a. Er hat versprochen, bald zu kommen.
   he have.PST promise.PST.PTCP soon ZU come.INF
   ‘He had promised to come soon.’

b. *Er hat versprochen, zu bald kommen.

Indeed *zu can, in certain circumstances, be part of the verb, as in the infinitive aufzustehen ‘to stand up’ beside the finite ich stehe auf ‘I stand up’. In the words of Haspelmath (1989: 296). “Modern German *zu is probably a bound prefix although the spelling treats it as a non-bound element” (compare Giusti 1991 for a similar conclusion).

In English, some separability is permitted, as in the Star Trek introduction: To boldly go where no man has gone before or in examples like (10), which are frequent despite the prescriptive prohibition of the split infinitive, not least because there is no obvious alternative to placing the adverb between to and understand.

(10) To really understand the situation you need to be an experienced politician.

The grammatical category to be assigned to English to is more controversial. Pullum (1982) argues that it behaves like an auxiliary, and Koster & May (1982) place it in I on the grounds that it expresses the feature value [−finite] and that finiteness in English is, in general, a property of items that fall under I. As Falk (2001) observes, this conclusion only follows if functional properties and categorical status have to be aligned, as indeed they do in the GB framework adopted by
Koster & May, but Falk is operating within LFG and, having separated function and category, concludes that *to* is in C. We will not seek to resolve the matter here; it suffices for us to note that all are agreed that its status in this construction is no longer prepositional. Moreover, it is clear that the distribution of *to* in earlier stages of the language implies a different status from that which it has in the modern language (van Gelderen 1998). Haspelmath (1989) adduces similar evidence for the separation of *zu* from V in earlier stages of German. Putting this evidence together, therefore, we can postulate a diachronic trajectory from P to an intermediate functional head such as C or I followed by incorporation under V.

When we come to North Germanic, however, things look rather different. Not only is the etymological source of the infinitival marker different but so is its distribution (Platzack 1986; Beukema & den Dikken 1989; Christensen 2007). The examples in (11) show that Swedish *att*, for example, can be separated from the verb even by whole phrases and clauses.

(11) Swedish

a. Hon njöt av *att* efter många år åter *känna* fast mark she enjoy.PST of *ATT* after many year again feel.INF solid ground under fötterna.
under foot.PL.DEF
‘She enjoyed feeling solid ground under her feet again after many years.’

b. *Att* fastän hon bara kunde ha stängt dörren efter *ATT* although she only could ha.INF close.PST.PTCP door.DEF after sig *stanna* och *lyssna* på vad han hade *att* säga refl stay.INF and listen.INF on what he have.PST ATT say.INF visade sig vara ett dåligt beslut.
show.PST refl be.INF a poor decision
‘To stay and listen to what he had to say, even though she could have simply closed the door behind her, turned out to have been a poor decision.’

It is also the case that, in Swedish, negation and negated objects obligatorily occur between *att* and the verb as in (12).

(12) Swedish

a. Hon gjorde sitt bästa för (*inte*) *att* inte somna (*inte*). she do.PST refl.poss best for *ATT* not fall asleep.INF
‘She did her best not to fall asleep.’
b. Känslan av att ingenting kunna göra (*ingenting) 
   feeling.DEF of att nothing be able.INF do.INF
   skrämmar mig.
   frighten.PRS me
   'The feeling of not being able to do anything about it frightens me.'

Given this distribution it is natural to see Swedish infinitival *att* and the corresponding forms in other Scandinavian languages as occupying the complementiser position and hence as instantiating a change from P to C. At the same time, it is of interest that these languages also display a separate form, usually spelled the same but pronounced differently, that is, the complementiser for finite clauses as in (13) (examples (13b) and (13c) taken from Nordström & Boye 2016).

(13) a. Swedish
    Olle vet att han får komma på festen.
    Olle know.PRS COMP he is allowed.PRS come.INF on party.DEF
    'Olle knows that he is allowed to come to the party.'

b. Danish
    Hun tvivler på at han er der.
    she doubt.PRS on COMP he be.PRS there
    'She doubts that he is there.'

c. Faroese
    Hon fortelur at hann fer at koma i dag.
    she tell.PRS COMP he go.PRS AT come.INF in day
    'She says that he is going to come today.'

Thus, in (13c) for example, the first occurrence of *at* is a finite complementiser derived from a demonstrative pronoun and cognate with English *that*, while the second occurrence in the future periphrasis *fer at koma* is cognate with Swedish infinitival *att* and has a prepositional source.

What we have seen in this section, then, is how prepositional items, which are traditionally defined as taking nominal complements may also over time come to be associated with verbal complements. We now turn now to consider the consequences of this alternative pattern of development.

7 From the nominal to the verbal domain

We have characterised the changes in the previous section in terms of a historical shift from P to C and/or I, and this is indeed what would have to be said within
both Minimalism and LFG. However, the HPSG concept of "weak head" will allow us to generalise across all the developments by simply saying that the original full head status of the prepositions in question weakens over time. Recall that the definition of a weak head is one that contributes only the value for the MARKING feature but yields its HEAD value, that is, its syntactic category, to the item with which it combines. Thus, if it combines with a verb, as with German zu, its external distribution is determined by that verb; if it is an independent constituent, as is the claim made in assigning an item the status of I or C, then it will pattern with that larger constituent, be it finite or non-finite as the context requires. We will consider now some evidence from Romance where the items in question do indeed yield their distributional power to the item with which they co-occur but, unlike the Germanic examples we have been considering, they nonetheless retain their own value as prepositions. In other terminology, they are prepositional complementisers (Kayne 1999; Borsley 2001).

Compare the two French examples in (14) as discussed by Abeillé et al. (2006).

(14) French

a. Il est allé à la gare.
   he.pr.3sg go.pst.ptcp to.the station
   ‘He went to the station.’

b. Il m’a invité à venir demain.
   he me-have.pr.3sg invite.pst.ptcp to.come.inf tomorrow
   ‘He invited me to come tomorrow.’

(14a) is a clear case of the full lexical preposition à with the directional meaning ‘to’, akin therefore to Swedish till in (1a). (14b), on the other hand, is another instance of an allative preposition coming to introduce an infinitival complement of a higher verb. The difference in the Romance case is that the pattern with à (and its cognates in the other languages) exists and develops side by side with another such pattern using the preposition de ‘of, from’ as in the examples in (15).

(15) French

a. Il vient de Paris.
   he come.pr.3sg de Paris
   ‘He comes from Paris.’

b. Il a décidé de venir demain.
   he have.pr.3sg decide.pst.ptcp de come.inf tomorrow
   ‘He has decided to come tomorrow.’
Abeillé et al. represent the lexical prepositions in (14a) and (15a) in much the same way as they would be represented in other frameworks: they are of the type *prep-word* and take an N-headed complement. The difference between frameworks is rather to be seen in the treatment of the grammaticalised use of the preposition to introduce an infinitive. For Abeillé et al., the weak heads *à* and *de* in (14b) and (15b) are heads in the sense that they select a complement, viz. the infinitival VP *venir demain*, and they add a value for the feature *marking* to the phrases they head, but they remain weak in the sense that they inherit the valence list of the complement. This last point is crucial since the matrix verb, on the one hand, determines the form of the complement – *inviter* in (14b) selects an infinitive marked with *à* and *décider* in (15b) one with *de* – and on the other contracts argument relations via control, or in other circumstances raising, with the embedded infinitive.\

At first sight it might appear that this is no different from saying that the items in question have become functional heads. However, Abeillé et al. (2006: note 12) are at pains to stress that, in their words, “weak heads differ from functional heads in LFG or GB”. In particular, a weak head is not a new type of category. As they go on to say: “Although a weak head’s category is underspecified in the lexicon, in any given syntactic context, it has a completely ordinary syntactic category (e.g. N or V). It is important to emphasise that when a weak head inherits a value of type verb or noun, it does not actually “become” a verb or a noun (i.e., a lexical object of type *noun-word* or *verb-word*).” Rather, in our present case, it maintains its status as a *prep-word*, which it shares with the full lexical preposition. In other words, the change is not a matter of grammatical category but of the manner in which elements of this kind integrate with the other parts of the sentence.\

Within LFG, a framework in which, as we have said, the distinction between category and function is built into the basic architecture via the distinction between f-structure and c-structure, an example like (14a) can be treated in the same way that underlying *à/de les garçons* obligatorily becomes *aux/des garçons*. Standard accounts explain this by treating the clitic and the article as belonging to the category D and attributing the differential behaviour to a categorial distinction between a P and C/I, whereas Abeillé et al. follow traditional grammar and treat pronouns and articles as distinct categories with the phonological merger only applying to the sequence P + Art. However, as they observe in their footnote 9, decisive evidence one way or the other is hard to come by.
way as our Swedish example (1a). For the infinitival construction, one option is to maintain the prepositional analysis, which entails a c-structure of the form in (16).

\[ (16) \quad \text{[PP [P à ] [VP \textit{venir demain} ]]} \]

This in turn would imply that diachronically the shift is not in the prepositional head but rather in an expansion of its f-structure to include XCOMP as well as OBL, so that there is a single lexical item with two alternate functional values depending on context. Alternatively, we have an IP with à defined as the value for the COMPFORM feature within its associated f-structure. The latter solution comes back to saying that there has been a diachronic shift at the categorial level, viz. P > C, and hence two distinct items.

The empirical evidence here is split. Latin prepositions did not govern infinitives, but there was a construction in which ad took a gerund as complement, thus \textit{ad dicendum} ‘towards, for speaking’. The change seems to have involved the loss of the gerund (in this function at least) and its replacement by the infinitive, itself also a verbal noun in origin. While this argues for \textit{ad} and its Romance reflexes having retained the status of prepositions, the fact that there are in the modern languages alternations between prepositional infinitives and finite complements introduced by que ‘that’ argues for the shift from P to C. Thus, if the complement of the preposition \textit{avant} ‘before’ is infinitival, it is introduced by \textit{de}, and if it is a finite clause we have \textit{que}, as in (17).

\( (17) \quad \text{French} \)

\begin{itemize}
  \item \text{a. Pierre écrira la lettre avant de partir.}
  \hspace{1cm} \textit{Pierre write.FUT.3SG the letter before DE leave.INF}
  \hspace{1cm} ‘Pierre will write the letter before leaving.’
  \item \text{b. Pierre écrira la lettre avant que sa soeur ne parte.}
  \hspace{1cm} \textit{Pierre write.FUT.3SG the letter before COMP his sister not leave.SBJV.SG}
  \hspace{1cm} ‘Pierre will write the letter before his sister leaves.’
\end{itemize}

Whichever solution is in the end adopted, there is a further difference between the use of functional heads in LFG and Minimalism that needs to be emphasised. In the remark quoted above, Abeillé et al. refer to “LFG and GB”. While it is true that in the latter, functional heads were for the most part restricted to C, T, I and D, at least one strand of Minimalism, the so-called cartographic approach developed
by Cinque and others, takes the further step of decomposing heads like C into a set of subsidiary functional heads (Rizzi 1997). Within such an approach, the original simple functional head C is split into a series of separate heads, of which Force is the highest and Fin the lowest.9 The item de in an example like (15b) or (17a) would be assigned to the Fin head whereas a finite complementiser like que in (17b) is located in Force. There are, however, two problems with moves of this kind. First, there is the obvious danger that, as the number of such heads expands, explanation is replaced by enumeration. The set of functional heads simply becomes an ever more fine-grained taxonomy. To take a recent example, (18) sets out the structure proposed in Munaro & Poletto (2014) for items meaning ‘where’ (construed as a PP ‘at/to wh-place’) in a range of Italian dialects (= their (7)).

\[PPDirSource \text{ da/di } PPDirGoal \text{ in } PPDirPath \text{ d } DisjP \text{ o/u } PPStatP \text{ DegreeP } \text{ ModeDirP} \text{ AbsViewP } \text{ RelViewP } \text{ DeicticP/ExistP } \text{ là/v/nd } \text{ AxPartP } \text{ PP } \text{ [P] [NPplace/Restrictor e [PLACE]]]]]]]]]]]]]]]]]

As they go on to note, “we assume that the whole extended projection in (7) is active even when a single lexically realized morpheme is present, irrespective of whether it occupies a high or low position” (2014: 292). When the constituent structures reach this order of complexity, it is reasonable to ask whether alternative approaches, in which not all aspects of meaning have to be driven through the syntax, are not worth considering. Moreover, diachrony adds a further difficulty: if, as we have seen and as also emerges in the Munaro & Poletto study and in related nanosyntactic research such as Roy & Svenonius (2009), the source of such heads lies in what were originally full lexical items, then the number of possible diachronic intermediate steps is potentially infinite, since there are no universally definable intermediate steps on the cline from lexical to grammatical.

8 Conclusions

We are now in a position to draw some conclusions from the case studies we have been considering and in particular to consider the relevance of diachronic data for theory construction. Let us begin with the key point that this data set

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9In Rizzi’s original account there were three intermediate heads between Force and Fin, namely two different Top(ic) heads ranged respectively above and below an intermediate Foc(us) head. In subsequent work within the framework, the number of such heads has expanded considerably but, for the purposes of our argument, consideration of Rizzi’s original proposal is sufficient.
reinforces the standard conclusion that grammaticalisation has a clear directionality. Lexical items of various categories may become prepositions with a range of functions and they move on from there to become complementisers, thereby shifting from the domain of nominal marking to verbal marking. A natural question to ask therefore is whether such directionality follows from any independent properties of the frameworks we have been exploring. And in the case of both LFG and HPSG the answer is a clear no. There are no internal principles within their architectures which predict the direction of change. This is a notable difference when compared to Minimalism, where, as we noted at the outset, the fact that grammaticalisation changes show a directionality can be argued – and indeed has been argued, not least by Ian Roberts in a number of studies – to follow from the fact that Universal Grammar allows raising but not lowering as a derivational operation. However, even this principle would not account for our observation that prepositions become complementisers but not vice versa since PP and CP are typically different projections rather than one being the extension of the other.

Two other types of diachronic pattern that have been considered from a Minimalist perspective are so-called lateral grammaticalization and downwards grammaticalization. The classic instance of the former is the development of deictic markers into copular verbs (see Börjars & Vincent 2017 for discussion and references), where an item appears to jump across from the nominal to the verbal domain. Downward grammaticalization, by contrast, is to be seen when an item starts its grammatical existence in a higher position and evolves into something which occupies a lower position in the tree. A case in point is the discussion by Munaro (2016) of the development of complementisers in some Italo-Romance dialects, where an item that was originally in the higher Force head position comes to occupy the lower Fin position. The evidence of changes such as these suggests that directionality of derivation is not the key to the directionality of change.

The alternatives, therefore, are either to find other internal mechanisms of grammar, such as the Late Merge and Economy principles proposed by van Gelderen (2009; 2011), or to consider the driving force of change to be the external circumstances of language use, but to deploy the devices of formal syntax in order to model such changes as and when they are attested. Thus, if, over time, we find evidence of nouns evolving into prepositions, prepositions evolving into complementisers and prepositions evolving from lexical (“full semantics”) to grammatical (“weak” semantics), but we do not have any attested cases of the reverse, we may reasonably ask: why not? The answer, we suggest, lies in the fact that non-finite forms start out as nominal and shift to verbal as they are incorporated into the verbal paradigm. There is, by contrast, no corresponding nominalisation of
finite forms. In other words, the directionality follows from the content and contextual function of the constructions at issue and does not need to be ascribed to any principle of UG.

The constructions we have reviewed here also demonstrate that large scale categorial changes can – and given the diachronic evidence should – be broken down into smaller steps which in turn can be modelled using such formal constructs as weak and transparent heads and non-projecting words. Within frameworks like LFG and HPSG, however, such constructs are not required to respect universal principles of categorial hierarchy. And in particular within a parallel correspondence architecture such as that provided by LFG, changes in the different dimensions do not necessarily proceed at the same pace. This, of course, is a familiar result when it comes to (morpho)syntax and phonology, but even within the former dimension we can now see that an item may cease to co-occur with nominals without necessarily losing the marking properties of a preposition. What, on the other hand, all three systems discussed here share is a commitment to the formal modelling of linguistic structure. The relation between any formal account and a functional explanation for the existence or development of that account remains, by contrast, an open question.

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>3</td>
<td>third person</td>
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<td>COMP</td>
<td>complementizer</td>
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<td>Head-Driven Phrase Structure Grammar</td>
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<td>Universal Grammar</td>
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Nigel Vincent & Kersti Börjars

References


Nigel Vincent & Kersti Börjars


