The syntax of French *à* and *de*: an HPSG analysis

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Abstract

We present a descriptive overview of the uses of the French prepositional forms *à* and *de* and the properties of the constructions they appear in. The complexity of the data argues against a unitary syntactic and/or semantic treatment, but the empirical facts can nevertheless be organized in a systematic fashion. Concentrating primarily on *de*, we show that its uses can be grouped into two classes, one in which *de* patterns with ordinary prepositions, and one in which it appears to reflect the syntactic category of its sister element. We show that these observations can be accounted for in an HPSG analysis that distinguishes ordinary heads from 'weak' heads.

1 Introduction

The forms *à* and *de* have a large number of uses in French, with a complex array of syntactic properties. Since the facts for *à* and *de* are quite parallel, in this paper we will focus mostly on *de*, which has a wider range of functions. Where appropriate, we will point out details specific to *à*.

As the following examples illustrate, *de* can combine with an NP (1a); it can appear in a sequence *de*+LE+N$'$, forming a so-called 'partitive' NP (1b); it can combine with an N$'$ in a variety of contexts, with or without further combination with a quantifier to the left (1c). It also combines with PPs (2), VPs (3), and APs and AdvPs (4).[1]

(1) a. Aller de la gare à l'hôtel. Un ami de Marie.
     'Go from the station to the hotel. A friend of Marie's.'

  b. Demander de la bière.   (*de*+LE 'partitive')
     'Ask for beer.'

  c. i. Je n'ai pas lu de journal.   (with negation)
        'I didn't read any newspaper.'

     ii. Il a lu beaucoup de livres.   (with quantifier)

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[1]We mention in passing two constructions studied by Milner (1978) that we cannot deal with in this paper for lack of space:

(i) Je préfère celui-là, de manteau.   (right dislocation of N$'$)
    'I prefer that one, that coat.'

(ii) Il lui est déjà arrivé de ces expériences.   (generalized 'partitive' NP, cf. (1b))
    'He has already had this kind of experience.'

It should also be noted that some constructions that might appear to belong in class (1c) above are in fact members of (1a). These include certain *de*+N$'$ structures (*changer de nom* 'change names') and [quantifier *de* NP] constructions (*beaucoup de ces maisons* 'many of these houses').

    iii. Il a beaucoup lu de livres.   (floating quantifier)
          'He has read a lot of books.'

    iv. Combien a-t-il lu de livres ?   (extracted quantifier)
          'How many books has he read?'

(2) Il surgit de derrière l'église.
     'He jumps out from behind the church.'

(3) Je me souviens d'avoir lu ce poème.
     'I remember having read this poem.'

(4) a. Quelqu'un de très fiable. J'ai encore trois jours de libres.
        'Someone very reliable. I have another three days free.'

     b. Quelque chose de mieux, une page de plus.
        'Something better, one page more.'

In addition, in various cases, an idiosyncratic form appears where a combination of *de* and some other item would be expected; these cases are traditionally analyzed as post-syntactic reductions. (5a) illustrates the portmanteau forms found in place of **de+le* and **de+les*. As shown in (5b), the portmanteau form *des* can be reduced to *de* (or *d'*)[2] before a prenominal modifier. Finally, the single form *de* obligatorily substitutes for the ungrammatical sequences **de+du*/*des*/*de la*/*de l'* (5c).

(5) special realizations

    a. Acheter du vin/des livres (*de le vin/*de les livres).
      'Buy wine/books.'

    b. Acheter des/de beaux tableaux.
      'Buy beautiful paintings.'

    c. Avoir besoin d'aide (*de de l'aide), parler de choses sérieuses (*de des choses sérieuses).
      'Need help, talk about serious matters.'

The analysis of *de* (and to a lesser extent, of *à*) is a well-known puzzle of French grammar, and raises problems both from a semantic and a syntactic point of view. Semantically, the question is whether *de* is always semantically empty (Blinkenberg, 1960; Gougenheim, 1959; Spang-Hanssen, 1963; Cadiot, 1997; see also the summary in Kupferman (1996)) and if not, whether it can be treated as a polysemous element, with an abstract core meaning (Moignet, 1981), or whether there are several homophonous items. Syntactically, it is generally agreed that *de* does not belong to a single category (preposition); certain uses of *de* belong to some other category, or categories. However, there are some attempts at a unitary analysis. Milner (1978, pp. 246–251) suggests that *de* (as well as *à*) could be a preposition in all of its uses, but not uniformly the head of a PP, thus dissociating the syntactic category from its habitual grammatical function. In recent terms, the preposition could be a 'marker' in some cases (Pollard and Sag , 1994); such an analysis is also compatible with Van Eynde's (2004) proposal concerning some uses of Dutch prepositions. On the other hand, Miller (1992) suggests that *de* and *à* are phrasal affixes rather than prepositions—an analysis that sidesteps the syntactic category problem, but also ignores the divergent properties of different uses of the same affix.

Three questions must be addressed. First, if one assumes a distinction between prepositional and non-prepositional uses of *de*, where is the dividing line between the two? For instance, when followed by an AP, should *de* be analyzed as a preposition (Azoulay-Vicente, 1985), or not (Huot, 1981)? When followed by an infinitival VP, is it always a preposition, always a complementizer, or one or the other depending on the environment (Huot, 1981)? Second, what is, or what are the categories of *de* when it is not a preposition, or does not head a PP? Different terms have been proposed for *de* in contexts where it does not seem to have the status of a normal preposition ("signe de liaison" (Blinkenberg, 1960), "cheville syntaxique" (Damourette and Pichon, 1911), "indice d'infinitif" (Gougenheim, 1959), "case marker" (Milner and Milner, 1972; Vergnaud, 1974)), but no precise syntactic analysis is offered.

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[2]All instances of *de* are systematically realized as *d'* before vowels. We will not go into the details of French vowel elision in this paper.

Third, a question all too often neglected: how can we account for the properties common to the prepositional and non-prepositional uses of *de*?

The analysis we develop in this paper distinguishes two classes of uses of *de*, which we refer to as 'oblique' and 'nonoblique' uses. This partition is shown to be motivated by explicit syntactic criteria (and not correlated with semantic contentfulness). In oblique uses, represented by examples (1a), (2), and (4) above, *de* patterns with ordinary prepositions. On the other hand, in nonoblique uses, corresponding to (1b,c) and (3), it does not behave like a normal preposition, and thus calls for a special analysis. For certain grammatical processes, however, we show that oblique and nonoblique uses pattern together, and in these cases a unified treatment is required.

The syntactic data justifying the distinction between the two types of uses are discussed in the following section. Section 3 offers an HPSG analysis of the empirical results.

2   Syntactic properties

In this section we compare the syntactic behavior of the various constructions involving *de* illustrated in (1–4). We first show that a number of contrasting properties (possible syntactic function, extraction, wide scope over coordination) motivate a division between 'oblique' and 'nonoblique' uses of *de*. We then present two properties that cut across the oblique/nonoblique distinction (portmanteau forms, pronominal clitics) pointing to the existence of some unifying property common to all uses of *de*.

2.1   Syntactic functions

De-phrases can have a wide variety of syntactic functions, including complement and modifier of a number of different categories. Of particular importance is the fact that certain *de*-phrases can be subjects; this is the case for 'partitive' NPs and *de*-VPs (6).[3] Since PPs cannot be subjects in French (7), this observation casts doubt on any analysis that treats these *de*-phrases as PPs, and motivates our term 'nonoblique' for picking out this class of uses.[4]

(6) a. [Des bijoux] ont été volés. 'Jewels were stolen.'

b. [De sortir un peu plus] te ferait du bien.
'Getting out a bit more would do you good.'

(7) *[Sous le lit] est un endroit idéal pour se cacher.
'Under the bed is an ideal place to hide.'

2.2   Extraction from *de*-phrases

The two types of *de*-phrases do not have the same properties with respect to extraction. Extraction out of nonoblique nominal phrases is possible (8a–c); notice that this is also what we observe for simple NPs (8d). By contrast, extraction is not possible out of oblique *de*+NPs or *de*+PPs (9a,b), just as with ordinary PPs (9c).

(8) a. Voici un auteur dont [des livres] sont en vente ici.
'Here's an author some of whose books are on sale here.'

b. Voici un auteur dont je n'ai pas lu [de livre].
'Here's an author who I haven't read any books by.'

c. Voici l'auteur dont j'ai lu beaucoup [de livres].
'Here's an author who I've read a lot of books by.'

d. Voici un auteur dont j'aime [les livres] (mais pas les poésies).
'Here's an author whose books I like (but not his poetry).'

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[3]Nonoblique *de*-N′ combinations (class (1c) above) can also appear as subjects, but only post-verbally: *Combien sont venus d'étudiants ?* 'How many students came?'

[4]Note the plural agreement on the verb in (6a). This contrasts clearly with the situation in English, where subject PPs are possible but do not trigger agreement (*Between the trees is/*are a good place to park*).

(9)   a.   *Voilà le pays dont Paul revient [de la capitale].
         'That's the country that P.'s returning from the capital of.'

      b.   *Voilà l'homme dont Jean a surgi [de derrière la voiture].
         'That's the man whose car Jean jumped out from behind.'

      c.   *Voilà le livre dont j'ai déjeuné [avec l'auteur].
         'That's the book that I had lunch with the author of.'

We can apply the same test to other uses of *de*, with clear results. *De*-VPs pattern with nonoblique uses,[5] while *de*-APs pattern with oblique ones; (11b) shows that the *de*-AP in (11a) is a predicative complement of the verb (and not an NP modifier), and (11c) shows that extraction out of adjectival complements of a verb is possible. Thus the only factor blocking extraction in (11d) is the presence of *de*. Finally, note that extraction out of *de*-AdvPs cannot be tested since the adverbs involved in this construction—recall the examples in (4b)—do not take complements.

(10)   Voici le livre que je rêve de traduire.
      'Here's the book that I dream of translating.'

(11)   a.   Il n'y avait que Pierre de convaincu de cette solution.
         'There was only Pierre (who was) convinced by this solution.'

      b.   Il n'y avait de convaincu que Pierre.
         'There was no one convinced but Pierre.'

      c.   C'est une solution dont je le croyais convaincu.
         'That's a solution that I thought he was convinced by.'

      d.   *C'est une solution dont il n'y avait que Pierre de convaincu.
         'That's a solution that only Pierre was convinced by.'

2.3   Wide scope over coordination

Coordination provides another argument for distinguishing oblique and nonoblique uses. Nonoblique *de* never takes wide scope over a coordination of phrases, be they LE+N′ sequences in 'partitive' NPs, bare N′s, or VPs.

(12)   a.   Pour ce gâteau, il faut de la farine et *(de) la levure.
         'For this cake, you need flour and baking powder.'

      b.   Il y avait des pêches mûres et *(des) tomates appétissantes.
         'There were ripe peaches and appetizing tomatoes.'

(13)   Il y avait sur la table beaucoup de pain et *(de) vin.
      'There was a lot of bread and wine on the table.'

(14)   Je rêve de lire ce livre et *(de) l'expliquer à mon fils.[6]
      'I dream of reading this book and explaining it to my son.'

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[5]Notice that extraction out of bare VPs is possible in French (i), while extraction from VPs introduced by other prepositional forms is subject to speaker variation (ii):

  (i)   Voici les livres que j'aimerais [lire] / que je dois [traduire]
      'Here are the books that I'd like to read/that I have to translate.'

  (ii)   % Voici les livres que j'insiste [pour lire] / que je suis partie [sans lire]
      'Here are the books that I insist on reading / that I left without reading.'

[6]Note that a single *à* or *de* can mark a VP containing a coordination of lexical Vs (Abeillé and Godard, 1997):

  (i)   Je rêve de [lire et expliquer] ce livre à mon fils.
      'I dream of reading and explaining this book to my son.'

In contrast, oblique *de* can take wide scope over a coordination of NPs, PPs, APs, or AdvPs. It should be noted that judgments here are somewhat unclear, due to poorly understood semantic constraints and speaker variation.

(15) J'ai besoin de [cette farine et cette levure] pour mon gâteau.
'I need this flour and this baking powder for my cake.'

(16) Il revient de [chez Paul ou chez Marie].
'He's coming back from Paul or Marie's.'

(17) a. quelqu'un de bon en maths et (de) fort en gym
'someone good at math and strong in P.E.'

  b. quelque chose de [plutôt bien ou plutôt mal]
'something pretty good or pretty bad'

2.4 Portmanteau forms

One well-known property of *de* is its interaction with the definite article *le* (but not the elided form *l'*) and the plural *les* to yield the contracted or 'portmanteau' forms *du* and *des*; recall the examples in (5). The corresponding portmanteaux for *à* are *au* and *aux*. This phenomenon is completely regular for all instances where *à* and *de* appear in combination with *le* or *les*—irrespective of the oblique or nonoblique status of *de*.

On the other hand, *à* and *de* do not give rise to portmanteau forms when they combine with a VP, although the accusative pronominal clitics *le* and *les* are phonologically identical to the forms that trigger contraction in nominal contexts:

(18) J'essaie de les vendre / *des vendre.
'I am trying to sell them.'

This might be taken as evidence for distinguishing pre-verbal and pre-nominal *de*, but on the other hand the pronominal clitics *le* and *les* could simply be different from the definite article *le*/*les*, in disallowing contraction.[7]

2.5 Pronominal clitics

As is well known, nominal phrases marked by *de* alternate with the pronominal clitic *en*. It is interesting to note that this same clitic is used whatever the other properties of the phrase; in particular *en* is used both for oblique (19a–c) and nonoblique (19d–f) *de*-phrases.[8]

(19) a. Je viens de Londres ⇒ J'en viens
'I'm coming from London / from there.'

  b. Je me souviens de ce poème ⇒ Je m'en souviens
'I remember that poem / it.'

  c. Je veux changer d'hôtel ⇒ Je veux en changer
'I want to change (hotels).'

  d. Je n'ai pas d'argent ⇒ Je n'en ai pas
'I don't have any (money).'

  e. J'ai trop de travail ⇒ J'en ai trop
'I have too much (work).'

  f. Tu as acheté de la bière / des livres ⇒ Tu en as acheté
'You bought some (beer/books).'

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[7]This is impossible to test directly, since NPs cannot begin with a clitic and VPs cannot begin with an article. Unfortunately, for lack of space, we cannot go into the complex problem of the realization and distribution of portmanteau forms, which (contrary to traditional assumptions) is not a purely phonological phenomenon.

[8]There are well-known restrictions on adnominal *en*, depending on the function of the NP it is dependent on (Milner, 1978).

The clitic *en* is also available for *de*-VPs, unless they alternate with direct NP objects (Gross, 1975; Huot, 1981):

(20) a. Je rêve de venir demain / de cela / *cela ⇒ J'en rêve
          'I dream of coming tomorrow / of that / of it.'
      b. Venir demain, Paul en rêve.
          'Coming tomorrow, Paul dreams of it.'

(21) a. Je promets de venir / *de cela / cela ⇒ *J'en promets
          'I promise to come / that.'
      b. Venir demain, Paul le promet.
          'To come tomorrow, Paul promises (it).'

The VP data in (20) and (21) indicate that *de*-marked VP[*inf*] complements do not give rise directly to clitics. Instead, the main verb selects the form *le* or *en* (or *y* for *à*-marked complements) according to its NP or PP complementation frame (with further semantic restrictions). A VP[*inf*] can be anaphorically linked to this nominal or prepositional clitic.

2.6   Interim conclusion

To sum up our observations so far, we have shown that uses of *de* are partitioned into two classes. When *de* precedes a PP, an AP/AdvP, or most NPs, it behaves like an ordinary preposition: the resulting phrase is an oblique complement or an adjunct, extraction is disallowed, and *de* can have wide scope over a coordination. On the other hand, when *de* precedes a VP, most N's (with the exception of examples like (19c), cf. fn. 1), or when it forms part of a so-called 'partitive' NP, it has properties that are unusual for prepositions: the resulting phrase can be a subject, extraction is possible, and *de* cannot take scope over a coordination. Finally, two properties are common to both classes: oblique and nonoblique uses of *de* give rise to portmanteau forms and *en*-cliticization.

Before we turn to our analysis, two comments are in order. First, as stated in the introduction, the distribution of *à* is very similar to that of *de*, except for the fact that its range of uses is much more limited. *À* is always oblique in combination with NPs and PPs, and nonoblique only in combination with VP[*inf*]; the contrast is briefly illustrated below with data involving wide scope over coordination.

(22) a. J'ai parlé à Jean et (à) Marie.
          'I talked to Jean and (to) Marie.'
      b. Jean a commencé à lire ce livre et *(à) le traduire.
          'Jean has begun to read this book and translate it.'

Second, it is well known that *à* and *de* have uses where they are semantically potent and uses where they are not. This semantic distinction does not coincide with the oblique/nonoblique division. This is illustrated in (23), where both examples are oblique uses. In combination with the copula (23a), *de* clearly expresses a semantic relation (here, 'origin'). In (23b) however, *de* makes no semantic contribution: the semantic role of experiencer or stimulus is clearly a reflex of the lexical semantics of the noun.

(23) a. Paul est de Paris. 'Paul is from Paris.'
      b. la peur des araignées
          'fear of spiders / the fear experienced by (the) spiders'

In many cases it is more difficult to establish whether or not *de* makes a semantic contribution. In particular we make no claim as to the semantic contribution (or lack thereof) of nonoblique uses of *de*. But these examples show that semantic vacuousness and non-obliqueness must be treated as independent properties.

(24) Summary of empirical results

	'oblique' *à/de*+NP/PP *de*+AP/AdvP	'nonoblique' *à/de*+VP *de*+N$'$/NP
has the distribution of	PP	VP/NP
extraction out of marked phrase	no	yes
wide scope over coordination	yes	no
portmanteau forms	yes	
en-cliticization (of *de*-phrases)	yes	
semantic contribution	sometimes	

3 Proposed HPSG analysis

In this section we present an analysis of *de* (and *à*) that explicitly formalizes the difference between oblique and nonoblique uses, while at the same time providing a way to handle the properties they have in common. The analysis relies crucially on the novel concept of a 'weak head'.

3.1 Oblique uses: true prepositions

We treat *à* and *de* in their oblique uses as prepositions—i.e., as syntactic heads of category P, selecting a complement and projecting a PP. (25) is a description of the type *prep-word* subsuming all French prepositions. The HEAD value indicates the syntactic category (preposition), which propagates to all projections of lexical entries of this type. The MARKING attribute will be discussed in detail below in section 3.3. The empty SLASH set in (25) prevents extraction of and subextraction out of the preposition's complement (if any), because heads amalgamate the SLASH information of all their dependents (Bouma, Malouf, and Sag, 2001). In other words, French PPs are extraction islands. The COMPS list is left unspecified in (25) because French prepositions have quite diverse complementation frames, including intransitive uses: *Qu'est-ce que vous prendrez avec (cela) ?* 'What will you have with that?'; *Il y a de l'alcool dedans* 'There's alcohol in it.'

(25)

$$
prep\text{-}word \Rightarrow \begin{bmatrix} \text{HEAD} & prep \\ \text{MARKING} & marked \\ \text{SLASH} & \{\,\} \end{bmatrix}
$$

In our analysis, oblique *de* is of type *prep-word*. Thus it projects a PP from which nothing can be extracted. Moreover, oblique *de* is subject to the additional constraints in (26). It takes a COMPS-saturated complement, which is obligatory (*Qu'est-ce que vous faites dépendre de *(cela) ?* 'What do you want to follow from that?'). Furthermore, this complement cannot be the projection of a verb (but can be nominal, prepositional, adjectival, or adverbial); consequently, *de*-marked infinitival VPs are exclusively nonoblique (as discussed in the next section).

(26) oblique *de*: *prep-word* &

$$
\begin{bmatrix} \text{MARKING} & de \\ \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{HEAD} & \neg\,verb \\ \text{MARKING} & \neg\,de \\ \text{COMPS} & \langle\,\rangle \end{bmatrix} \right\rangle \end{bmatrix}
$$

Finally, (26) prohibits the complement of oblique *de* from bearing the MARKING value *de*. This blocks the 'cacophonous' repetition of *de* in examples like (5c) above (Gross, 1967). For instance, the *de*-marked 'partitive' phrase *de l'aide* cannot appear as the complement of the preposition *de*: **besoin*

de de l'aide. To account for the so-called 'haplology' of *de* in the grammatical realization *besoin d'aide*, we assume a special lexical entry for prepositional *de* (or *d'*) selecting an N′ complement.

Oblique uses of *à* are also analyzed as prepositions (27). Prepositional *à* selects an obligatory nominal or PP complement, with a MARKING restriction to prevent repetition (**aller à à la station* 'go to (at) the station').[9]

(27) oblique *à*: *prep-word* &

$$
\begin{bmatrix}
\text{MARKING} & à \\
\text{COMPS} & \left\langle \begin{bmatrix} \text{HEAD} & noun \lor prep \\ \text{MARKING} & \neg\,à \end{bmatrix} \right\rangle
\end{bmatrix}
$$

3.2 Nonoblique uses: Weak heads

To handle the properties of nonoblique *à* (appearing only in combination with infinitival VPs) and nonoblique *de* (appearing with VP[*inf*], LE+N′, and bare N′), we appeal to the notion of 'weak head', which replaces the syntactic category of *marker* in classical HPSG (Tseng, 2002). A weak head is a lexical head that shares its syntactic category and other HEAD information with its complement. Recall that the HEAD value in HPSG encodes the part of speech (subtypes of *head*: *noun*, *verb*, *adj*, *prep*, etc.) and syntactic features appropriate for each part of speech (such as CASE, VFORM, PFORM, MOD). The sharing of HEAD values is indicated by the label ☐ in the constraint in (28).[10] This accounts directly for the fact that certain properties of the non-head daughter remain visible on the phrase headed by nonoblique *à* or *de*. For example, a control verb like *essayer* 'try' selects a complement headed by the weak head *de*, bearing the HEAD feature [VFORM *inf*]; if *de* were a true prepositional head in this construction, verb form information would be inaccessible for external selection.

(28) *weak-head* ⇒

$$
\begin{bmatrix}
\text{HEAD} & \boxed{1} \\
\text{MARKING} & marked \\
\text{VALENCE} & \begin{bmatrix} \text{SUBJ} & \boxed{2} \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{HEAD} & \boxed{1} \\ \text{MARKING} & unmarked \\ \text{SUBJ} & \boxed{2} \\ \text{COORD} & - \end{bmatrix} \right\rangle \end{bmatrix}
\end{bmatrix}
$$

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[9]The complement of oblique *à* is not required to be COMPS-saturated (compare (26) and (27)). Heads of complex predicates in French (such as the copula) can and sometimes must inherit the unrealized complements of their complements (Abeillé and Godard, 2002; Abeillé, Godard, Miller, and Sag, 1997). An inherited complement can be realized as a clitic on the main verb (i). This is generally blocked if the upstairs complement is a PP (ii), but some cases of complement inheritance are accepted, by some speakers (iii):

(i) Il est [tout fier de son exploit] ⇒ Il en est tout fier.
    'He is so proud of his accomplishment / of it.'

(ii) Il est [à la plage d'Arcachon] ⇒ *Il en est à la plage.
    'He is on the beach of Arcachon / of it.'

(iii) Il est [à l'origine du canular] ⇒ % Il en est à l'origine.
    'He is at the origin of the hoax / of it.'

[10]Note that weak heads differ from functional heads in LFG or GB. Although a weak head's category is underspecified in the lexicon, in any given syntactic context, it has a completely ordinary syntactic category, e.g. N or V. It is important to emphasize that when a weak head inherits a HEAD value of type *verb* or *noun*, it does not actually 'become' a verb or a noun (i.e., a lexical object of type *noun-word* or *verb-word*). Thus it is not surprising that it behaves very differently from a normal noun or verb with respect to complementation, inflection, etc.

The constraint in (28) further requires that the weak head inherit the subject list of its complement. This allows, for example, the subject of the verb in an *à*- or *de*-marked VP[*inf*] to be controlled by the governing predicate: in other words, weak heads are subject raisers. Finally, the constraint [COORD −] on the complement prevents weak heads from taking wide scope over a coordinated structure.

It is crucial to note that the constraint in (28) says nothing about specifier valence. This allows the various forms of nonoblique *de* to constrain their specifier requirements in different ways. For the weak head *de*, we assume sharing of the SPR lists of the head and its complement, as indicated in (29a). Thus when *de* combines with an N′, it and the resulting *de*-marked N′ remain SPR-unsaturated. This accounts for the limited distribution of *de*-N′; for example, it cannot appear in preverbal subject position (29b). We assume that the quantifier in structures of the form [Q *de* N′] is a specifier of *de*, giving rise to a fully saturated NP that can be a preverbal subject (29c).

(29) a. nonoblique *de*: *weak-head* &

$$\begin{bmatrix} \text{HEAD} & noun \lor verb \\ \text{MARKING} & de \\ \text{SPR} & \boxed{1} \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{SPR} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix}$$

   b. *Jean ne croit pas que d'hommes soient venus.
       'Jean doesn't believe that any men came.'

   c. Beaucoup d'hommes sont venus. 'Many men came.'

We analyze the so-called 'partitive' determiners *du*, *des*, *de la*, and *de l'* uniformly as synthetic forms (i.e., single lexical items).[11] Moreoever, they are weak heads that select an N′ complement (lacking a specifier), but they themselves do not require a specifier. This allows us to account for the NP-like distribution of 'partitives' while maintaining the generalization that we are dealing with *de*-marked phrases.

(30) *des, du, de la, de l'* : *weak-head* &
      'partitive'

$$\begin{bmatrix} \text{MARKING} & de \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{HEAD} & noun \\ \text{SPR} & \langle [\ ] \rangle \end{bmatrix} \right\rangle \end{bmatrix}$$

The lexical description of the weak head *à* is much more straightforward (31): it always selects a VP[*inf*] complement (from which it inherits all valence requirements) and introduces the MARKING value *à*.[12]

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[11]Recall that the form *des* alternates with a reduced form *de* (5b); we will not formalize here the phonosyntactic conditions governing this alternation. Furthermore, our system would also permit an analytic treatment of *de la* and *de l'*, but we have seen no strong evidence in favor of this approach. Finally, note that for lack of space we omit the analysis of the portmanteau forms *du* and *des* in oblique (prepositional) uses. In oblique uses, the sequences *de l'* and *de la* are naturally analyzed as two-word combinations.

[12]An example of complement inheritance by nonoblique *à* is in *tough* constructions like *facile à lire* 'easy to read'. Here, the unrealized direct object of *lire* is inherited by *à* and is therefore visible on the phrase *à lire*, where it can be selected by the adjective *facile* (Abeillé, Godard, Miller, and Sag, 1997).

(31) nonobl. *à*: *weak-head* &

$$
\begin{bmatrix}
\text{MARKING } \textit{à} \\
\text{SPR } \boxed{1}, \quad \text{SUBJ } \boxed{2} \left\langle \begin{bmatrix} \; \end{bmatrix} \right\rangle \\
\text{COMPS } \left\langle \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb}, \text{VFORM } \textit{inf} \end{bmatrix} \\ \text{SPR } \boxed{1}, & \text{SUBJ } \boxed{2}, \quad \text{COMPS } \boxed{3} \end{bmatrix} \right\rangle \oplus \boxed{3}
\end{bmatrix}
$$

An alternative HPSG analysis for similar data is proposed by Van Eynde (2004), who distinguishes major and minor prepositions in Dutch. Like weak heads, minor prepositions introduce a specific MARKING value and do not contribute any part of speech information to the phrase. Unlike weak heads, they do not have syntactic head status, but are instead FUNCTOR daughters, like other non-head selectors (specifiers, modifiers). Finally, we note that ideas suggestive of the weak head approach can be found in Hulk's (1996) notion of 'functional head' and in Kupferman's (2004) quantifier analysis of *de*. Although their proposals differ from ours in significant ways (no account of the VP data, emphasis on the quantificational semantics of *de*), in their analyses *de* is also compatible with complements of various categories.

3.3 Grammatical marking

Up to now we have shown how a formal distinction between true prepositional heads and weak heads can account for the differences between oblique and nonoblique uses of *à* and *de*. But we also need to handle phenomena (in particular cliticization) where prepositions and weak heads pattern together. To do this we rely on the MARKING specification.

The MARKING feature is familiar from previous work in HPSG; it is the feature that allows phrases containing an explicit marker (e.g., a complementizer) to be distinguished from unmarked phrases. We adopt the proposals of Tseng (2002), simplifying the Marking Theory of standard HPSG. This approach eliminates the syntactic category *marker* and the type *head-marker-phrase* of Pollard and Sag (1994). Markers are analyzed as weak heads that select an unmarked complement, while introducing a new MARKING value on the phrases they head. In this approach, the percolation of MARKING information is uniformly head driven; MARKING is not a HEAD feature, however, and so it is not shared between weak heads and their complements.

We assume that nouns and verbs are [MARKING *unmarked*] in the lexicon, and that each preposition introduces a specific *marked* value (see (26) and (27)). Thus MARKING takes over the role played by PFORM in earlier HPSG, making it possible for a head to select a complement headed by a specific preposition. Two subtypes of the *marked* value *à* are needed, in order to account for the different cliticization possibilities: $à_{dat}$ corresponds to dative clitics such as *lui* (*faire confiance à Paul* $\Rightarrow$ *lui faire confiance* 'to trust Paul/him'), and $à_{loc}$ to the 'locative' clitic *y* (*penser à Paul* $\Rightarrow$ *y penser* 'to think about Paul/him'). This approach to marking allows for an account of preposition selection where the same preposition can be selected on the basis of its semantics in some instances (Bonami, 1999), and on the basis of its MARKING value in others (Tseng, 2001).

The weak heads versions of *à* and *de* also introduce MARKING values, chosen from the same set of *marked* subtypes as their prepositional counterparts; recall (29a), (30), and (31). The MARKING attribute therefore provides a simple mechanism for handling phenomena in which corresponding weak heads and prepositions behave identically. In particular, we can easily account for the fact that all *de*-phrases—oblique and nonoblique—alternate with the same clitic *en* (cf. (19)). We analyze *(se souvenir) de Marie* as a PP, *(beaucoup lu) de livres* as an N$'$[*acc*], *(boire) de la bière* as an NP[*acc*], and *(envie) de dormir* as a VP, but all of these phrases share the feature [MARKING *de*], and so they can all be replaced by the same clitic *en*. We know of no previous proposal capable of capturing this generalization, which involves phrases that are otherwise so dissimilar with respect to all other syntactic and semantic features.

4   Concluding remarks

We have presented an empirical overview of constructions involving the forms *à* and *de* in French, and we have offered a number of proposals for their analysis in the framework of HPSG. Our account depends crucially on the distinction between oblique uses of *à* and *de* (where they are analyzed as ordinary prepositional heads) and nonoblique uses (where they are analyzed as weak heads). At the same time, oblique and nonoblique uses of *à* and *de* can still pattern together thanks to a common inventory of MARKING values. This multi-faceted treatment accommodates most, if not all, uses of *à* and *de* in French and their properties with respect to a wide range of phenomena, including extraction, coordination, and cliticization.

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