

On the notion ‘minor preposition’

Frank Van Eynde
Center for Computational Linguistics
University of Leuven, Belgium

Abstract

Since the introduction of the X-bar principles it is commonly assumed that prepositions are heads of PPs, in the same way as nouns and pronouns are heads of NPs. However, while this is well motivated for a large majority of the pronouns and the prepositions in many languages, there are also exceptions. More specifically, Van Eynde (1999) argues that the reduced or minor pronouns of Dutch—as opposed to their full or tonic counterparts—cannot head an NP, and the purpose of this paper is to demonstrate that there are also prepositions which cannot head a PP. The first section introduces the distinction between major and minor categories. The second shows how it can be applied to the prepositions and presents a way of treating minor prepositions in HPSG. The third singles out the Dutch *te* (to) as a plausible candidate for a minor preposition treatment, and the fourth provides criteria for the identification of other minor prepositions. The concluding section points out the wider significance of these findings.

1 The major/minor distinction

1.1 Two types of personal pronouns

Like French and Italian, Dutch has two types of personal pronouns: the full or tonic ones and the reduced ones, see figure 1. The most conspicuous difference between the two types is a phonological one: while the full pronouns can be stressed, the reduced ones cannot.

In contrast to the clitic pronouns of French and Italian, which share many properties with affixes and which are in fact analysed as such in resp. Miller (1992) and Monachesi (1995), the reduced pronouns of Dutch are autonomous words. Notice, for instance, that they can be separated from their head by any number of constituents.

person	full forms	reduced forms
first	<i>ik, mij, wij, ons</i>	<i>me, we</i>
second	<i>jij, jou, gij, u</i>	<i>je, ge</i>
third	<i>hij, zij, hem, hen, hun, haar</i>	<i>ze, het, ie</i>

Figure 1: The monosyllabic Dutch personal pronouns

- (1) ... dat ze *me* toen wat verlegen om een vuurtje *vroeg*.
 ... that she me then somewhat shyly for a light asked
 ‘... that she asked me somewhat shyly for a light then.’

In this respect they are just like the full forms, but—at the same time—there are also some clear syntactic differences. The most salient one is that the full pronouns can head a branching NP, whereas the reduced ones cannot. This accounts for the contrast in the following examples, quoted from Model (1991, 287-8).

- (2) Wij/*we allen hebben daar aan meegewerkt.
 we all have there on collaborated
 ‘We all have contributed to that.’
- (3) Wij/we hebben allen daar aan meegewerkt.
 we have all there on collaborated
 ‘We have all contributed to that.’

Since verb-second clauses allow at most one constituent before the finite verb, the words which precede *hebben* (have) must form one constituent. As a consequence, if there is more than one word, the pronoun must be one which can head a branching NP, i.e. a full form.¹ If there is only one word, though, as in the sentence with the floated quantifier, the pronoun does not head a branching NP and can hence also be realized by a reduced pronoun. The impossibility of the reduced pronouns to head a branching NP implies that they cannot take any *local* dependents, such as adjuncts or specifiers.

Other differences concern the fact that only the full forms can be conjoined, topicalised and used in isolation, as in short answers and elliptical comparative clauses.

- (4) Ze twijfelen tussen Mark en jou/*je.
 they hesitate between Mark and you
 ‘They hesitate between Mark and you.’
- (5) Mij/*me hebben ze niets gevraagd.
 me have they nothing asked
 ‘To me they did not ask anything.’
- (6) Wie heeft dit gedaan? Wij/*we.
 who has this done? we
 ‘Who did this? We.’
- (7) Hij reist meer dan jij/*je.
 he travels more than you
 ‘He travels more than you do.’

A final syntactic difference concerns their position. While the full pronouns appear in the same canonical order as definite NPs, i.e. Subj < IO < DO, the reduced ones tend to appear further to the left. In the following sentences, for

¹That the pronoun is the head and not the quantifier is clear from the fact that the person value of the NP is identical to the one of the pronoun, cf. *wij allen hebben ons/*zich geschoren* (we all have shaved ourselves/*themselves).

instance, the full DO follows the IO, whereas its reduced counterpart must precede the IO.²

- (8) ... dat hij ons haar/*ze heeft voorgesteld.
 ... that he us her has introduced
 ‘... that he has introduced her to us.’
- (9) ... dat hij ze/*haar ons heeft voorgesteld.
 ... that he her us has introduced
 ‘... that he has introduced her to us.’

Next to the phonological and syntactic differences there is also a semantic one. Whereas the full pronouns are always used as the argument of some predicate, be it a verb, a preposition or an adjective, the reduced ones can also be used in positions which are not assigned any semantic role. In other words, the reduced forms may have semantically vacuous uses, whereas the full forms are always referential.

1.2 An HPSG analysis

For capturing the syntactic differences between the full and the reduced pronouns, we cannot make use of the standard part of speech distinctions, since the part of speech of the reduced pronouns is the same as the one of their full counterparts; nor can we make use of functional distinctions, since both types express the same range of syntactic functions (subject, (in)direct object, prepositional object, ...). What we need then is a distinction which is orthogonal to the part of speech partition and which is neutral with respect to the standard functional distinctions. For this purpose I will make a distinction between two types of *category* (*major* vs. *minor*), as in Van Eynde (1999). While all objects of type *category* have a HEAD feature, which specifies its part of speech, and a MARKING feature, only the major ones have valence features, such as SUBJ and COMPS.

$$\begin{array}{c}
 \text{category} \left[\begin{array}{ll} \text{HEAD} & \textit{head} \\ \text{MARKING} & \textit{marking} \end{array} \right] \\
 \text{major} \left[\begin{array}{ll} \text{SUBJ} & \textit{list}(\textit{synsem}) \\ \text{COMPS} & \textit{list}(\textit{synsem}) \end{array} \right]
 \end{array}$$

The absence of valence features in minor categories reflects the fact that their members cannot take any local dependents.

Most of the other syntactic restrictions on minor categories can be summed up in terms of one general constraint, i.e. the constraint that their members must be local dependents of an overtly expressed head. This implies that they cannot be used as heads, conjuncts, non-local dependents (fillers)³ or remnants in verbless

²The grammaticality judgements hold for the reading in which *ons* (us) is the indirect object and *haar/ze* (her) the direct object. If the roles are reversed, the second sentence is also grammatical with the full form *haar*.

³This subsumes the ban on topicalisation, but also the extraction of *wh*-constituents. The prediction is hence that such constituents must be major, and—interestingly—this prediction is indeed borne out. The interrogative, relative and exclamative pronouns are—in contrast to the personal ones—all stressable, conjoinable and hence major.

- (1) Wie of wat je ook ziet, laat me iets weten.
 who or what you also see, let me something know

clauses. In terms of the inventory of phrase structure types in Pollard and Sag (1994), this means that a minor word can only be used as a complement, a subject, an adjunct, a marker or a specifier.

The tendency of the reduced pronouns to precede their major sisters can be related to a similar observation about the word order in French clauses. As argued in Abeillé and Godard (2000) one of the factors in determining that order is the relative weight of the constituents. More specifically, complements which consist of a single word (the so-called lite ones), have to precede their non-lite (branching) sisters. Compare

- (10) La course donne soif/une grande soif à Jean.
the race gives thirst/a great thirst to Jean
'The race makes Jean thirsty/very thirsty.'
- (11) La course donne à Jean *soif/une grande soif.
the race gives to Jean thirst/a great thirst
'The race makes Jean thirsty/very thirsty.'

While the non-lite object *une grande soif* may precede as well as follow the prepositional object *à Jean*, its lite counterpart *soif* can only precede it. Lite objects are not necessarily minor categories, but the converse does hold: minor pronouns are necessarily lite, and their leftward tendency can hence be attributed to their inherent liteness.

It may be worth stressing that the major/minor dichotomy is a purely syntactic distinction. Phonological reduction and the existence of semantically vacuous uses are useful for identifying plausible candidates for minor status, but they cannot be used as criteria.

Since the major/minor distinction is orthogonal to the part of speech partition, it can also be applied to other parts of speech, as will now be demonstrated for the Dutch prepositions.

2 Major and minor prepositions

2.1 Why most prepositions are major

When the relevant tests are applied to the Dutch prepositions, most of them turn out to be major. For a start, they can be heads of phrasal projections and take various kinds of local dependents, such as complements and specifiers.

- (12) [NP-[P-NP]] een meter onder de grond
[NP-[P-NP]] one meter under the ground
- (13) [A-[P-S]] net voor we vertrokken
[A-[P-S]] just before we left

They can also be conjoined, topicalised (when used intransitively) and used in isolation.

'Whoever or whatever you see, let me know.'

- (14) voor of tegen ons, door en voor de kinderen
for or against us, by and for the children
- (15) zonder had het ook gekund
without had it also can.PSP
'it could also have been done without, there is another bed upstairs.'
- (16) Heb je het liever met saus of zonder? Met!
have you it rather with sauce or without? with!
'Would you rather have it with sauce or without? With!'

As for word order, most of the prepositions do not show the typical leftward tendency of the minor words, since they may just as well precede as follow their complement. The postpositional order is even (almost) obligatory with the [+R]-pronouns (*er, hier, daar, waar, ergens, nergens, overal*), and also occurs with full NPs and PPs.

- (17) [[+R]-P] denkt nergens aan, springt overal op
[[+R]-P] thinks nowhere on, jumps everywhere up
'does not think of anything, jumps on everything'
- (18) [NP|PP-P] loopt de berg op, door de muur heen
[NP|PP-P] runs the mountain up, through the wall to
'runs up the mountain, through the wall'

There is only a small number of prepositions which invariably precede their complement: *met* (with) and *tot* (till), for instance, are inherently prepositional and formally distinct from their postpositional counterparts *mee* and *toe*.

Further evidence against minor status can be derived from extraction data: since the complement of a postposition can be extracted, the latter can be stranded. This phenomenon is usually illustrated with the [+R]-pronouns, but it also occurs in the case of full NPs and PPs.⁴

- (19) *Waar* denk je [__ aan] ?
where think you [__ on] ?
'What are you thinking of ?'
- (20) *Die berg* rij ik liever niet alleen [__ op].
that mountain drive I rather not alone [__ up]
'I would rather not drive up that mountain alone.'
- (21) *Door die muur* kunnen we niet [__ heen].
through that wall can we not [__ through]
'We cannot get through that wall.'

As a consequence, the postposition cannot be treated as a minor sister of the extracted phrase, since minor words can only be used as local dependents of an overtly expressed head.

⁴What is not possible in Dutch, is to extract complements (or parts thereof) of PREpositions: no matter whether the PP is an adjunct or a complement, extraction out of a prepositional PP is not possible.

For completeness' sake, let us also check the secondary characteristic of the existence of semantically vacuous uses. In this respect, many of the Dutch adpositions could in principle qualify as minor, since they do not contribute any content when they introduce a prepositional complement, or—more generally—when they are externally selected. Nonetheless, even in such uses, the syntactic criteria show otherwise. Stranding, for instance, is quite common for PP complements (even more than for PP adjuncts, since adjuncts tend to behave as islands), and the fact that semantically vacuous prepositions may combine with a minor pronoun is significant as well.

- (22) Hij denkt vaak aan me/je.
 he thinks often on me/you
 'He often thinks of me/you.'

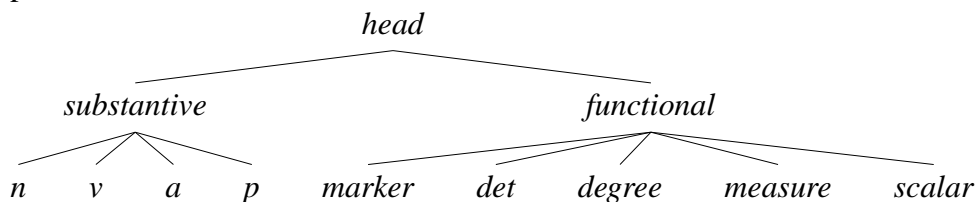
In this combination the preposition must be major, for if it were minor, it would be impossible to form a constituent with the pronoun. Put in other words, the node which dominates the preposition and the pronoun must obviously be a branching node, and since minor signs cannot head a branching node, at least one of the two sisters must be major; as a consequence, since the pronoun is minor, the preposition must be major.

At first sight then, the prospect of finding any minor prepositions in Dutch looks rather bleak. However, since the major/minor distinction does not apply to parts of speech as a whole, but rather to their individual members, it cannot be concluded from these examples that *all* Dutch prepositions are major. In the same way as the Dutch pronouns have both major and minor members, there may be minor prepositions next to the major ones.

2.2 An HPSG analysis for minor prepositions

Before singling out any specific words as candidates for a minor preposition treatment, I will spell out how such a treatment can be captured in terms of the HPSG sort hierarchy.

Since a minor preposition can by definition not be the head of a PP, the question is how it relates to the projection with which it combines. Given that prepositions standardly select their sister, we need a type of combination in which the selector is not identified with the head. Surveying the inventory of phrase structure types in Pollard and Sag (1994) there are three possibilities. One is *head-adjunct*, as for the prenominal adjectives which select a nominal head. Another is *head-marker*, as for the complementizers which select a verbal projection, usually a clause. The third possibility is *head-specifier*, as for determiners which select a nominal head. Which of these three combinations applies is determined by the part of speech of the nonhead daughter. Given the following partition for the part of speech values



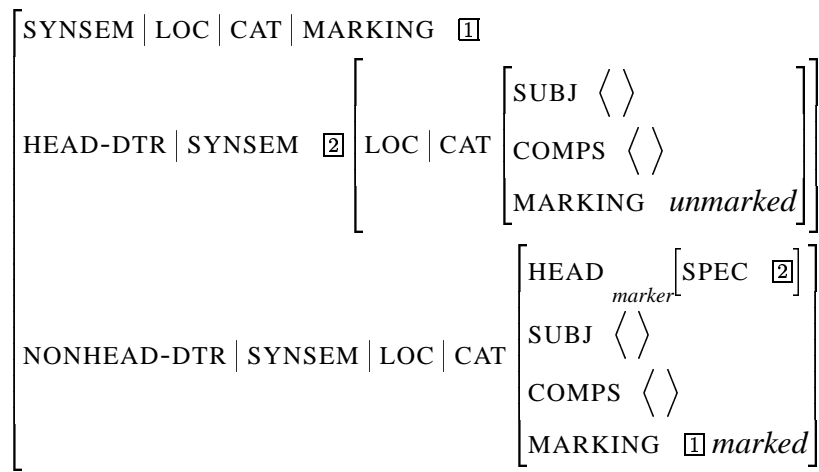


Figure 2: The head-marker phrase type

the adjunct daughters are defined as projections of substantive parts of speech, the marker daughters as markers and the specifier daughters as projections of the other functional parts of speech.

A special property of marker daughters is that they are required to be words, rather than phrases. Since this lack of a phrasal projection is also typical of minor words, the *head-marker* combination deserves a closer look. Its general properties can be read off figure 2.

In words, a marker daughter is a word which belongs to a special part of speech, called ‘marker’, which selects a phrasal head (via its SPEC value), which does not take any dependents, such as a subject or a complement, and which has a marked MARKING value, which it shares with its mother. The English complementizer *that*, for instance, selects a finite clause and has the MARKING value *that*. The head daughter, on the other hand, is a fully saturated phrase with the MARKING value *unmarked*; the discrepancy between the MARKING values of the mother and the head daughter has the effect of preventing iterative application.

Adopting this scheme, a minor preposition could be said to select its sister via SPEC (instead of via COMPS), and to have a MARKING value which corresponds to its name, such as *in* or *aan*. As a matter of fact, a treatment along these lines has already been suggested for the case-marking prepositions in Pollard and Sag (1987, 65) and again in Pollard and Sag (1994, 45), where it is explicitly limited to languages without adposition stranding. More concrete proposals have been made for German in Heinz and Matiasek (1994, 214) and for Catalan in Badia (1998).⁵

However, while this treatment may be technically satisfactory, it has the somewhat puzzling consequence that minor prepositions cannot be treated as prepositions. Instead, they are required to belong to some other part of speech, called ‘marker’, with a rather heterogeneous membership, ranging from complementizers over coordinate conjunctions to case-marking prepositions and perhaps some other elements like the comparative *than* and *as*. As a matter of fact, if this part of speech is intended to include all words which cannot have a phrasal projection, it

⁵As pointed out in the previous paragraph, the Dutch case-marking prepositions are heads of PPs and hence do not qualify as markers. This confirms the restriction in Pollard and Sag (1994), since Dutch allows adposition stranding.

should even include the reduced pronouns of Dutch. Apart from the heterogeneity of its membership the part of speech ‘marker’ is also exceptional in that there is no other linguistic theory which employs it.

More satisfactory would be an analysis in which the minor prepositions can be treated as prepositional, in the same way as the reduced pronouns are treated as pronouns. Within the existing type hierarchy, though, this is prone to lead to other idiosyncracies, for if the minor prepositions are prepositional, and if we stick to the correspondence between syntactic function and part of speech, they should be treated as adjunct daughters, which would not be very satisfactory either; it would, for instance, imply that the German case marking *auf* is an adjunct of the pronoun in the combination *auf ihn warten* (wait for him), which is somewhat counterintuitive to say the least.

A neat way to solve this paradox is to give up the correspondence between syntactic function and part of speech. As a matter of fact, this would not only facilitate the treatment of the minor prepositions, it would also solve some other problems. The specifiers, for instance, are required to belong to special parts of speech, such as *degree*, *measure* and *scalar*, but the words which head such phrases are usually also members of ‘substantive’ parts of speech, such as *adverb* or *noun*. As a consequence, a word like *years* would be the head of an NP, and hence a noun, in *we were living in Italy in those years*, but the head of a measure phrase in *two years before the war*. It would seem more logical to treat *years* invariably as a noun, and to allow the phrase which it projects to serve various syntactic functions, such as subject, object, measure phrase, prepositional complement, etc.

Putting the matter in a broader perspective, the postulation of POS ambiguities for making functional distinctions can even be shown to be at odds with one of the basic motivations for the use of abstract phrase structure types in HPSG. The use of the *head-complement* type of structure, for instance, is claimed to be preferable to the use of several category specific rules (like $PP \rightarrow P NP$), because the latter enforces one to state the constraints on constituency twice (once in the lexical entries of the complement taking words and once in the rules), whereas the former allows one to avoid this redundancy. The phrase structure types can hence be kept so abstract, that they generalize over categories, in much the same way as the X-bar principles in transformational grammar. In the *head-complement* combination, for instance, both the head and the complement(s) can belong to any part of speech. Given this drive for cross-categorial generalisation in the definition of the phrase structure types, it is an entirely unexpected and even self-defeating move to differentiate the adjunct, specifier and marker combinations in terms of the categories of their nonhead daughter. It would be more consistent to use one and only one type of structure for modelling the combination of a selecting non-head sign with its head, and to leave the specifics to the lexical entries of the head selecting words.

As a matter of fact, it is precisely for this purpose that I have introduced a new phrase type, called *head-functor*, in Van Eynde (1998). It models all combinations in which the nonhead daughter selects the head daughter,⁶ and hence

⁶For modelling this selection I use the head feature SELECT. It replaces the MOD and SPEC features which Pollard and Sag (1994) employs for the selection by respectively substantive and functional parts of speech. The possible values of SELECT are *none* and *synsem*, just like for the MOD feature in Pollard and Sag (1994).

subsumes the more specific types *head-marker*, *head-specifier* and *head-adjunct*; it also employs the MARKING feature, requiring token identity of the values of the mother and the functor daughter.

$$\begin{array}{l}
 \left[\begin{array}{l}
 \text{SYNSEM | LOC | CAT | MARKING } \boxed{2} \textit{marked} \\
 \text{HEAD-DTR | SYNSEM } \boxed{3} \\
 \text{NONHEAD-DTR | SYNSEM | LOC | CAT } \left[\begin{array}{l}
 \text{HEAD | SELECT } \boxed{3} \\
 \text{MARKING } \boxed{2}
 \end{array} \right]
 \end{array} \right] \\
 \textit{head-functor-phr}
 \end{array}$$

There are no constraints on the categories of either the head or the functor: they can belong to any of the usual parts of speech (N, V, P, A), they can be phrasal as well as lexical, and the functor daughter may be major as well as minor. Given this general characterization, we no longer need a distinction between substantive and functional parts of speech, which in turn frees us from the obligation to assign different POS values to a word, depending on whether it is used in a complement or in a measure phrase, or whether it is used as a case-marker or as the head of a PP. Instead, we can now characterize a minor preposition as a functor which selects a head sister (of any type of category) and which has a MARKING value of type *marked*. As such, it is clearly distinct from a major preposition, which is the head of a PP and which selects a complement.

Having defined what a minor preposition is, we can now turn to some specific prepositions and examine whether they qualify as minor.

3 The preposition *te*

Taking a cue from the treatment of the personal pronouns in the first section, the most plausible candidate for a minor preposition treatment is *te* (to). Its phonological shape, for instance, closely resembles the one of most minor pronouns, i.e. a consonant followed by a mute vowel, as in *me*, *we*, *je*, *ge*, *ze*. Moreover, in the same way as these pronouns are the reduced counterparts of full forms like *mij* and *wij*, *te* is the reduced counterpart of the inherently initial *tot*, which in turn is the prepositional counterpart of the postpositional *toe*.⁷ Furthermore, since *te* lacks autonomous content in its most common use, which is the combination with infinitives (*te werken* (to work)), it also shows another secondary characteristic of minor words, i.e. the existence of semantically vacuous uses. In order to find out whether it qualifies as minor, though, we have to check the syntactic criteria, and for that purpose it is useful to distinguish between its combination with nominals and its combination with infinitives.

3.1 *Te* plus nominal

Like almost every other preposition, *te* combines with NPs, both proper ones and common ones.

⁷This co-existence of three different forms for the ‘same’ adposition is quite remarkable. German and English, for instance, have only one form each, resp. *zu* and *to*. The absence of separate reduced forms in these languages may be an accident of orthography, though, for at least the English *to* is occasionally realised with a mute vowel.

- (23) te Leuven, te vier uur, te zijner ere
 in Leuven, at four hour, in his honour
 ‘in Leuven, at four o’clock, in his honour’

The NP is usually unmarked for case, but it may also take a dative form, as in the last example. To determine whether the preposition is major or minor in this combination it is useful to spell out its interaction with the nominal. If major, it takes the nominal as its complement and yields a PP. If minor, it selects the NP as its head and yields an NP.



In order to make a choice it is useful to have a look at cases in which the preposition introduces an adjunct of a nominal, as in

- (24) Baron Welis de Cortendonck, [ambassadeur *te Parijs*], ...
 Baron Welis de Cortendonck, [ambassador *in Paris*], ...

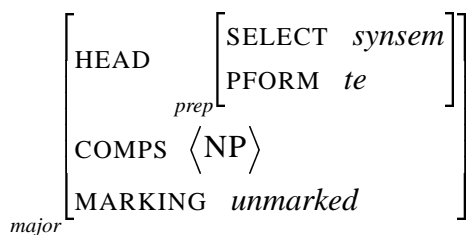
If the preposition is major, the bracketed nominal has the structure [N-PP]; if it is minor we get [N-NP]. While the former is very common type of structure for a nominal, the latter is restricted to appositive and partitive constructions, as in *Koning Albert* (King Albert) and *een fles Campari* (a bottle of Campari). As a consequence, since the *te* phrase in the example is neither appositive nor partitive, it seems preferable to treat it as a PP.

Another argument for major status is that *te* can be conjoined, as in⁸

- (25) Alle briefwisseling dient gericht aan de burgemeester, stadhuis
 all correspondence needs addressed to the mayor, town-hall
 van en te 3000 Leuven.
 of and at 3000 Leuven
 ‘All correspondence should be addressed to the mayor, town hall of and at 3000 Leuven.’

A third argument is of a more theory internal kind. Since HPSG requires the adjuncts to select their heads by means of a HEAD feature, this feature should also be present on the head daughter of the adjunct, i.e. on the preposition (in case of PP) or on the noun (in case of NP). Of these two options, the latter is clearly less attractive, since nouns like *uur* and *Leuven* hardly qualify as adjunctive by themselves. The other option is more attractive, since it attributes the head selecting feature and, hence, the adjunctive nature to the preposition.

In sum, the combination of *te* with an NP had better be treated as a PP, and this implies that the preposition qualifies as major.



⁸This phrase is quoted from an information brochure about the town of Leuven, published in 2000.

In words, the preposition takes an NP complement and heads a PP which modifies another projection. This other projection can be verbal, nominal or adjectival, as in *woonachtig te Leuven* (living in Leuven).

Next to this compositional type of combination, there are numerous idiomatic ones. Most of them are combinations with a single common noun and are part of collocations, as in *staat iemand te woord* (speaks to someone) and *komt iemand te hulp* (comes to someone's rescue). In such combinations, [*te* + N] is not an adjunct of the verb; nor is it a regular PP complement, for in such complements the link between noun and verb is much less tight. The nominal which is part of the PP complement of the verb *denken* (think), for instance, can be any kind of noun or pronoun, but the noun which is introduced by *te* in combination with *staat* (stands) can hardly be anything else than *woord* (word). Notice also that the valence and the meaning of the collocation is not straightforwardly derivable from its parts: *staat te woord*, for instance, takes an NP complement, whereas *staat* does not, and the idiomaticity of its meaning is a.o. clear from the fact that a word-by-word translation yields gibberish (stands someone to word). Treating the whole of the collocation as one syntactic unit would be implausible, since the verb can be separated from the [*te* + N] combination by any number of constituents, but there is some evidence for treating the latter as one syntactic atom. The two parts, for instance, are inseparable, and the noun may be one which does not occur independently, such as *voorschijn* in the collocation *brengt iets te voorschijn* (brings something out). Moreover, the fact that the combination consists of two words is due to some rather arbitrary spelling conventions; notice, for instance, that the same kind of combination is spelled as one word in collocations like *stelt teleur* (disappoints) and *gaat teloor* (becomes lost), and that there are several collocations in which the [*te* + N] combination is spelled in two words when combined with a verb, as in *stelt te werk* (employs), but in one word when combined with the corresponding noun, as in *tewerkstelling* (employment). In sum, there is ample evidence for treating *te* in these combinations as part of a compound word, rather than as a syntactic atom in its own right, and this implies that it requires an affixal treatment rather than a prepositional one.

Wrapping up, when combined with an NP, *te* is the head of a PP, and hence a major preposition, and when combined with a single common noun, it is not a syntactic atom but rather an affix. So far then, we have not found any evidence for a minor preposition treatment.

3.2 The infinitival *te*

In contrast to the English infinitival *to*, which combines with full-fledged VPs, the Dutch infinitival *te* combines with a single verb. More specifically, the infinitive with which it combines must not have taken any of its complements or adjuncts yet.

- (26) Hij had beloofd [ons een kopie [te sturen]].
he had promised us a copy to send
'He had promised to send us a copy.'
- (27) *Hij had beloofd [te [ons een kopie sturen]].
* he had promised to us a copy send

No word may separate the preposition from the infinitive, not even a particle. Compare, for instance, the well-formed *op te bouwen* (up to build) with the ungrammatical **te opbouwen*. This close connection with the verb is also clear from the inability to scope over conjunction, cf. *te nemen of *(te) laten* (to take or to leave). These are two properties which *te* shares with the participial prefix *ge-*, cf. *opgebeld* vs. **geopbeld*, and *gekregen of *(ge)kocht* (received or bought). At first sight then, there is some evidence for treating the combination as a single syntactic unit, along the same lines as the idiomatic [*te* + N] combinations.

When we apply the criteria of Zwicky and Pullum (1983), though, the affixal treatment turns out to be less attractive. First, the existence of arbitrary gaps, which is typical of affixation, is also attested in the case of the participial prefix *ge-*, but not in the case of the infinitival *te*. More specifically, while the presence of the participial prefix is limited by a number of constraints, which are partly phonological (**geverloren*) and partly morphological (**geonderschat*), *te* combines with any kind of infinitive (*te verliezen*, *te onderschatten*). In this respect it also differs from the combination with single common nouns, since many of the latter cannot be combined with *te*, cf. *per/*te trein* (by train), *per/*te telefoon* (by phone).

Second, the occurrence of morpho-phonological adjustments, which is another symptom of affixation, can be observed in the case of the participial prefix, but not in the case of the infinitival *te*. The addition of *ge-*, for instance, is accompanied by the idiosyncratic insertion of another *-g-* in *ge-g-eten* (eaten), but the combination of *te* with an infinitive is entirely regular. There is, for instance, no alternation between *te* and *ten*, as in the combination with single common nouns, cf. *te/*ten woord* (to word) vs. *ten/*te oorlog* (to war).

Third, there are no semantic idiosyncracies in the combination of *te* with a verb. Whatever the contribution of the preposition is, it is constant for the various infinitives with which it combines. Moreover, the combination does not form a collocation with some other verb or predicate, but is semantically autonomous.⁹

In sum, even though there is some initial evidence for an affixal treatment, the application of the Pullum-Zwicky criteria and a comparison with the participial *ge-* and the affixal *te* reveals that the infinitival *te* had better be treated as an autonomous syntactic unit.¹⁰

As for its status and its part of speech, the obvious first guess is to treat it along the same lines as the *te* which combines with NPs, i.e. as a major preposition, and hence as the head of a PP. This treatment, though, meets no less than five empirical problems. First, since clause final verb clusters may not contain any PPs, a PP analysis of the infinitival combination predicts that it cannot be part of the verb

⁹Another criterion of Zwicky and Pullum concerns selectivity: whereas affixes tend to require a stem of some specific category, words are less selective with respect to the category of their head or host. As applied to the infinitival *te*, this provides further evidence against an affixal treatment, since *te* also combines with nouns. Nonetheless, as a criterion it is less reliable than the other three, since there are various affixes which also combine with different categories. The Dutch *on-*, for instance, is unmistakably an affix, but combines equally well with adjectives (*oneven* (uneven)) as with nouns (*onrust* (unrest)).

¹⁰The fact that the infinitival *te* cannot scope over conjunction is hence not a sufficient reason for treating it as an affix. The converse of the criterion is valid, though: if an element can scope over conjunction, then it must be a word rather than an affix.

cluster, but this prediction is not borne out. On the contrary, it turns out that the combination *MUST* appear in the verb cluster.

- (28) dat ik met hem [wil praten], * dat ik [wil met hem praten].
that I with him [want talk], * that I [want with him talk]
'that I want to talk to him.'
- (29) dat hij [zegt te willen komen], * dat hij te willen [zegt komen].
that he [says to want come], * that he to want [says come]
'that he says he wants to come.'

Second, PPs can be topicalized, by fronting or by clefting, whereas the *te-V[inf]* combination cannot.

- (30) [Met hem] wil ze niet praten.
[with him] wants she not talk
'Him she doesn't want to talk to.'
- (31) Het is [met hem] dat ze niet wil praten.
it is [with him] that she not wants talk
'It is him that she doesn't want to talk to.'
- (32) * [Te komen] heeft hij beloofd.
* [to come] has he promised
- (33) * Het is [te komen] dat hij beloofd heeft.
* it is [to come] that he promised has

Third, since the presence of the preposition is optional in certain contexts, as in

- (34) Ze had niet hoeven (te) komen.
she had not needed (to) come
'She hadn't had to come.'

the PP treatment would involve an otherwise unattested alternation of *V[inf]* and *PP[te]*.

In the previous examples, the *te-V[inf]* combination is the complement of some other verb, but the same combination can be used as a nominal modifier, and also in that use, there is some evidence against a PP analysis. First, while PP modifiers of nouns must occur postnominally, the *te-V[inf]* combination must occur prenominally, just like the participles (passive, perfect or present).

- (35) de facturen [van vorig jaar], * de [van vorig jaar] facturen
the invoices [of last year], * the [of last year] invoices
'the invoices of last year'
- (36) de [te betalen] facturen, * de facturen [te betalen]
the [to pay] invoices, * the invoices [to pay]
'the invoices to be paid'
- (37) de betaalde facturen, de betalende toeschouwers
the paid invoices, the paying spectators
'the invoices paid, the paying spectators'

Second, prenominal adjectives and participles show agreement with the head noun, in the sense that the presence of the inflectional suffix *-e* is determined a.o. by the number and gender of the modified noun.

- (38) een warm/*warme bad, zeer warme/*warm kleren
 a warm/*warm.DECL bath, very warm.DECL/*warm clothes
 ‘a warm bath, very warm clothes’

A straightforward way of handling this is to assign different HEAD|SELECT values to the forms with and without suffix. Given the HEAD FEATURE PRINCIPLE, this correctly predicts that it is the head of the adjunct (i.e. the adjective or the participle), which agrees with the noun, and not any of its dependents, such as *zeer*. Turning now to the infinitival adjuncts, we find the same kind of agreement.¹¹

- (39) een [niet te verstaan/*verstane] gemompel
 a [not to understand/*understand.DECL] mumble
 ‘an ununderstandable mumble’
- (40) in [niet mis te verstane/*verstaan] bewoordingen
 in [not mis to understand.DECL/*understand] words
 ‘in unmistakable terms’

As a consequence, if we treat the preposition as the head of the adjunct, we incorrectly predict that the agreement suffix should be realized on the preposition. In sum, the PP treatment is highly implausible for the infinitival *te*.

For an alternative, we could turn to the analysis which Pullum (1982) has proposed for the English infinitival *to*. After having dismissed various alternatives (affix, particle, complementizer, preposition, ...), he proposes to treat it as a nonfinite auxiliary verb which takes a VP[*inf*] complement and which heads a VP[*aux,to*]. When applied to the Dutch *te*, the resulting analysis would solve several of the problems with the PP treatment, but there are two which remain. The verb cluster data, for instance, are still problematic, for if one allows VPs in clause final verb clusters, one has to stipulate that these can only be VPs which are headed by *te* and which do not contain any other VP constituents (all other VPs have to be excluded). The agreement data remain equally problematic, for if the head of the prenominal infinitival is *te*, one makes a wrong prediction about the position of the agreement suffix. On top of that there is a new problem, namely that *te* does not show any verbal morphology. For the English *to* that may be less of a problem, since it could—morphologically speaking—be a bare infinitive, just like *do*, but for the Dutch *te* this rebuttal does not work, since Dutch infinitives are always—without any exception—marked by the affix *-n*; as a consequence, if it were an infinitive, one would expect the form *ten*, but in spite of the fact that this form exists, it does not combine with verbs. In sum, whatever its merits for English, the assignment of verbal status to the Dutch *te* is rather implausible.

Another alternative is the one that Sag (1997, 458) has recently proposed for the English infinitival *to*, i.e. to treat it as a complementizer which takes a VP[*inf*] and which heads a CP[*inf*].

¹¹The infinitives which end in *-en* do not take the suffix for phonological reasons, but the alternation can be demonstrated with infinitives in which the final consonant is preceded by a non-mute vowel, such as *gaan* (go), *staan* (stand), *slaan* (hit), *doen* (do) and *zien* (see).

$$\left[\begin{array}{l} \text{PHON } \langle \text{TO} \rangle \\ \text{SYNSEM} \mid \text{LOC} \mid \text{CAT} \left[\begin{array}{l} \text{HEAD} \quad \text{comp} \left[\text{VFORM } \textit{inf} \right] \\ \text{SUBJ } \langle \text{I} \rangle \\ \text{COMPS } \langle \text{VP} \left[\textit{inf}, \text{SUBJ} \langle \text{I} \rangle \right] \rangle \end{array} \right] \end{array} \right]$$

Notice that complementizers have a VFORM feature, just like verbs. Technically, this is modelled by the introduction of a supertype *verbal*, which subsumes both *verb* and *complementizer*, and which is declared to have VFORM, AUX and other verbal features.

A similar analysis could be spelled out for the Dutch *te*, but the resulting CP treatment would have the same problems as the VP analysis, i.e. (1) a complication in the analysis of verb clusters, since CPs are not the kind of objects which can normally appear in Dutch verb clusters, (2) a wrong prediction about the locus of the agreement suffix in prenominal infinitivals, and (3) the unmotivated assignment of a VFORM feature to *te*. On top of that, the CP analysis has two further problems. First, it makes a wrong prediction about the word order in NPs, since CPs invariably follow the noun they modify.

- (41) het bericht [dat ze komt], * het [dat ze komt] bericht
the message [that she comes], * the [that she comes] message
- (42) de [te betalen] facturen, * de facturen [te betalen]
the [to pay] invoices, * the invoices [to pay]

Second, since direct object CPs can be topicalized by fronting, one would expect the same of the *te* V[*inf*] combination, but this expectation is not borne out.

- (43) Dat/of er iets gestolen was, wisten we niet.
that/whether there something stolen was, knew we not
‘We did not know that/whether something had been stolen.’
- (44) * Te verdwijnen hebben ze geprobeerd.
* to disappear have they tried

In sum, whatever its merits for the English infinitival *to*, the CP analysis is rather implausible for the Dutch *te*.

Comparing the treatments which have been examined so far (PP,VP,CP), they have one property in common, i.e. the assumption that the infinitival *te* is a complement taking head. As a matter of fact, it is precisely this assumption which inevitably leads to wrong predictions about the order in verb clusters and NP internal agreement. An obvious way to avoid these is to treat the infinitive as the head, and *te* as its nonhead sister. In the framework of this article, this implies that *te* is a minor functor and that its AVM can be spelled out as follows.

$$\left[\begin{array}{l} \text{PHON } \langle \text{TE} \rangle \\ \text{SYNSEM} \mid \text{LOC} \mid \text{CAT} \quad \text{minor} \left[\begin{array}{l} \text{HEAD} \quad \text{prep} \left[\text{SELECT } \text{V} \left[\textit{inf}, \textit{unm} \right] \right] \\ \text{MARKING } \textit{te} \end{array} \right] \end{array} \right]$$

This analysis avoids the problems with the three XP treatments (PP,VP,CP). More specifically,

- it is compatible with the constraint that clause final verb clusters contain only Vs;
- it correctly predicts that the topicalisation of V[*inf,te*] combinations sounds awkward;
- the optionality of the preposition can be captured by underspecification: V[*inf*] subsumes both V[*inf,te*] and V[*inf,unm*];
- it complies with the LP constraints within NPs, more specifically with the constraint that nonfinite V-projections may precede the noun which they modify, whereas PPs may not;¹²
- it correctly predicts that the agreement suffix in prenominal adjuncts will be realized on the infinitive and not on *te*.

The same effects could be obtained in a marker treatment of the infinitival *te*, but even apart from the evidence against the use of a separate *head-marker* type of combination (see section 2.2), it would require some particular adjustments and stipulations. Notice, for instance, that markers can only be combined with fully saturated projections (such as S and NP), whereas the infinitival *te* combines with a single verb. Moreover, the fact that *te* cannot be conjoined would have to be stipulated, since it is not a general property of markers. Compare¹³

- (45) Ik weet nog niet [of en wanneer] ze komen.
I know not still [if and when] they come
'I do not know yet if and when they come.'
- (46) *Ze liggen [op of te] sterven.
* they lie [up or to] die

In the minor preposition treatment, this need not be stipulated since the ban on conjunction follows from the minor status of the infinitival *te*. Similarly, while markers may just as well precede as follow their head sister, a minor preposition is predicted to precede it, because of the general leftward tendency of minor words.

In sum, we have explored a large variety of possible analyses for the infinitival *te*, ranging from affix over major preposition to auxiliary, complementizer and marker, but they all met one or—usually—more problems which the minor preposition treatment manages to avoid.

¹²Given the Head Feature Principle, the selection of a nominal head by the V[*inf,te*] adjunct is part of the CAT|HEAD value of the infinitive. The adjunctive nature of the phrase is hence attributed to the infinitive, and not to *te*. This is plausible, since also other nonfinite verbs (present, past and passive participles) can be used as adjuncts of nouns.

¹³Notice that *ze liggen op sterven* (they are about to die) and *ze liggen te sterven* (they are dying) are both well-formed.

initial only	flexible	final only
<i>als, met, per, sinds</i> <i>te, ten, ter, tot</i>	<i>aan, bij, door, in, langs, na, naar</i> <i>naast, om, op, rond, uit, van, voor</i>	<i>af, heen</i> <i>mee, toe</i>

Figure 3: The monosyllabic Dutch adpositions

3.3 Summing up

Taking stock, we can conclude that *te* requires different analyses, depending on the kind of construction in which it participates. More specifically, it is a major preposition in combination with NPs, an affix in combination with certain nouns, and a minor preposition in combination with infinitives. This demonstrates that a preposition is not major or minor as such, but rather that it can be major in some of its uses and minor in other ones.

4 Extrapolation

Providing a full list of the minor prepositions in even one language is beyond the scope of this article, not so much because the number of plausible candidates is so large, but rather because the argumentation for a minor preposition treatment is only convincing if it can be shown to be more appropriate than any of its alternatives, which invariably requires some detailed argumentation. For this reason, I will not go into the specifics of another particular combination; instead, I will use the criteria and the analysis of *te* as the starting point for some tentative extrapolation.

First, since minor words can normally not be stressed, a preposition is most likely to have minor uses, when it is short, i.e. nonsyllabic or monosyllabic.¹⁴ This limits the list of possible candidates to the twenty-six in figure 3.

Second, since minor words tend to precede their sisters, an adposition is more likely to be minor (in some particular use) when it precedes the phrase which it selects. From this it follows that the four inherently final adpositions are unlikely to have any minor uses, and that the fourteen flexible ones are less likely to be minor when they are used postpositionally. Given the fact that only POSTpositions can be stranded in Dutch, this implies that stranded adpositions are unlikely candidates for minor status, and since the intransitive adpositions are a subset of the strandable ones, this extends to the intransitive ones, including the particles. Confirmation for this co-rolary is provided by the fact that most of the intransitive Ps can be topicalised, which is a clear sign of major status.

Third, since minor words tend to have semantically vacuous uses, one is more likely to find minor uses for prepositions which can also introduce complements than for those which can only introduce adjuncts. Surveying the list of twenty-two remaining candidates and matching it with the list which Beeken (1991) provides of the prepositions which are used to introduce complements, we can eliminate

¹⁴Notice that the unstressability does not apply to the preposition as such, but to the preposition in some particular use: *te*, for instance, can be stressed when it is used as a major preposition, as in *van en te Leuven*, but not when it is combined with an infinitive.

some more candidates, such as *langs* (along), *na* (after), *naast* (next to), *per* (per), *rond* (around), *sinds* (since), *ten* (to) and *ter* (to).¹⁵

At this point, we are left with twelve candidates: the inherently initial *als* and *met*¹⁶ and the prepositional uses of *aan*, *bij*, *door*, *in*, *naar*, *om*, *op*, *uit*, *van* and *voor*. As a matter of fact, I have already argued that the use of *aan* in the progressive [*aan het* + V[*inf*]] combination can best be analysed as a minor preposition, rather than as a major preposition, a complementizer or a marker, see Van Eynde (1998), and in Van Eynde (n.d.) I provide evidence that *om*, *van* and *voor* have also got uses for which a minor preposition treatment is preferable to any other kind of treatment.

5 Conclusions

The main conclusions can be summed as follows

- in the same way as there are pronouns which cannot head a branching NP there are prepositions which cannot head a branching PP; we call them minor and have proposed criteria for their identification;
- an example of a minor preposition is the Dutch infinitival *te*; alternative analyses (as an affix, a major preposition, an auxiliary, a complementizer or a marker) are less plausible;
- a treatment along these lines is also applicable to specific uses of other prepositions, such as the Dutch *aan*, *om*, *van* and *voor*;
- the postulation of a cross-categorical *major/minor* distinction prepares the way for considerable simplifications in the part of speech hierarchy and—especially—in the hierarchy of phrase types; more specifically, the *head-functor* combination subsumes the *head-adjunct*, *head-marker* and *head-specifier* combinations of Pollard and Sag (1994).

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¹⁵Contrary to Beeken (1991), I include *als* among the prepositions which can introduce complements. A relevant instance is its use in *beschouwen als* (regard as).

¹⁶*Tot* is a less plausible candidate, since the existence of *te* is likely to preempt its use as a minor preposition.

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