

Minor Prepositions in Nominal Projections

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Abstract

There are prepositions which in some of their uses cannot plausibly be treated as heads of PPs. They include the English *of* in pseudopartitive NPs¹ and the German *für* in interrogative NPs. The existing proposals for the treatment of these prepositions rely on ad-hoc devices and are difficult to integrate in grammars for NLP. As an alternative, I propose to treat the exceptional prepositions as head selecting functors, thus contrasting them with their canonical counterparts which are complementing selecting heads. The resulting treatment relies exclusively on independently needed devices and distinctions.

1 Two puzzling constructions

As a starting point, let us compare the NP subjects in (1-2).

- (1) A writer of comic books makes much money.
- (2) A lot of Albanians have settled in Italy.

The number of the verb in (1) shows that the subject must be singular and that its head is, hence, the singular noun *writer*. In (2), by contrast, the number of the verb shows that the head of the subject is the plural *Albanians*, as in the near-synonymous (3).

- (3) Many Albanians have settled in Italy.

¹The distinction between normal partitives and pseudopartitives is due to (Selkirk, 1977). For a comparison of the two constructions, see 3.3.

For the preposition, this implies that its treatment as the head of a postnominal PP is appropriate in (1), but not in (2), since it would entail that *lot* is the head of the NP and, ergo, that the NP is singular. The phenomenon also exists in other languages. Take, for instance, the Italian *di* and the French *de*.

- (4) Un po' di macchine sono vendute.
a few of cars are sold
'A few cars have been sold.'
- (5) Un peu de maisons seront démolies.
a few of houses will-be demolished
'A few houses will be demolished.'

The auxiliary and the participle agree with the plural feminine *macchine* and *maisons*, rather than with the singular masculine *po'* or *peu*. Further evidence against a PP treatment is provided by the contrast between (6) and (7).

- (6) a. I bought some books yesterday of Salman Rushdie.
b. Ho comprato qualche libro ieri di Italo Calvino.
c. J'ai acheté quelques livres hier de Marcel Proust.
- (7) a. * I bought a lot yesterday of comic books.
b. * Ho comprato un po' ieri di libri tedeschi.
c. * J'ai acheté un peu hier de livres antiques.

Since postnominal PPs can be extraposed, as illustrated in (6), the ungrammaticality of (7) provides

some evidence that the nominals which are introduced by the exceptional prepositions are not PPs.

It is not only in nominals with a quantifying noun that the prepositions may show unusual properties. An example of a different kind is the German interrogative phrase *was für (ein) N* ‘what for (a) N’. A peculiar property of this phrase is that the case value of the nominal is not determined by the preposition, which canonically requires an accusative NP, but by the external selector of the phrase.

- (8) Was für ein Mann ist er?
what for a-NOM man is he?
‘What kind of man is he?’
- (9) Was für einen Mann hast du gesehen?
what for a-ACC man have you seen?
‘What kind of man did you see?’
- (10) Was für einem Mann hast du geholfen?
what for a-DAT man have you helped?
‘What kind of man did you help?’

The nominal is nominative when it is the predicate complement of the copula, as in (8), accusative when it is the object of *sehen*, as in (9), and dative when it is the object of *helfen*, as in (10). This clearly suggests that the head of the construction is the nominal. Confirming evidence is provided by the number agreement in (11).

- (11) a. Was für ein Mann ist das?
what for a man is that?
‘What kind of man is that?’
- b. Was für Männer sind das?
what for men are that?
‘What kind of men are they?’

The same phenomenon can be observed in Dutch.

- (12) a. Wat voor (een) man is dat?
what for (a) man is that?
‘What kind of man is that?’
- b. Wat voor mannen zijn dat?
what for men are that?
‘What kind of men are they?’

Further evidence against the PP treatment is provided by the extraposition data in:

- (13) Wat heb je gekocht voor haar?
What have you bought for her?
‘What did you buy for her?’
- (14) * Wat heb je gekocht voor een
* what have you bought for a
geschenk?
present?

While the PP in (13) can be extraposed, the *voor* phrase in (14) cannot.

More examples can be given, and some will be given in 3.4, but the two above suffice to make the point that not all prepositions can plausibly be treated as heads of PPs. The objective of the paper is to find out how they can be treated in a way which captures their peculiarities but which is also easy to integrate in the rest of the grammar. For this purpose, I will first discuss a number of existing proposals.

2 Four ways of treating the exceptional prepositions

2.1 The fixed phrase assumption

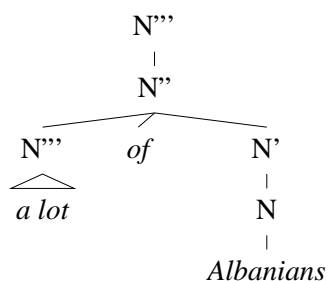
An easy way to avoid the complications with exceptional prepositions is to treat them as part of a fixed phrase. In that case, *a lot of*, *un po’ di* and *was für* are single syntactic units. A problem with this treatment, though, is that these ‘fixed’ phrases can be split. Notice, for instance, the adjectives in *a whole lot of garbage*, *an awful lot of errors*, *un bel po’ di persone* ‘a nice few of persons’ and *un tout petit peu de fleurs* ‘a tiny little bit of flowers’. The interrogative *wat voor* can even be separated by most of the rest of the sentence, as in (15).

- (15) Wat is dat eigenlijk voor een man?
what is that really for a man?
‘What kind of man is that?’

Another problem for the fixed phrase treatment is that the preposition is not present, if there is no following noun, as in *he suffered a lot*, *he feels a lot better now* and *aspetta un po’* ‘wait a little’. In sum, the exceptional prepositions are closely related to the words which surround them, but not to the point that they form a single syntactic unit.

2.2 Syncategorematic insertion

Another way of coping with the exceptional prepositions is to treat them as grammatical formatives. An example of this treatment is the analysis of the pseudopartitives in Jackendoff's three-level version of X-bar syntax, see (Jackendoff, 1977, 119-126).



The plural *Albanians* is the head of the NP, and the quantifying NP *a lot* is a non-head sister of N' . As such, it takes the same position as the quantifying determiner in *many Albanians*. The preposition is introduced syncategorematically in a phrase structure rule (o.c., 139).²

$$(16) \quad N'' \longrightarrow (N'' - (of)) - N'$$

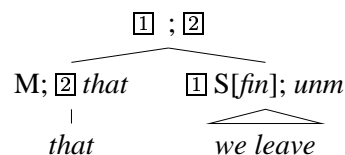
This analysis yields the result we need, i.e. a plural NP, but the treatment of the preposition is less satisfactory. It is not assigned any category and its status and its role are left unspecified. Besides, there are some technical problems. One concerns the assumption that *a lot* takes the same position as *many*. This is motivated by their near-synonymy, but contradicted by the fact that the latter can be preceded by a determiner, as in *his/those/the many files*, whereas the former cannot, **his/those/the a lot of files*. Another problem follows from the optionality of *of* in (16); lest one generate **a lot Albanians*, its presence must be enforced in this combination, but it is not made clear how this can be done.³

²The quantifying N'' is optional. When present, it may but need not be followed by *of*. Because of the optionality of the preposition the rule also covers the measure phrase in *two parts alcohol*.

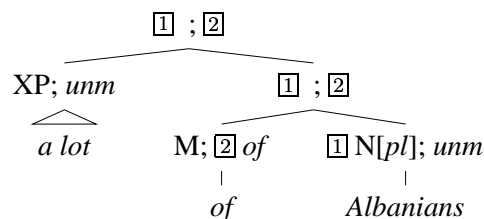
³The interrogative *was für* and *wat voor* phrases are not treated in (Jackendoff, 1977), but it can be imagined how they would. The pronoun would probably be an NP, just like *a lot*, and the preposition a grammatical formative without category or function, just like *of*. The place of attachment, however, would be higher, since the nominals which they introduce may contain a determiner. They would, hence, be sisters of N'' , rather than of N' .

2.3 The marker treatment

Another alternative is the marker treatment, as defined in (Pollard and Sag, 1994). 'Marker' is the name of a syntactic category, and thus contrasts with other categories, such as N,V,A,P,Det,... Its members include the complementizers *that* and *for*. A defining property of the markers is that they are never used as heads, but only as nonhead sisters of phrasal projections.⁴ More specifically, they select a phrasal category as their head, and leave their mark on it. The complementizer *that*, for instance, selects an unmarked finite clause as its head, and yields a finite *that*-clause. To model this, (Pollard and Sag, 1994, 44-46) makes a distinction between the HEAD feature, whose value is shared between mother and head daughter, and the MARKING feature, whose value is shared between mother and marker daughter.⁵



The addition of the complementizer leaves the HEAD value of the clause unchanged ($\boxed{1}$), but modifies its MARKING value ($\boxed{2}$). In the same way, the prepositions in the *was für* and *wat voor* phrases could be treated as markers which select an indefinite NP as their head and which yield an NP marked by respectively *für* and *voor*. Similarly, the preposition in the pseudopartitive NPs could be analyzed as follows.



⁴As a name for the syntactic function of the markers, (Pollard and Sag, 1994) employs the term 'marker'. The use of the same term for both a category and a function is unusual, since categories and functions are normally treated as mutually independent. A complement, for instance, can belong to any category (NP, PP, VP, S, ...) and an NP can have any kind of function (subject, object, adjunct, conjunct, ...). The members of the category 'marker', by contrast, can only be used as markers.

⁵For each node, I give both the HEAD value and the MARKING value; they are separated by a semicolon. The boxed integers express token-identity. M is short for 'Marker' and *unmarked* for *unmarked*.

The combination of the marker and the unmarked noun yields a plural noun which is marked by *of*. This nominal is then combined with the specifier *a lot*⁶ and heads the NP, so that the latter is also plural. This treatment has an edge over syncategorematic insertion, since it assigns a category and a function to the exceptional preposition. At the same time, though, it has a distinct flavor of idiosyncrasy. Both the category *marker* and the homophonous syntactic function are not employed in any other framework and are ignored in most of the rest of the HPSG literature, including (Ginzburg and Sag, 2000). The marker treatment is, hence, only slightly more satisfactory than an unabashed syncategorematic treatment.

Besides, there are some technical problems. First, since markers, as defined in (Pollard and Sag, 1994), are only allowed to combine with phrases, the prepositions in *a lot of Albanians* and *was für Männer* can, technically speaking, not be analysed as markers, since they are each combined with a single word.⁷ Second, since the addition of a specifier—or, more generally, of anything which is not a marker—has no effect on the MARKING value of the head, the NP *a lot of Albanians* is marked as *of* and the NP *was für Männer* as *für*. This marking, though, is irrelevant and misleading, since there are no external selectors of NPs, which require the presence of *of* or *für* somewhere within the NP. In this respect, there is a clear difference with the complementizers, whose presence may be required by an external selector of the clause. This second problem is, in fact, related to the first, for the constraint that the markers may only combine with phrases is meant to ensure that they take a peripheral position in the phrase, so that their marking values are accessible and relevant for external selectors. The exceptional prepositions in *a lot of Albanians* and *was für Männer*, however, are not in a peripheral position of the NP. Instead, they are selected by a word within the NP, more specifically by the noun *lot* and the pronoun *was* respectively.

⁶Since (Pollard and Sag, 1994) requires the specifiers to belong to a functional category, *a lot* cannot be an NP. Instead, it must be any of Det(eterminer)P, Deg(ree)P, Scal(ar)P or Meas(ure)P.

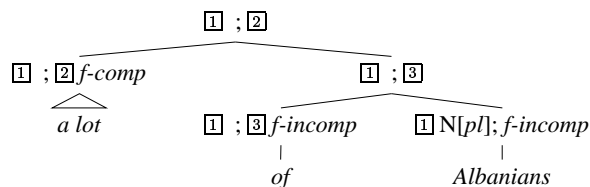
⁷It is, of course, possible to allow vacuous expansion from N to N', but if that is sufficient to iron out this wrinkle, it is no longer clear whether the constraint has any empirical significance.

In sum, the marker treatment is ill-equipped to deal with the exceptional NP-internal prepositions, and it suffers from a high degree of idiosyncrasy. Its distinction between two types of syntactic features (HEAD vs. MARKING), however, will play a crucial role in the development of an alternative treatment.

2.4 The functional head treatment

Yet another alternative is the functional head treatment, as defined in (Netter, 1994). A functional head takes a complement as its sister, just like a substantive head, but in contrast to a substantive head, it inherits most of its syntactic properties from that complement. A complementizer, for instance, takes a clause as its complement and inherits its category and its VFORM value from that clausal complement. Similarly, a determiner takes a nominal as its complement and inherits its category and its case, number and gender from that nominal complement. Besides the properties which the functional head shares with its complement, there are the properties which they do not share. An example is the property of functional completeness. While the complement of a determiner or a complementizer is functionally incomplete, the determiner and the complementizer themselves are functionally complete, and share that property with the dominating category.

Assuming now that the exceptional preposition in *a lot of Albanians* is a functional head, we get the following structure.⁸



The functionally incomplete noun *Albanians* is the complement of the exceptional *of*. The latter inherits the nominal's category and number ([1]), and is functionally incomplete ([3]). The resulting nominal shares both sets of properties with its functional head, and becomes the complement of *a lot*. Assuming that the latter is a functional head as well, it inherits the category and the number value of its complement. Its own contribution consists in the fact

⁸For each node, I give first the properties which the functional head shares with its complement, and then the other ones. They are separated by a semicolon.

that it makes the nominal functionally complete (2).

This analysis yields a plural NP, as it should, and it avoids the use of idiosyncratic categories or functions. There is, for instance, no need for a separate type of combination, such as head-marker, since the combination is subsumed by the independently needed head-complement combination. At the same time, though, the functional head treatment yields some perplexing intermediate results: *of* and *a lot*, for instance, are claimed to be plural nouns. Similarly, if the pronoun and the preposition in the interrogative *was für* phrases are functional heads, the NP in *was für einem Mann hast du geholfen?* is correctly analysed as a singular masculine dative, but in the process, both *was* and *für* are claimed to be dative nominals as well. This will, to put it mildly, complicate the lexicon-syntax interface.

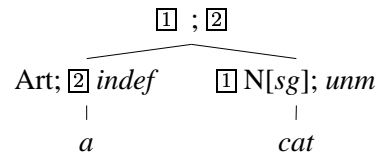
3 The functor treatment

Of the four ways of treating the exceptional prepositions, none has turned out to be satisfactory. In this section I will propose an alternative in which the exceptional prepositions are treated as functors. I will first spell out the general characteristics of the functor treatment (3.1) and then apply it to the by now familiar examples (3.2). For ease of reference, I will use the term ‘major preposition’ for the prepositions which head a PP and ‘minor preposition’ for those which do not. To further elucidate the difference between major and minor prepositions I will compare the minor *of* which occurs in pseudopartitives with its major homonym which occurs in partitive NPs (3.3). The last paragraph discusses the relevance of the data for grammar engineering (3.4).

3.1 The notion ‘functor’

The notion ‘functor’, as defined in (Van Eynde, 1998) and (Allegranza, 1998), stands for a syntactic function, and contrasts with other such functions as ‘head’ and ‘complement’. Just like the markers of (Pollard and Sag, 1994), functors select a head sister and leave their mark on the resulting combination, but, in contrast to the markers, they may belong to any category (N,V,A,...), lexical as well as phrasal; their head sister may also belong to any lexical or phrasal category. In terms of the HPSG inventory of syntactic functions, the functors include the mark-

ers, the specifiers and the modifiers which precede their head. The indefinite article, for instance, is a functor which selects a singular count noun as its head, and which leaves a mark of indefiniteness on the resulting combination.



The mother shares its category and most of its syntactic properties, such as case, number and gender, with the head daughter. Some properties, though, are shared with the functor daughter, such as definiteness. Adopting the practice of (Pollard and Sag, 1994), I will model the former in terms of HEAD features and the latter in terms of MARKING features.

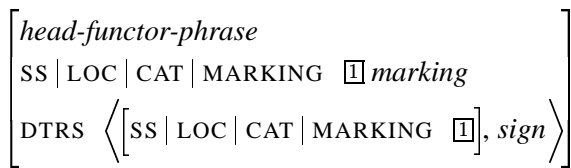
The defining property of the head-functor combination is that the functor selects the head, rather than the other way round. In the Typed Feature Structure notation of (Ginzburg and Sag, 2000), this can be expressed as follows.

$$\left[\begin{array}{l}
 \text{head-functor-phrase} \\
 \text{DTRS} \left\langle \left[\text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{HEAD} \mid \text{SEL} \boxed{1} \right], \boxed{2} \right\rangle \\
 \text{HEAD-DTR} \boxed{2} \left[\text{SS} \boxed{1} \text{ synsem} \right]
 \end{array} \right]$$

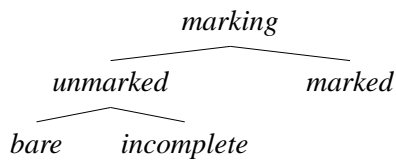
In words, phrases of type *head-functor* have two daughters. The functor daughter contains a SEL(ECT) value of type *synsem* in its HEAD feature, and the head daughter has a S(YN)S(EM) value which is unified with the SEL value of the functor daughter.⁹ Since head-functor phrases are headed phrases, they are subsumed by the Head Feature Principle, which means that the mother shares its HEAD value with the head daughter. The sharing of the MARKING value is modeled by the Generalized Marking Principle.¹⁰

⁹The SEL(ECT) feature replaces the features SPEC(IFIED) and MOD(IFIED) of (Pollard and Sag, 1994).

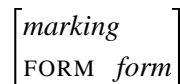
¹⁰The reason for adding the qualification ‘Generalized’ is that this principle has a much wider range of application than the Marking Principle of (Pollard and Sag, 1994). If the non-head daughter is a complement or an adjunct, the mother shares its MARKING value with the head daughter. This accounts for the indefiniteness of *somebody from Malta* and for the PFORM value in PP complements, such as those in *rely on us* and *dream of an ice-cream*.



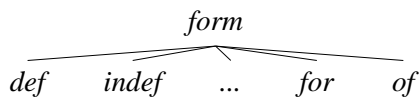
The hierarchy of MARKING values is the following:



Nominal projections are marked if they contain a determiner, and unmarked otherwise; the latter are further differentiated in *bare* and *incomplete*. Similarly, verbal projections are marked if they contain a complementizer, and unmarked otherwise, and adjectival projections are marked if they contain a degree marker, and unmarked otherwise. Finer-grained distinctions are captured in terms of an associated feature (FORM).



This feature has a wide range of values. Focussing on those which we need for the nominal projections, there is the value *indefinite*, which is assigned to all of the unmarked nominals, as well as to the indefinite pronouns and determiners, such as *somebody*, *no* and the indefinite article. It contrasts with the value *definite*, which is assigned to the proper nouns and the personal pronouns, as well as to the definite article and the demonstrative and possessive determiners, such as *those* and *my*. Besides, the FORM inventory includes separate values for specific words, such as *for* and *of*, comparable to the PFORM values in (Pollard and Sag, 1994).



Having introduced the relevant features and constraints, we can now employ them for the analysis of the exceptional prepositions.

3.2 Application

A functor treatment of the interrogative *was für* construction yields the structure given in figure 1.¹¹

¹¹*mrk* is short for *marked* and *inc* for *incomplete*.

Starting at the bottom, we find a dative singular NP which is marked and indefinite. Since it is the head of the NP, its HEAD value is shared with all of the dominating nodes (1). Its MARKING value, however, is superseded by those of its functors. The first one is the preposition *für*. It selects an indefinite nominal, which can be marked, as in *was für einem Mann*, or unmarked, as in the plural *was für Kinder* ‘what for children’. In contrast to the major *für*, which requires an accusative NP, its minor homonym does not impose any restrictions on the nominal’s CASE value. When combined with an appropriate nominal head, the resulting nominal is incomplete and marked by *für* (3). The incompleteness of the nominal captures the fact that a combination like *für einem Mann* is not well-formed in itself. The interrogative pronoun *was* has the case value *standard*, which subsumes the nominative and the accusative, and is marked, since pronouns do not take any determiners. It is also definite, in contrast to such indefinite pronouns as *someone* and *anybody*. Treating the pronoun as the head of the NP is implausible, since it is the nominal and not the pronoun which bears the case and number values which are required by the external selector of the NP. It is, hence, preferable to treat the pronoun as a functor as well. It selects an incomplete nominal which is marked by *für* and it yields an NP which is marked and definite. Just like the preposition, it does not impose any restrictions on the nominal’s case value.

This treatment yields the result we want (a dative singular NP) without employing any ad-hoc devices. *Für* is assigned the same category as in its other uses (P), and its combination with the nominal is modeled in terms of a type of combination (head-functor), which is of the same degree of generality as the head-complement combination. Similarly, *was* is treated as an interrogative pronoun and the fact that it requires a nominal which is introduced by *für* is captured in terms of its SELECT feature. The main difference with Netter’s functional head treatment is that the functors are not assigned any properties which conflict with their lexical properties: *für*, for instance, is not a dative NP, but an NP selecting preposition and *was* is not a dative NP either, but a definite interrogative pronoun in standard case.

The pseudopartitive in *a lot of Albanians* can be

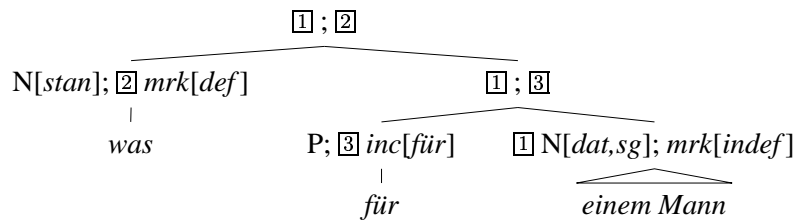


Figure 1: The German interrogative NP *was für einem Mann*

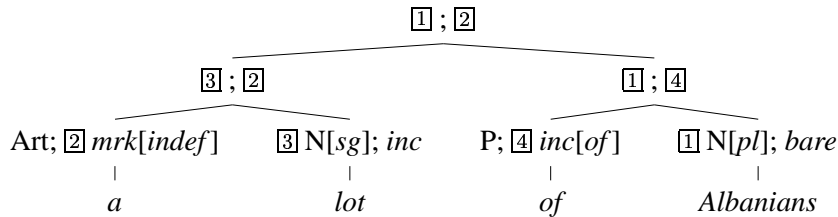


Figure 2: The English pseudopartitive NP *a lot of Albanians*

analysed along the same lines, see figure 2.

Starting at the bottom, we find a bare plural. Its HEAD value is shared by all of the dominating nodes, since it is the head of the NP ([1]). Its MARKING value, however, is superseded by the one of its functor *of* ([4]). In contrast to the addition of a major preposition, which yields a PP, the addition of the minor *of* yields a nominal which is incomplete. It is, for instance, not possible to use *of Albanians* in positions where a nominal is required, such as the direct object of *see* or the subject of *are leaving their country*. In order to be well-formed the incomplete nominal has to be preceded by another functor. This has to be a functor which is compatible with an incomplete nominal which is marked by *of*. The quantifying *a lot* fits the bill, but since it is not a single word, the analysis is slightly more complex than in the *was für* example.

First, within the quantifying NP, the noun *lot* is the head and the article its functor. More specifically, the article selects an unmarked singular count nominal and yields an NP which is marked and indefinite ([2]). The noun *lot* is inherently incomplete, which implies that it needs a determiner, and has a SELECT value which spells out that it requires a nominal head which is incomplete and introduced by *of*; since the SELECT value is part of the HEAD value, this selection requirement is shared with the NP *a lot* ([3]). Second, the resulting NP is then com-

bined with its head *of Albanians*. The resulting combination shares its category and its number with the latter ([1]), but inherits its MARKING value from the former ([2]), so that the NP is marked and indefinite. The MARKING value of the entire combination is, hence, identical to the one of its functor's functor.

The iterative propagation of the MARKING value provides an account for the contrast between **his a lot of friends* and *his many friends*. Assuming that the possessive determiners select an unmarked nominal and yield a marked NP, the former combination is ruled out, since the NP *a lot of friends* is already marked. The latter combination, by contrast, is grammatical, since *many* is unmarked.¹²

3.3 The partitive construction

To gain a better understanding of the minor *of* in pseudopartitives it is useful to contrast it with its homonym in genuine partitives, such as (17).

- (17) One (N) of my friends has settled in Italy.

As shown by the number value of the verb, the head of the subject NP must be a singular noun, rather than the plural *friends*. This noun could, in principle, be the numeral *one*, but there is some evidence that it is not the numeral itself, but rather the noun which is selected by the numeral which plays that role. To demonstrate this, let us compare:

¹²The fact that *a lot* and *many* have nearly identical meanings does not imply that their MARKING values must be the same.

- (18) Twenty is an even number.
- (19) Twenty prisoners have escaped.
- (20) Twenty (N) of my friends live in Italy.

When the numeral *twenty* stands for a number, as in (18), it is a singular noun. This is not only clear from the agreement with the verb, but also from its compatibility with the indefinite article in *a good twenty pages*. When the numeral is combined with a common noun, the latter must be plural, as shown by *twenty cats*/**cat*, and in that combination the common noun is the head, as shown by the agreement in (19). As a consequence, if the head of the NP in (20) were the numeral, the verb would be singular, but instead it must be plural. This cannot be attributed to the plurality of *friends*, for in that case *one of my friends* would be plural as well. The only plausible candidate for triggering the plural marking on the verb is, hence, the noun which is selected by the numeral, i.e. the phonetically empty (N). In sum, the number value of a partitive NP is determined by the phonetically empty noun which precedes the preposition.

This is a major difference with the pseudopartitive construction, in which the number of the NP is identified with the one of the noun which follows the preposition. Another difference concerns the internal structure of the nominal which follows the preposition. In the partitive construction, that nominal must be definite. More specifically, it can be a definite pronoun, as in (21), or it can be introduced by a demonstrative, a definite article, a possessive or a genitive, as in (22), but it cannot be a bare plural, as in (23), and it cannot be introduced by a quantifying determiner, as in (24).

- (21) One (N) of us/them will come.
- (22) One (N) of those/the/his/John's horses has been sold.
- (23) * One (N) of horses has been sold.
- (24) * One (N) of some/few horses has been sold.

The minor *of* which occurs in pseudopartitives, by contrast, requires an unmarked indefinite nominal. Such a nominal may be introduced by an adjective, as in *a lot of poor Albanians*, but not by a determiner, as in *a lot of those Albanians*. The latter is, of course, not ungrammatical, but it has lost

its pseudopartitive character. It has become an ordinary partitive, in which the head of the NP is the phonetically empty noun which is selected by *a lot*.

- (25) A lot (N) of those Albanians have settled in Italy.
- (26) Thousands of Albanians have left their country. A lot (N) have settled in Italy.

(26) is particularly telling, since it demonstrates unequivocally that the verb agrees with the phonetically empty noun, and not with the singular *lot*. Further evidence for the partitive nature of this combination is provided by the contrast in:

- (27) * A lot have settled in Italy of Albanians.
- (28) A lot (N) have settled in Italy of those Albanians.

While the *of*-phrase in the pseudopartitive cannot be extraposed, since it is an incomplete nominal rather than a PP, the one in the partitive construction can. This shows that the latter is a PP, and, hence, that the preposition is an ordinary complement taking and PP projecting head.

Pulling the various strings together we can analyse the partitive construction as in figure 3.

The numeral *one* selects a singular noun which is inherently incomplete, and yields a marked indefinite NP, to which the partitive PP is adjoined.¹³ This PP is headed by the preposition and the latter takes an NP complement which must be marked and definite. Since the mother of a head-complement combination shares its MARKING value with its head daughter, the resulting phrase is an unmarked PP[*of*].

The same analysis applies to NPs with a plural empty head, such as *twenty (N) of his friends* and *a lot (N) of those Albanians*. The quantifying *a lot* can, hence, be used in both partitive and pseudopartitive constructions. In both cases it selects an incomplete nominal, but in the former the selected noun must be phonetically empty, and in the latter it must be introduced by the minor *of*.

¹³The reason for adjoining the PP to the combination of the numeral and the empty noun, rather than to the empty noun alone, is that empty nouns can only take a postnominal dependent if they are introduced by a prenominal dependent. In (Nerbonne and Mullen, 2000, 126) this is called the Non-empty Left Periphery Constraint.

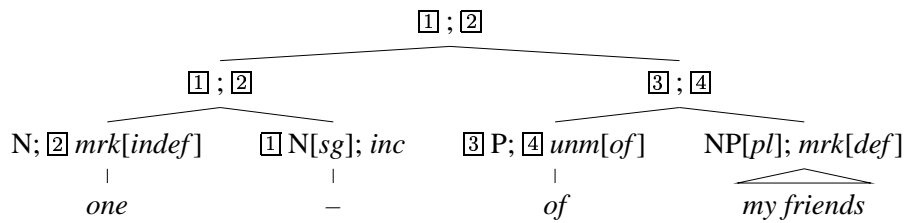


Figure 3: The English partitive NP *one of my friends*

3.4 Relevance of the data

For the purpose of grammar engineering it is important to distinguish the minor prepositions from their major counterparts. Otherwise, one has to modify the constraints which model number and gender agreement, case assignment and extraposition, burdening them with exception statements and ad-hoc stipulations. Of the various alternatives for treating the minor prepositions it is preferable to choose the one which is easiest to integrate in the rest of the grammar. Syncategorematic insertion is not very appealing from that perspective, and neither is the introduction of ad-hoc categories and functions, such as the head-marker combination. More appealing are proposals which rely exclusively on independently needed devices, such as the functional head treatment and the functor treatment. The main difference between these two concerns the interface between lexicon and syntax. The former allows the words which are used as functional heads to have syntactic properties which are unrelated to their lexical properties; the latter, by contrast, assumes a standard subsumption relation between words in the lexicon and words in context. As a consequence, if one employs a lexicon during parsing, as most parsers do, the functor treatment is considerably more reliable and consistent than the functional head treatment.

For those with lingering doubts about the relevance of the minor prepositions for NLP it may be worth adding that there are many more than those which have been treated in this paper. (Van Eynde, 2004), for instance, argues that they cannot only be found in nominal projections but also in verbal ones. Some relevant examples are the Dutch complementizers *om* ‘for’ and *te* ‘to’, for which the minor functor treatment is demonstrably more appropriate than the treatment as head of CP, PP or VP. Further work

will no doubt lead to the discovery of other exceptional (uses of) prepositions. Their relevance for NLP is enhanced by their high frequency of occurrence. This is due to the fact that the prepositions with exceptional uses are precisely those which are used more frequently. In the Spoken Dutch Corpus, for instance, *van* ‘of’ is the preposition with the highest frequency, and the other prepositions with exceptional uses, such as *voor* ‘for’, *te* ‘to’ and *om* ‘for’, also figure in the top-7, see (Van Eynde, 2004, 54). Not all uses of these prepositions are exceptional, of course, but the exceptional uses tend to be quite common and for some of the prepositions, such as the Dutch *te*, they even account for the majority. In sum, the phenomenon of the minor prepositions is anything but marginal, and the proper treatment of their exceptional properties deserves special attention.

4 Conclusion

There are prepositions which cannot plausibly be treated as the head of a PP. Some relevant examples concern the use of the English *of*, the Italian *di* and the French *de* in pseudopartitives and the use of the German *für* and the Dutch *voor* in interrogative NPs. Providing an alternative treatment which fits in well with the rest of the grammar is a challenge. Four possibilities have been discussed and dismissed: the fixed phrase assumption (2.1), the option of syncategorematic insertion (2.2), the marker treatment (2.3) and the functional head treatment (2.4). The alternative advocated in this paper is to treat the exceptional prepositions as functors, in the sense of (Van Eynde, 1998) and (Allegranza, 1998). In this treatment the exceptional prepositions are functors which select a nominal head, rather than heads which select a nominal complement. An advantage of this treatment is that it yields the results we need without the postu-

lation of any ad-hoc devices or categories.

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