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## Lexical and Functional Properties of Prepositions

The distinction between lexical and functional categories is at the heart of present-day generative grammar. It plays a role in nearly every conceivable area inside and outside the grammar, ranging from word order and prosody to language acquisition and aphasia. For clear-cut cases like nouns and determiners the distinction between lexical and functional categories is straightforward, but there are some categories that are notoriously difficult to classify, like adverbs, auxiliaries, numerals, and, most of all, prepositions, the category on which this article focuses. There is no consensus in the literature about whether the prepositions side with the lexical categories N, V, and A or whether they are a functional category like D, C, or I.

In the X' theory of the seventies and eighties, P was generally assumed to be no less lexical than N, V, or A, following Jackendoff (1973). However, the delineation of the concept of functional categories in the late eighties raised doubts about the character of P. Abney (1987) notices that "P seems to straddle the line between functional and thematic [lexical, JZ] elements" (Abney 1987:63). Grimshaw (1991), proposes, although with some reservations, that P is a functional element of the nominal system, playing the same role that C plays in the verbal system. Several authors have argued that P is heterogeneous: some prepositions are lexical, others are functional (see, for example, Van Riemsdijk 1990, Rauh 1995, and Zwarts 1995a).

The reason for this lack of unanimity is that the criteria that distinguish N, V, and A from categories like D and C fail to yield clear results when applied to P. Is the category of prepositions a closed class or not? Do prepositions have descriptive content or only a

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syntactic function? Do they form an extended projection with their complement (in the sense of Grimshaw 1991) or not? As yet no conclusive answers have been given to these questions.

Why are prepositions so problematic for the lexical-functional distinction? This paper will show, on the basis of the prepositions of Dutch, that there are two related reasons, one having to do with the prepositions themselves and the other concerning the notions lexical and functional.

Section 1 demonstrates that the category of Dutch prepositions consists of a core of 'real' prepositions and a periphery of words that may behave like prepositions in certain respects, but that should not be treated as genuine instances of the category P, as argued in Zwarts (1995b). Keeping the real prepositions apart from these peripheral cases gives us a clearer view on the properties of P: P turns out to be functional in some respects (it is a closed class of small words) but lexical in other respects (Ps can be used intransitively, in morphological processes, and they can be stranded).

In order to explain the hybrid status of P, I will argue in section 2 that the notions 'lexical' and 'functional' are not complementaries, but that they refer to two independent dimensions: a category is lexical if it is based on the lexical features +N and +V; it is functional if it is a function mapping phrases into phrases. The categories N, V, and A are lexical (and nonfunctional); categories like D and C are functional (and nonlexical); the category P lies in between, being *nonlexical and nonfunctional*:

(2) <----lexical---->.....<---functional--->

N, V, A

P

D, C, I, ...

I will show how the properties of P can be derived from this nonlexical-nonfunctional status.

The distinction between lexicality and functionality provides a natural analysis for several kinds of functional prepositions, as shown in section 3, and could also be used to give an analysis of another problematic category, the auxiliary verb, in section 4.

# 1 Prepositions and the Category P

## 1.1 Two Types of Prepositions in Dutch

The number of prepositions that one can find in dictionaries and grammars of Dutch is somewhere around eighty. According to the traditional criterion of prepositionhood any word that forms an adverbial phrase when combined with a noun phrase is a preposition. This criterion gives us run-of-the-mill prepositions like those in (3a), but also less familiar cases like the ones in (3b):

- (3) a. aan (at), achter (behind), bij (near), buiten (outside), door (through), in (in), na (after), naar (to), naast (beside), op (on), over (over), tegen (against), tussen (between), uit (from), van (of), voor (for, in front of)
- b. aangaande (concerning), behoudens (barring), benevens (in addition to), benoorden (north of), inclusief (including), inzake (on the subject of), middels (by means of), namens (in name of), ondanks (despite), overeenkomstig (in correspondence with), qua (concerning), richting (in the direction of), sedert (since), via (via), zonder (without)

There is an intuitive difference between the prepositions in (3a) and (3b). When speakers of Dutch with elementary knowledge of grammar would be asked to mention some prepositions, they would probably come up with the words in (3a), and be somewhat surprised to hear that the words in (3b) are also prepositions. This intuition corresponds with a long list of concrete differences in phonology, morphology, syntax, semantics, etymology, frequency, acquisition, and register. A similar division of the classes of German and English prepositions has been discussed in König and Kortmann (1991) and Kortmann and König (1992). I will use, for ease of reference, the term type A for the ordinary type of prepositions exemplified in (3a) and type B for prepositions like those in (3b).

When we would list the prepositions of type A and type B (see Zwarts 1995b for fairly complete lists), we would see that type B is more than twice as large as type A. Furthermore, the individual items of type B are on the average also longer than the items of type A. The

type A prepositions have one or two syllables, many type B prepositions have three or more syllables. The type A prepositions are generally monomorphemic, but most of the type B prepositions on the other hand are polymorphemic, showing a rich variety of prefixes and suffixes (*be-*, *ge-*, *on-*, *-en*, *-de*, *-s*). This relates to the fact that many of these type B prepositions are historically derived from nouns, verbs, and adjectives. Some examples:

(4)	<i>Preposition</i>	<i>Source</i>
N	vanwege (because of)	weg (way)
	benoorden (north of)	noord (north)
	namens (in name of)	naam (name)
	richting (in the direction of)	richting (direction)
V	aangaande (concerning)	aangaan (concern)
	gegeven (given)	geven (give)
	volgens (according to)	volgen (follow)
A	rond (around)	rond (round)
	vol (full of)	vol (full)

In type A, only the prepositions in (5) show some morphological complexity:

(5)	binnen (inside)	be- + in (in) + -en
	buiten (outside)	be- + uit (out) + -en
	boven (above)	be- + over (over) + -en
	langs (along)	lang (long) + -s
	naast (next to)	na (near) + -st

Only type B contains borrowings from other languages:

- (6) à (at, to), conform (in conformity with), contra (contra), ex/inclusief (ex/including), per (by), qua (as, as far as), versus (versus), via (via)

Type A on the other hand is purely native.

The use of type A and type B differs in several respects. Type A prepositions are far out the most frequent both in spoken and written language. Almost 95 percent of all the prepositions found in a corpus of spoken and written Dutch is made up by prepositions of type A (Uit den Boogaart 1975). The use of type B prepositions is often restricted to written language, some of the words are very formal and archaic, and are only used in legal and official documents. It is not surprising that the prepositions that children learn first are of type A and that type B prepositions are acquired much later (if at all).

Most of the type A prepositions have an intransitive use, exemplified in (7):

- |     |    |   |                                    |
|-----|----|---|------------------------------------|
| (7) | a. | Jan is <i>binnen/buiten</i>             | (John is inside/outside)           |
|     | b. | Hij is <i>voor/achter</i> met zijn werk | (He is ahead/behind with his work) |
|     | c. | De kinderen slapen <i>boven/onder</i>   | (The children sleep up/downstairs) |
|     | d. | Het licht is <i>aan/uit</i>             | (The light is on/off)              |
|     | e. | De patiënt is <i>bij</i>                | (The patient is conscious)         |
|     | f. | Het tafelkleed is <i>door</i>           | (The table-cloth is worn out)      |
|     | g. | De bal is <i>in/naast</i>               | (The ball is in/wide)              |
|     | h. | De dokter is <i>langs</i> geweest       | (The doctor has visited)           |
|     | i. | Het parlement is <i>tegen</i>           | (The parliament is against)        |
|     | j. | De boom is <i>om</i>                    | (The tree is down)                 |
|     | k. | De wijn was <i>op</i>                   | (The wine was out)                 |
|     | l. | Het speelkwartier was <i>over</i>       | (The break was over)               |

Type B prepositions can rarely occur without their complement, although we have the following cases:

- |     |    |                                 |                                     |
|-----|----|---------------------------------|-------------------------------------|
| (8) | a. | Het toilet is <i>beneden</i>    | (The toilet is downstairs)          |
|     | b. | We zijn nu <i>halverwege</i>    | (We are now halfway)                |
|     | c. | De lente is <i>nabij</i>        | (Spring is near)                    |
|     | d. | De wedstrijd is <i>voorbij</i>  | (The game is over)                  |
|     | e. | Het hele dorp zit <i>zonder</i> | (The whole village is left without) |

Most type A prepositions can be compounded with nouns and verbs:

- (9) a. *Productive nominal compounds*: achterdeur (backdoor), bijgebouw (outbuilding), binnenband (inner tube), bovenkamer (upstairs room), buitenlucht (open air), nasmaak (after-taste), onderkant (underside), overgewicht (overweight), tegenpartij (opposing party), tussendeur (connecting door), voorhoofd (forehead)
- b. *Verbal compounds*: aanzetten (put on), doorsnijden (cut through), inschenken (pour in), omcirkelen (circle round), optillen (lift up), uitkomen (come out), ...

The few prepositions that have derivations are mostly of type A:

- (10) N *overheid* (government), *overste* (colonel), *ommetje* (walk), *uitje* (outing)
- V *innen* (collect), *uiten* (express), *opperen* (suggest), *veroveren* (conquer), *herinneren* (remember)
- A *achterlijk* (backward), *voorlijk* (forward), *innerlijk* (internal), *uiterlijk* (external), *innig* (close), *overig* (remaining), *achterste* (last), *voorste* (first), *onderste* (lowest), *uiterste* (outmost), *binnenste* (inmost), *buitenste* (outmost), *bovenste* (upmost)

Prepositions of type A can be stranded, which in Dutch is only possible when the object of the preposition takes the form of a so-called R-pronoun:

- |   |  |
|---|--|
| <p>(11) a. op het paard<br/>on the horse</p> <p>b. achter die tafel<br/>behind that table</p> <p>c. over welk probleem<br/>about which problem</p> <p>d. voor een bepaalde gelegenheid<br/>for a certain occasion</p> | <p>(12) a. er op<br/>there on</p> <p>b. daar achter<br/>there behind</p> <p>c. waar over<br/>where about</p> <p>d. ergens voor<br/>somewhere for</p> |
|---|--|

Stranding of type B prepositions, however, is out of the question in most cases:<sup>2</sup>

- |         |   |           |                                   |
|---------|---|-----------|-----------------------------------|
| (13) a. | gezien het weer<br>considering the whether        | (14) a. * | er gezien<br>there considering    |
| b.      | middels dat programma<br>by means of that program | b. *      | daar middels<br>there by means of |
| c.      | ondanks welk bezwaar<br>despite which objection   | c. *      | waar ondanks<br>where despite     |
| d.      | via een raam<br>via a window                      | d. *      | ergens via<br>somewhere via       |

Only type A prepositions (but not all) can be used 'grammatically', i.e. as the head of a prepositional object, governed by a specific verb, adjective, or noun:

- (15) a. geloven in spoken  
believe in ghosts
- b. erg boos op mij  
very angry on me
- c. de belangstelling voor geschiedenis  
the interest in history

Finally, all type A prepositions have first of all a basic spatial meaning and in addition a range of derived non-spatial uses (temporal, causal, etc.). Type B prepositions are often specialized for one specific domain, sometimes spatial, but usually nonspatial domains, like for example (see also König and Kortmann 1991):

- (16) a. *Temporal*  
gedurende, tijdens (during), hangende, staande (pending), sedert, sinds (since)
- b. *Causative*

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<sup>2</sup> Some cases that seem to be acceptable are *er beneden* (below it), *er tegenover* (opposite it), and *er voorbij* (past it), and for some Dutch speakers also *er zonder* (without it).

trots, ondanks (despite), ongeacht (regardless), dankzij, ingevolge, vanwege, wegens (because of)

c. *In/Exclusive*

behoudens, exclusief, uitgezonderd (excluding), benevens, inclusief (including)

d. *Topic*

aangaande, betreffende, inzake, nopens, qua (concerning)

Related to this is the fact that type A prepositions can be modified in a variety of ways, but that modification of type B prepositions is quite restricted:

- (17) a. vlak boven het huis  
just above the house
- b. heel hoog boven het huis  
very high above the house
- c. schuin boven het huis  
diagonally above the house
- d. vier meter boven het huis  
four meters above the house

The following table summarizes the differences that we have seen between type A and type B prepositions:

(18) <i>Type A Prepositions</i>	<i>Type B Prepositions</i>
closed	relatively open
only native words	also borrowed words
small words	longer words
monomorphemic	often derived from N, V, A
frequent	non-frequent
colloquial	formal and archaic
acquired early	acquire late
intransitive uses	always transitive



morphological role	no morphological role
stranding	no stranding
grammatical uses	no grammatical uses
spatial meaning	often no spatial meaning
rich modification	restricted modification

## 1.2 Complex Prepositions

The differences between type A and type B prepositions that were discussed in the preceding section throw doubt on a unified analysis of these two types as instances of one and the same category P. The question is justified whether these two classes of words should not really be seen as two different categories. It seems that type A prepositions constitute the real category P in Dutch and that the words of type B, although they may behave prepositional in some respects, are elements of a different kind.

In Zwarts (1995b) I proposed that type B prepositions are really a sort of *idioms* that involve two syntactic heads and an open syntactic argument slot in which a DP must be inserted. The difference between type A and type B prepositions is as given in (19):

- (19) a. Type A: P  
 b. Type B: [PP P [XP X [DP \_ ] ] ]

In (20) some representative type B prepositions are analyzed according to the structure in (19b):

- (20) [PP P [XP [X ... ] DP ] ]

a.	in	[ <sub>N</sub> zake ]	(on the subject of)
b.	-s	[ <sub>N</sub> middel ]	(by means of)
c.		[ <sub>N</sub> richting ]	(in the direction of)
d.	-s	[ <sub>V</sub> volgen ]	(according to)
e.		[ <sub>V</sub> gegeven ]	(given)
f.		[ <sub>A</sub> inclusief ]	(including)
g.		[ <sub>X</sub> sedert ]	(since)

The upper head, that determines the prepositional nature of the whole construction, is always a P. This P can be a cliticized preposition, like *in* in (20a), it can be an affix, like the *-s* in (20b) and (20d), or it can be abstract, i.e. without phonetic realization, as in most cases. The lower head is mostly a noun or verb, but in quite a number of cases the category of this head is no longer identifiable synchronically, for example in (20g). I assume that in cases like these the lexicon leaves the category unspecified as X. The lower head undergoes head movement to the P position and the DP complement receives Case from the resulting chain. (See Zwarts 1995b for more details.)

Intuitively, the construction in (19b) can be seen as a syntactic way of turning non-prepositions into prepositions: words from other syntactic categories, from other languages, from non-spatial domains are dressed up as if they were real prepositions by the presence of an abstract P. The idiomatic and complex nature of these 'fake' prepositions explains why they behave differently from real prepositions in so many ways. The complexity prohibits stranding of the DP and because the DP slot has to be filled, it is impossible to use a type B preposition intransitively or to make compounds or derivations with it. The more restricted use of type B prepositions could also be ascribed to their complex, idiomatic nature.

### 1.3 The Status of Category P

Now that we have isolated the real category P from the periphery of idiomatic prepositions, we are ready to take a closer look at the nature of the category P, returning to the question that we started with: is P a functional category or not.

The best way to answer this question is by comparing the properties of P with the properties of clear instances of indisputable functional categories like D, C, and the conjunction elements (for which I will use the symbol B for Boolean, following Munn 1992):

- (21) a. D: de, het (the), een (an)  
 b. C: dat (that), of (if)  
 c. B: en (and), of (or)

Although our knowledge about functional heads may still be far from complete, it is easy to see that the elements in (21) have the properties in (22) (see also Abney 1987):<sup>3</sup>

- (22) a. closed class  
 b. small morphemes  
 c. one obligatory complement  
 d. no stranding  
 e. no role in morphology

Determiners, complementizers, and conjunctions are almost prototypical examples of closed classes of function words. Their phonological size is small, and in the case of the Dutch articles *de*, *het* and *een* even 'minimal' (C+schwa or schwa+C). They cannot occur without directly being followed by their complement and they cannot feed morphological processes like compounding or derivation.

When we compare the functional properties of (22) with the relevant properties of P that we discussed earlier in this section, we get the following result:

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<sup>3</sup> Abney (1987) also mentions that functional heads lack descriptive content. I have left this aspect of the lexical-functional distinction out of consideration, because it is not fully clear to me how to apply it to prepositions. A close study of the argument structure(s) of prepositions might shed light on this aspect (see Rauh 1995 and references mentioned there).

(23)	<i>Functional category</i>	<i>Category P</i>
a.	closed class	closed class
b.	small morphemes	small morphemes
c.	one obligatory complement	can be used without complement
d.	no stranding	can be stranded
e.	no role in morphology	morphological role

What (23) shows is that P is functional in two respects: it is a closed class and it consists of small words, as we saw earlier. However, (23) also shows that P has *non*-functional properties as well: P can be used intransitively, i.e. without a complement (see (7)), P can be stranded (see (12)), and P can be used in morphological processes (see (9) and (10)). So, obviously, P does not fit into the usual classification of lexical and functional categories and a revision of this classification is called for.

## 2 A Revision of the Lexical-Functional Distinction

It has always been taken for granted that the notions 'lexical' and 'functional' are complementary: if a category is not lexical then it is functional, and if it is not functional then it is lexical. This licenses the encoding of the distinction by means of a binary feature  $\pm F$ : functional elements are +F and lexical elements are –F. It is this complementarity assumption that stands in the way of a better understanding of the status of prepositions. Instead I will treat 'lexical' and 'functional' as two independent dimensions.

### 2.1 Lexicality and Functionality

It is obvious that the categories N, V, and A differ from the other categories: they are the *open* categories that freely admit new members borrowed from other languages, produced by productive morphological processes or creative coining. The term 'lexical' is sometimes used in the literature to refer to these three categories only, for example in Chomsky (1981:48), and I will adopt that usage here. In fact the term 'lexical' can be taken to suggest that these three categories are the 'categories of the lexicon', while the other categories, including P, are 'categories of the grammar'.<sup>4</sup> These nonlexical categories are closed classes of small words, relatively inaccessible for innovation because they are in a sense 'wired in' in the grammar.

The distinction between functional and nonfunctional categories is of a completely different kind. I would like to take the notion 'functional' in more or less its mathematical sense: as a formal device that maps phrases to phrases. The article *the* applies to a noun phrase and it yields a *definite* noun phrase, or in other words, it maps nouns phrases (NPs) to definite noun phrases (DPs). Similarly, the complementizer *that* maps clauses to indicative clauses and finite T maps verbal projections (VPs) to tensed clauses (TPs). The categories N, V, A, and, crucially, P, are nonfunctional, because they are not functions in this sense, although they may of course have one or more arguments.<sup>5</sup> If the determiner *the*, for example, is a function from phrases to phrases, then we can derive two of its properties. First, *the* is always transitive, because, being a function, it requires something to apply to. Second, since it maps phrases to phrases it cannot play a role in morphology. The third relevant property of functional heads (why they do not strand) will be discussed later in this section.

Taken together, these two distinctions yield the following schema:

(24)	<i>Lexical</i>	<i>Nonlexical</i>
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<sup>4</sup> This suggest the term 'grammatical category' as a more natural antonym of 'lexical category'. It seems that Emonds (1985) uses a distinction between lexical and grammatical categories that corresponds roughly to the one that is relevant here. However, I will continu to speak about lexical and nonlexical categories in order not to introduce a terminology with too many disturbing connotations.

<sup>5</sup> See Higginbotham (1985), Abney (1987), and Zwarts (1992) for semantic elaborations of the idea that functional and nonfunctional ('thematic') heads bear different relations to their complements.

<i>Nonfunctional</i>	N, V, A	P
<i>Functional</i>	?	D, C, B, ...

This schema brings out clearly the special status of P: P is neither lexical nor functional, yet it is similar to functional categories like D and C in one respect (being a closed class of small words), but it is also similar to the lexical categories N, V, and A in other respects (being sometimes intransitive and playing a role in morphology).

## 2.2 Features and Functions

After this informal redefinition of the notions lexical and functional, it will be useful to see whether we can give these notions a more concrete basis in the representation of categories in terms of features.

For a definition of 'lexical category' we can follow Chomsky (1981:48,252), who analyzes the categories N, V, A, and P as sets constructed out of the binary features N and V, with +N meaning 'substantive' and +V 'predicative':

(25) noun	=	[+N,-V]
adjective	=	[+N,+V]
verb	=	[-N,+V]
preposition	=	[-N,-V]

Chomsky defines the lexical categories as those that have the +N or +V feature, which yields N, V, and A, but not P. We may assume (with Déchaine 1993) that only categories with a positive N,V specification are 'visible' or 'accessible' in the lexicon, making borrowings and other innovations possible. Categories with no or with a negative N,V specification are 'invisible' and 'inaccessible' and they can never be the target for the formation of new words.

Chomsky's feature system in (25) has been extended to include functional categories in Abney (1987) (in a revised form), Van Riemsdijk (1990), and Grimshaw (1991). The basic idea is that a determiner D must combine with a noun because D is nominal itself (+N,-V). In addition it has a feature F that indicates that it is functional. This gives the following feature bundles:

- (26) D = [+N,-V, F ]  
 Deg = [+N,+V, F ]  
 C, I = [-N,+V, F ]  
 B = [ F ]

In (26), Deg (for Degree) is the functional head that accompanies adjectives and that hosts words like *how*, *so*, *too*, and comparative and superlative inflection (*-er* and *-est*) (see Abney 1987 and Corver 1990). That the conjunction B can combine with all sorts of phrases, is explained by leaving it unspecified for the  $\pm N, \pm V$  features. Notice that the use of one F feature makes it impossible to distinguish C and I that both occur with verbal projections. Grimshaw (1991) solves this by having F features with integers: F1 for I and F2 for C.

We can define the lexical and functional categories now as follows:

- (27) a. A lexical category has the feature +N or +V  
 b. A functional category has the feature F.

'A category C has a feature K' is informal for 'feature K is an element of category C', because categories are taken as sets of features. According to the definitions in (27) P is neither lexical nor functional.

However, given the specifications in (26), the definition in (27a) has the unwanted result that the categories D, Deg, C, and I come out as lexical. In order to avoid this, I will treat the functional feature F not as a feature that is added to a feature bundle, but as an operator that applies to a bundle that indicates the category of the phrase to which the functional head applies:

$$\begin{aligned}
 (28) \quad D &= [ F([+N,-V]) ] \\
 \text{Deg} &= [ F([+N,+V]) ] \\
 C, I &= [ F([-N,+V]) ] \\
 B &= [ F([\ ]) ]
 \end{aligned}$$

Now the feature bundle of D in (28) can no longer be said to be lexical: D does not have the feature +N or +V, only its domain has.

### 2.3 Stranding and Projection

Recall that one of the properties of functional categories mentioned in (22) is that they cannot be stranded. In order to understand this we need to say something about the mechanism of extended projection (Grimshaw 1991). When a functional head, like D, combines with a phrase, NP in this case, the resulting DP is not only a projection of the D, but it can also be seen as a projection, an *extended* projection, of the N. In a DP structure, number features of N, but also semantic properties, project to the DP level. In the DP *the books*, for example, the whole DP is plural, not because of the head D, which is unspecified for number, but because the N has plural morphology.<sup>6</sup> This example suggests that the NP projects those features to the DP level that the D itself does not have. The determiner *the* projects certain referential features, but it lacks categorial features and so these are projected from the N. We can represent the DP structure in (29a) as in (29b):<sup>7</sup>

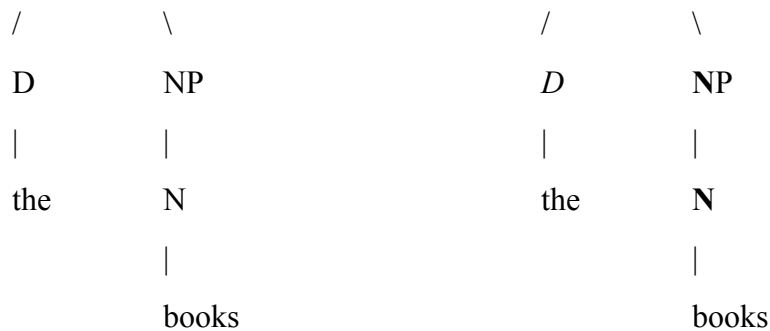
$$(29) \quad \text{a.} \quad \text{DP} \qquad \qquad \qquad \text{b.} \quad \text{DNP}$$

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<sup>6</sup> But see Verkuyl (1993) for a contrasting view, formulated in the framework of the Generalized Quantifier Theory, in which the singular-plural distinction is basically a property of the determiner.

<sup>7</sup> See Radford (1993) for a similar notation to make the 'two-headed' nature of functional projections explicit: DP is DNP.

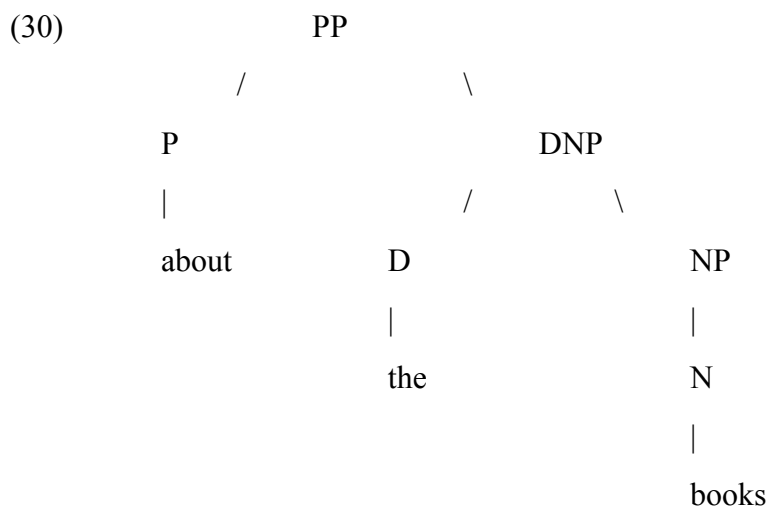




What is not represented in (29a) is made explicit in (29b): the DP is a combination of features from D (analyzed as F(N)) and N. The extended projection line from the ultimate nominal head and the highest DP projection is represented in bold type.

We can understand why movement of the phrase *books* (the NP in (29a)) is prohibited when we use the structure in (29b). In (29b) the NP *books* is part of a projection line and moving this phrase would break up the integrity of this projection. Only the highest projection can be moved (XP movement) or the lowest head ( $X^0$  movement). Any node in between is an intermediate projection in more or less the same sense as nodes labeled X' or X<sup>1</sup> in three-level X' theory.

We can also understand why the complement of a preposition can be moved. Although a preposition is non-lexical, it has categorial features to project, namely  $-N, -V$  and therefore the PP is the exclusive projection of P and not an extended projection of N:



When the DP (here DNP) is moved we do not break up the integrity of a projection line as in the case of complements of functional heads. In this case P is just like the lexical heads N, V, and A, that also head their own projection.

### 3 Functional Prepositions

We have argued that the prepositions of type A are the only instances of category P and that the hybrid nature of this category P with respect to the lexical-functional nature can be explained when we take P to be a category that is neither lexical nor functional. The nonlexical nature of P corresponds with its being a closed class of small words; the nonfunctional nature of P corresponds with the possibility to use Ps intransitively, in morphology and with their stranding.

However, two important directional Ps pose a problem for this analysis, namely *naar* (to) and *van* (from, of). Notice first that these Ps cannot be used intransitively:

- (31) a. \* Hij is naar                    (He is to)  
       b. \* Hij is van                    (He is of, from)

Second, they cannot be used in morphology, for example in verbal compounds, although there seems to be nothing about their meaning that would rule this out:

- (32) a. \* naargaan  
           to-go                            ('approach?')  
       b. \* vankomen  
           from-come                    ('leave?')

These Ps then share two important properties from the list in (22) with the functional heads. In Zwarts (1995a) I therefore proposed to treat these elements as *functional prepositions*, a notion that I adopted (in a reinterpreted form) from Van Riemsdijk (1990).<sup>8</sup>

How do these functional prepositions fit into the present framework? The most natural thing to do is to take them as Ps that behave like functions. So instead of an F, we have a P functor applying to a nominal projection:

(33)        naar, van = [ P(N) ]

These Ps are still nonlexical (i.e. –N and –V), but what makes them different from the other Ps is that they are functions. Nevertheless, there is still an important property that distinguishes the Ps in (33) from other functional heads: they can be stranded:

- (34) a.    Waar kijk je naar?  
           Where look you to?  
           'What are you looking at?'  
       b.    Waar is dit van?  
           Where is this of?  
           'What is this made of?'

That stranding is possible can be understood by comparing the projection properties of D, that we represented earlier, with those of the functional Ps:

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<sup>8</sup> Other examples of functional prepositions in Dutch might be *met* (with) and *tot* (tot, until), which share some properties with *naar* and *van*. However, the status of *met* and *tot* is obscured by the existence of the allomorphs *mee* and *toe* that have lexical properties.

(35)	a.	<b>DNP</b> /        \ <b>D</b> <b>NP</b>            the <b>N</b>            books	b.	<b>PP</b> /        \ <b>P</b> <b>NP</b>            naar <b>N</b>            Amsterdam
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In (35a), the whole phrase *the books* is an extended projection of the noun *books*, because of the lack of categorial features of *the*. In (35b) however, the situation is essentially like in (30): *naar* projects its own categorial features  $[-N, -V]$  and this P-projection blocks the projection of the nominal features. Moving the nominal complement of *naar* would not break up a projection line. This does not mean that we can just move the noun phrase *Amsterdam* in (35b), because there are independent reasons why in Dutch the complement can only move when it is a R-pronoun, but at least one of the conditions for stranding is satisfied.

It is instructive to compare the functional Ps in (33) with two other functional elements in Dutch, namely the items *voor* and *van* occurring in the following notorious constructions, the *wat-voor-construction* in (36a) and the *van-die-construction* in (36b):<sup>9</sup>

- (36) a.    *Wat voor* plaatjes heb je gezien?  
What for pictures have you seen  
'What kind of pictures have you seen?'
- b.    *Ik heb van* die leuke plaatjes gezien  
I have of those nice pictures seen  
'I have seen those nice pictures'

One of the problems about these constructions is that we have a preposition in front of a noun phrase, but that the whole thing is not a PP but a noun phrase:

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<sup>9</sup> See Bennis (1995) and Corver (1990) for the *wat-voor-construction* and De Hoop et al. (1989) voor de *van-die-constructie*.

- (37) a. [ Wat voor plaatjes ] staan er in dat artikel?  
 What for pictures stand there in that article?  
 'What kind of pictures are in that article?'
- b. Met [ wat voor plaatjes ] heb jij het verduidelijkt?  
 With what for pictures have you it clarify?  
 'With what kind of pictures did you clarify it?'
- (38) a. Er staan [ van die leuke plaatjes ] in dat artikel  
 There stand of those nice pictures in that article  
 'There are nice pictures in that article (of a particular kind)'
- b. een artikel met [ van die leuke plaatjes ]  
 an article with of those nice pictures  
 'an article with nice pictures (of a particular kind)'

Both the *wat-voor*-phrases in (37) and the *van-die*-phrases in (38) occupy positions that are only possible for noun phrases. This implies that the features of the whole must be nominal and not prepositional. Given our framework of assumptions, these instances of *voor* and *van* must have become genuine functional heads:

- (39)  $\text{voor, van} = [ F(N) ]$

They have lost their prepositional feature content and have become very much like determiners, which are also  $F(N)$ . When they combine with a DP, the resulting phrase is again nominal. Of course, *voor* and *van* do not express the same information as determiners. They both seem to assign a kind-interpretation to the noun phrase.

Notice that stranding is not possible with the *van-die*-construction, which is exactly as we would expect given the feature specification in (39):

- (40) a. \* Waar staan er [ van *t* ] in dat artikel?  
 Where stand there of in that article  
 'What kind are there in that article?'

- b. \* een artikel met [ daar van *t* ]  
 an article with there of  
 'an article with that kind'

The reason that we give only examples with the *van-die*-construction is that it is impossible to determine whether or not the complement of *voor* in the *wat-voor*-construction can extract, because this would independently be ruled out by the presence of the *wat*. We might follow Bennis (1995) and assume that *wat* occupies the Spec of the functional head:

(41) [FP *wat* [F' [F(N) *voor* ] [DP *plaatjes* ]]]

What we have seen in this section and the preceding one leads to a kind of 'scale' on which different subclasses of the type A prepositions can be represented as being closer to N, V, A on the one hand or D, C, B on the other hand. The relevant parameters are lexicality, functionality and categoriality, (the presence of the categorial features  $\pm N, \pm V$ ):

(42)

Lexical	Nonlexical	Nonlexical	Nonlexical	Nonlexical
Nonfunctional	Nonfunctional	Functional	Functional	Functional
Categorial	Categorial	Categorial	Noncategorial	Noncategorial
N, V, A	P achter op	P(N) naar van	F(N) ( <i>wat</i> ) voor van ( <i>die</i> )	D, C, B

Below the line are the 'lexical' properties, above the line are the 'functional' properties.

## 4 Functional Lexical Categories

In the schema of categories that we gave earlier in (24) there was one cell for which we had no categories, the categories that are lexical and functional at the same time:

(43)	<i>Lexical</i>	<i>Nonlexical</i>
<i>Nonfunctional</i>	N, V, A	P
<i>Functional</i>	?	P(N), F(N), F(V), F(A)

In this final section I will speculate about one candidate category for this cell.

Given what we find in the other cells, these lexical functional categories must be Ns, Vs, or As used as functions, in other words, functional nouns, functional verbs, and functional adjectives:

(44) N(..), V(...), A(...)

A functional verb would be something that looks like a verb but that behaves like a functional head in certain respects. I would like to suggest that auxiliary verbs are actually such functional verbs, combining properties of lexical and functional categories:

(45) V(V) = auxiliary verbs

The status of auxiliary verbs has always been a bit problematic in phrase structure theory. They are not like ordinary main verbs that can stand on their own, because they are crucially 'auxiliary', that is occurring with other verbs of which they mark certain modal, temporal, or aspectual properties. On the other hand, putting them in a functional position obscures the fact that they are still verbal in a sense in which complementizers are not verbal. The fact that their complement (italicized in the examples in (46)) can move is a clear indication that they are not like C or D:

- (46) a. He said that he would win the race and *win the race* he did \_  
 b. *Mooi gezongen dat zij heeft* \_!  
 beautifully sung that she has  
 'She has sung so beautifully!'

The analysis in (45) captures the facts about auxiliary verbs. The functional aspect of auxiliary verbs implies that they are typically transitive elements that do not feed morphological processes like compounding and derivation. Since their label is V and not F, auxiliary verbs head their own projection and do not form an extended projection with their complement. From this it follows that auxiliaries can be stranded, as in (46).

## 5 Summary

The purpose of this paper was to shed light on the problematic status of prepositions, using Dutch as the object language. This problematic status was shown to result from two common assumptions in the literature: (i) that the class of prepositions is homogeneous (ii) that the notions lexical and functional are complementary. This paper shows that both of these assumptions are false. The class of prepositions is not homogeneous but consists of a core of real prepositions and a periphery of prepositional idioms that should be kept out of the discussion about the category P. The nature of P can only be understood when we reinterpret the notions lexical and functional as independent notions instead of complementary notions. Then P can be described as nonlexical and nonfunctional and its properties can be made to follow from the way we characterize the notions of lexicality and functionality. Disentangling these notions might also give us a better view on the status of auxiliary verbs.



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