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FRENCH CLITIC MOVEMENT WITHOUT CLITICS OR MOVEMENT

The French clitic system has posed a persistent challenge to transformational syntactic analysis, which has never produced a successful account of problems such as clitic ordering. Lexicalist alternatives, however, have never been reconciled with the full range of familiar problems and the growing body of known lexical idiosyncracies. We present a lexicalist treatment of the French clitic system that treats all ‘clitics’ as lexical pronominal affixes, whose ordering is templatic in nature. On our account, the order of French pronominal affixes is independent of the general properties of syntactic structures; cliticized words – treated as valence-reduced realizations of verbal lexemes – enter the syntax fully inflected. The conclusions we reach challenge grammatical architectures that seek to explain the behavior of clitics in terms of functional projections, head movement and/or the Mirror Principle.

INTRODUCTION

For more than a quarter century, French pronominal affixes (indeed Romance pronominal affixes in general) have posed a dilemma for generative grammar.*

* This paper presents some of the common ground underlying our collaboration with Anne Abeillé and Danièle Godard (v. Sag and Godard (1994), Abeillé and Godard (1994, 1996, 1997), Abeillé et al. (to appear, in press, in preparation)). We would like to thank them for detailed discussion and crucial insights on the material presented here and more generally on the grammar of French. We are particularly grateful to Gosse Bouma for his reaction to various ideas we had along the way. The present paper is significantly influenced by his thinking about the relation between words and lexemes (See Bouma 1997). We would also like to acknowledge the contribution of Paola Monachesi who participated in our initial discussions of the argument composition analysis of nonlocal pronominal affixes at the Colchester ESSLLI of 1992, which gave rise to her papers Monachesi (1993a,b) on nonlocal pronominal affixes in Italian and is more fully developed for Italian in her dissertation (Monachesi 1996). A predecessor of the present paper (embodying an analysis that we have in essence abandoned) was first presented in January, 1993 at the LSA’s annual meeting in Los Angeles, and was subsequently published as Miller and Sag 1995. We would like to thank the numerous colleagues who provided interesting suggestions: Julie Auger, Sergio Balari, Liz Bratt, Chris Culy, Tony Davis, Janet Fodor, Georgia Green, Aaron Halpern, Tony Kroch, Bob Levine, Chris Manning, Detmar Meurers, Michael Moortgat, Owen Rambow, Peter Sells, Martine Smets, Mark Steedman, Tom Wasow, and three anonymous reviewers. We have a special debt as well to Carl Pollard and the Ohio State HPSG seminar of Fall, 1996, who provided important critical comments on

Put simply, the dilemma is that verb forms bearing pronominal affixes,¹ by any number of criteria, are single *words*, yet the syntactic distribution of these words differs from that of their uncliticized counterparts in systematic ways that an adequate grammar must explain. Thus in familiar contrasts as (1) and (2), the presence of a pronominal affix causes a systematic change in the verb's combinatoric potential (or 'valence'):

- (1) a. Marie le voit. 'Marie sees him.'
 b.*Marie le voit Jean. 'Marie sees Jean.'²
 c. Marie voit Jean. 'Marie sees Jean.'
- (2) a. Marie lui donne le livre. 'Marie gives her the book.'
 b. Marie le lui donne. 'Marie gives it to her.'
 c.*Marie lui donne un livre à Anne. 'Marie gives a book to Anne.'
 d.*Marie le lui donne le livre. 'Marie gives her the book.'

This dilemma has received considerable attention in the generative literature, ever since the seminal studies of Kayne (1969, 1975) and Perlmutter (1970). In the earliest proposals, pronominal affixes were analyzed in terms of syntactic movement: they were regarded as full NPs in their usual argument position in deep structure and then transformationally attached to the verb. Later proposals included base generated analyses of pronominal affixes (e.g. Rivas 1977, Jaeggli 1982), whereas others have continued to argue for a movement-based approach (e.g. Kayne 1991).

Sportiche (1996) provides an interesting discussion of the advantages and disadvantages of each approach. He argues that a uniform, strictly base-generated approach to clitic constructions is impossible because "there are many cases in which the clitic appears on a verb to which it bears no lexical relation" (Sportiche 1996: 219), e.g. the cases illustrated in (3).

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¹ We have resolved to call the entities under discussion here pronominal affixes rather than pronominal clitics in order to make clear that in the analysis which we defend, there is no sense in which these affixal elements function as independent syntactic entities, which is what the term *clitic* has come to mean in generative studies.

² Examples like (1) are grammatical with a pause before the final element (*Jean*), which we take to be indicative of a right dislocated (unbounded dependency) structure.

than as postlexical clitics.³ We will briefly present a set of arguments in favor of this analysis, principally based on the criteria for distinguishing affixes from postlexical clitics due to Zwicky and Pullum (1983). It should be noted that Labelle (1985), using the same types of criteria, came to the opposite conclusion, namely that the pronominal affixes are postlexical clitics. However, we claim that she came to this incorrect conclusion because she ignored numerous relevant data which we now very briefly review. Detailed argumentation can be found in Miller (1992a: 173–181), providing numerous further examples of the types given below as well as a theoretical justification of the criteria invoked here. In addition, Auger's (1993, 1994, 1995) arguments (based primarily on Quebec French) lead to the conclusions converging with ours, as do those offered by Bonet (1991) under differing theoretical assumptions, based on data from Catalan, and those of Monachesi (1993a,b, 1996), which concern multiple varieties of Italian. The arguments presented here are relevant for the affixal status both of subject and object pronominals.

It is important to note here that we are *not* claiming that pronominal affixes are agreement markers in French. We assume that agreement marker vs. pronoun status and affix vs. word status are two independent parameters, and that in standard French, the bound pronominals are affixal (or 'incorporated') pronouns.⁴ The major evidence for this is the absence of systematic doubling. The following evidence supports the conclusion that French pronominal affixes are lexically attached inflections:

• DEGREE OF SELECTION WITH RESPECT TO THE HOST:

Contrary to the claims of Labelle (1985: 91–92), French pronominal affixes are not VP-initial clitics: in those cases where the VP is not verb initial, the affixes (e.g. *lui* in (4a)) appear on the verb, the head of the VP, as is typical for inflection, and not on other VP-initial items.

- (4) a. Il faut [ne rien lui dire].
 It is necessary to tell her/him nothing.
- b.*Il faut [ne lui rien dire].
- c. [Tout lui donner] serait une erreur.
 To give her everything would be a mistake.

³ By postlexical clitics, we mean autonomous syntactic words which are prosodically deficient and hence postlexically (and postsyntactically) attached to a neighboring word, forming a new prosodic word domain.

⁴ See, e.g. Bresnan and Mchombo 1987 and Auger (1993, 1994, 1995 sec. 5). Auger argues that subject affixes, though not object affixes, have been reanalyzed as agreement markers in Spoken Quebec French.

d.*[Lui tout donner] serait une erreur.

• ARBITRARY GAPS IN THE SET OF COMBINATIONS:

There are arbitrary gaps in the set of combinations of pronominal affixes and verbs. This is typical of inflection and not of cliticization. For instance, the classical phenomena of pronominal affix incompatibility, e.g. the impossibility of (5b) (whose only grammatical realization is (5c) as opposed to (5a), constitute clear cases of gaps in the paradigm.

(5) a. Il le lui a présenté. ‘He presented him to her.’

b.*Il me t’/lui a présenté. (putatively same as (5c))

c. Il m’a présenté à toi/elle. ‘He presented me to you/her.’

Similarly, for most verbs there is no acceptable form for the inverted first person singular pronominal affix *je*, as opposed to other persons. The contrast between (6b) and paraphrases such as *Je sors?/Je chante?, Est-ce que je sors?/Est-ce que je chante?* shows that this is not a semantic or pragmatic problem, but a purely morphological one.⁵

(6) a. Sors-tu? ‘Are you going out?’

Chantes-tu? ‘Are you singing?’

b.*Sors-je? (putatively ‘Am I going out?’)

*Chante-je? (putatively ‘Am I singing?’)

It is very difficult to imagine a principled syntactic account of such data, especially given the fact that, for (5), the strong form alternates are well-formed and that, for (6), some other verbs and all other persons allow inversion.

• MORPHOPHONOLOGICAL IDIOSYNCRASIES:

The combinations of pronominal affixes with verbal stems involve numerous morphophonological idiosyncrasies, which are not explainable in terms of productive phonological rules. The precise repertory of idiosyncrasies exhibits geographical variation, although they clearly appear in all varieties of spoken French (see e.g. Morin 1979a for extensive data and Auger 1993,

⁵ Note that for the *-er* verbs, there is an archaic form *chanté-je* [šâtež] but it is obsolete even in writing; the precise list of verbs for which inverted first person forms are acceptable (e.g. *devoir: dois-je*) varies from speaker to speaker, as is to be expected of a morphological (rather than syntactic) phenomenon.

1994, 1995 for discussion of morphophonological idiosyncrasies in Quebec and standard French). We will mention just two examples: the idiosyncratic realization of *y* as \emptyset in front of the future stem *ir-* of *aller*, illustrated in (7) (cf. Miller (1992a: 176–177)), and the idiosyncratic realization of *je suis* as *chuis* [ʃɥi] (note that this is only possible for the verb *être*, and not for the homophonous form of *suivre* ‘follow’, *je suis*, proving that *chuis* cannot be derived by productive phonological rules) and *je sais* as *chais* [ʃe].

- (7) a. Pierre *(y) va. ‘Pierre is going there.’
 b. Pierre (*y) ira. ‘Pierre will go there.’

• RIGID AND IDIOSYNCRATIC ORDERING:

French pronominal affixes exhibit rigid and idiosyncratic ordering, typical of affixation, rather than of cliticization. For instance, the ordering of dative and accusative pronominal affixes in standard French depends on the persons of the affixes involved. More generally, dialects that are otherwise very similar can exhibit variation in affix ordering (see, e.g. Morin (1979b: 307), Cummins and Roberge 1994b), which confirms the idea that the ordering is not explainable in terms of deep syntactic properties.

- (8) a. Marie me(dat) le(acc) donne. ‘Marie gives it to me.’
 b. Marie le(acc) lui(dat) donne. ‘Marie gives it to her.’

• PRONOMINAL AFFIXES UNDERGO LEXICAL PHONOLOGICAL RULES:

It can be argued that affix+stem units undergo lexical phonological rules, such as obligatory liaison of nasal consonants, lending further evidence that the bound pronominals are lexically attached affixes.

- (9) Marie en a. ([ãna] / *[ãa]) ‘Marie has some.’

For a discussion of the difference between this and the similar liaison found in examples like *bon ami*, see Miller (1992a: 166ff).

• OBJECT AFFIXES CANNOT HAVE WIDE SCOPE OVER COORDINATION:

Object affixes cannot have wide scope over a coordination of hosts, as shown in (10). Miller (1992b) argues that this is strong evidence for the lexically attached status of these elements and against clitic status.

(10) *Pierre les voit et écoute. (putatively ‘Pierre sees and hears them.’)

Compare this, for example, with the behavior of English reduced auxiliaries, which allow such a wide scope interpretation:

(11) [Pat and Leslie]’ll be there...

• SYNTACTIC EXPLANATIONS FOR CLITIC ORDERING HAVE FAILED:

Syntactic accounts of the ordering of pronominal affixes like that of Sportiche (1992) have encountered severe difficulties. Further arguments against a syntactic derivation of clitic order can be found in Perlmutter 1970 and Bonet 1991. Other attempts to provide a principled syntactically based explanation of pronominal affix ordering, e.g. that of Fiengo and Gitterman (1978), have also failed, as has been shown in considerable detail by Morin (1979b).

From this body of evidence, we conclude that verb forms bearing pronominal affixes should be formed in the lexicon, not in the syntax, as is frequently assumed. Further consequences of this conclusion are discussed in the concluding section.

2. HPSG: THEORETICAL BACKGROUND

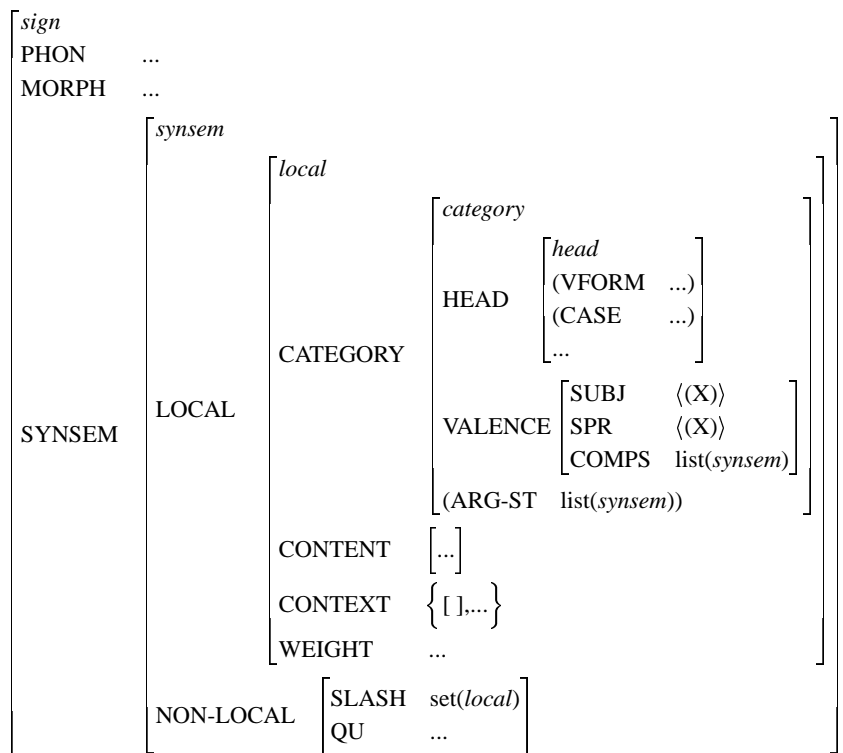
HPSG is, first and foremost, a constraint-based theory of grammatical competence. All of its representations – lexical entries, rules, and even universal principles – are partial descriptions of (i.e. constraints on) feature structures – the fundamental construct used to model linguistic entities. HPSG linguistic descriptions are declarative, order-independent, and reversible, making them ideally suited for the description of linguistic performance, where, as a long tradition of psycholinguistic results has established, linguistic and nonlinguistic constraints are seamlessly integrated with astonishing speed and accuracy.⁶

Linguistic information in HPSG is organized into signs and their components. Current work is entertaining hypotheses about the internal structure of signs such as the one sketched in (12), which we will assume here.⁷

⁶ See, for example, Tanenhaus and Trueswell 1995.

⁷ Parenthesized feature specifications indicate features whose appropriateness is restricted. For example, CASE is appropriate only for those values of HEAD that are of type *noun*. Similarly, ARG-ST is appropriate only for CAT values that are of the type *lexical-category*.

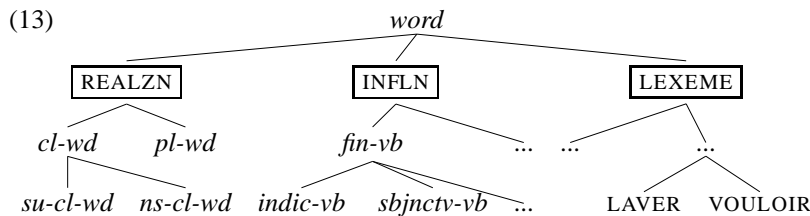
(12) The *Sign* in HPSG:



Not only words, but also phrases will be treated in terms of such feature structures, whose precise nature is guaranteed by the constraints of the grammar. In (12), for example: (1) the HEAD value specifies part of speech and other information (varying according to the part of speech) that a word shares with the phrases it projects; (2) the syntactico-semantic complexes called *synsem* objects contain the information (part-of-speech, case, agreement properties, semantic content, etc.) that is selectable by a given head; (3) SLASH encodes information about an element that is missing from a sign in an extraction dependency construction; (4) the ARG-ST (ARGUMENT-STRUCTURE) specifies a list of *synsems* that correspond to the arguments selected by a lexical head. (5) WEIGHT values (e.g. *lite* vs. *non-lite*) are relevant to the account of French linear order phenomena developed by Abeillé and Godard (in press).

HPSG is a lexicalist theory, incorporating the principle of *Strong Lexicalism* (see Scalise (1984: 101ff)).⁸ That is, (1) the principles of word structure are independent from those governing syntactic structure and (2) syntactic operations do not affect (or even ‘see’) the internal structure of words. Strong lexicalism precludes any analysis where lexical affixes are assigned lexemic status or undergo syntactic rules. Affix movement operations, assumed in a long tradition from Chomsky 1955 through Pollock 1989, are hence inconsistent with strong lexicalism and with HPSG, where words, fully formed, ground the recursive definition of well-formed signs.

We will assume here that each inflected word must belong simultaneously to three compatible types: (1) a (CLITIC-)REALIZATION (REALZN) type – either *plain-word* (*pl-wd*) or *cliticized-word* (*cl-wd*); see sec. 3.1. *cl-wd* is further divided into the two subtypes *su(bject)-cl-wd* and *n(on)s(ubject)-cl-wd*; (2) an INFLECTIONAL (INFLN) type, e.g. *3sg-pres-indic-vb*, *2sg-imper-vb*, etc.) that specifies an inflectional form for a given lexeme; and (3) a LEXEME type that specifies the morphological stem, part of speech, argument structure, and meaning common to a family of inflected forms.⁹ The hierarchically organized verbal *lexeme* types correspond to what are normally regarded as lexical entries. The hierarchy of words is thus as partially described in terms of the three partitions indicated in (13).



Following Wechsler (1995) and Davis (1996), much of the information in the lexical description of a lexeme – in particular information about the linking of ARG-ST members to semantic roles is predictable on semantic grounds. To the extent that this is true, a lexemic description need only include information about phonology, grammatical category, and meaning.¹⁰ (14) illustrates the French lexeme LAVER and the form that arises by combining its constraints with those associated with the inflectional type *1st-plural-present-indicative*.

⁸ See also the closely related notions of *Generalized Lexical Integrity* (Lapointe 1980), *Morphological Integrity* (Di Sciullo and Williams 1987), and the *Lexical Integrity Hypothesis* of Bresnan and Mchombo 1995, inter alia.

⁹ We draw freely here from the approach to lexical organization developed in Koenig 1994. Koenig uses ‘and-or’ nets to constrain the interaction of types and type constraints.

¹⁰ In fact, as discussed by, e.g. Davis (1996), lexical entries will require a bit more specification than this.

- (14) a.
$$\left[\begin{array}{c} \text{LAVER} \\ \text{MORPH} \left[\begin{array}{cc} \text{STEM} & \text{lav-} \end{array} \right] \\ \text{SYNSEM} \left[\begin{array}{cc} \text{LOC} & \left[\begin{array}{c} \text{CAT} \left[\begin{array}{cc} \text{HEAD} & \text{verb} \\ \text{ARG-ST} & \langle \text{NP}_i, \text{NP}_j \rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{cc} \text{wash-rel} & \\ \text{ACTOR} & i \\ \text{UNDERGOER} & j \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$
- b.
$$\left[\begin{array}{c} \text{LAVER \& 1st-plural-present-indicative} \\ \text{MORPH} \left[\begin{array}{cc} \text{I-FORM} & \text{lavons} \\ \text{STEM} & \text{lav-} \end{array} \right] \\ \text{SYNSEM} \left[\begin{array}{cc} \text{LOC} & \left[\begin{array}{c} \text{CAT} \left[\begin{array}{cc} \text{HEAD} & \left[\begin{array}{cc} \text{verb} & \\ \text{VFORM} & \text{indic} \end{array} \right] \\ \text{ARG-ST} & \langle \text{NP}[\text{Ipl}]_i, \text{NP}_j \rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{cc} \text{wash-rel} & \\ \text{ACTOR} & i \\ \text{UNDERGOER} & j \\ \text{LOCATION} & \text{present} \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

Note that constraints on the agreement properties of the subject argument have been ‘unified in’ and that the description in (14) specifies an I-FORM value, in addition to the STEM value inherited from the lexeme. We will assume that inflectional information always combines in this way, that is, monotonically. By contrast, any phenomenon involving a change in the number of arguments in the ARG-ST list will be treated as derivational, rather than inflectional, i.e. as involving a lexical relation between distinct lexemes.¹¹ The FORM value of a *plain-word* will be identified with the word’s I-FORM value.¹²

Languages differ in how the arguments of a word can be realized; variations exist with respect to argument drop (so called ‘PRO drop’), extraction, and – crucially – pronominal affixation (given, as we have already argued, that cliticization is in fact lexical affixation). In the version of HPSG we assume, this is treated by distinguishing ARG-ST from the valence features (SUBJ, COMPS, SPR) that will specify which arguments a given

¹¹ This will be of relevance in our discussion of *en*-affixation in section 5.3.

¹² I-FORM thus corresponds systematically to classical inflection and ‘cliticization’ is a kind of extended inflection.

head combines with locally. Thus, while the canonical relation (cross-linguistically, as well) among these is shown in (15), where \oplus designates list concatenation (or the ‘append’ relation), we analyze argument drop, extraction, and pronominal affixation all in terms of arguments (ARG-ST members) that are absent from any valence list. (Boxed numbers are used here and throughout to ‘tag’ two feature structures as token identical.)

(15) Argument Conservation (simplified):

$$word \Rightarrow \left[\begin{array}{c} SS|LOC|CAT \\ \left[\begin{array}{c} VALENCE \\ ARG-ST \end{array} \left[\begin{array}{c} \begin{array}{c} SUBJ \quad \boxed{1} \\ SPR \quad \boxed{2} \\ COMPS \quad \boxed{3} \end{array} \\ \boxed{1} \oplus \boxed{2} \oplus \boxed{3} \end{array} \right] \end{array} \right]$$

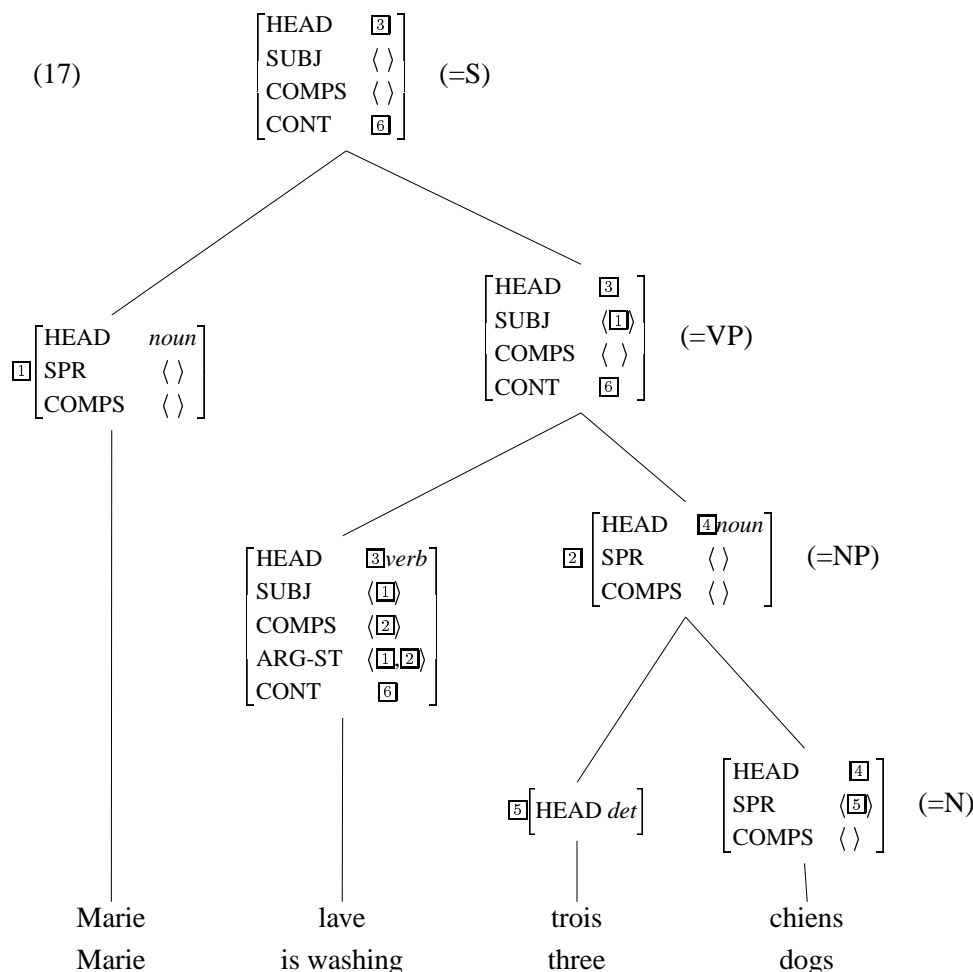
We will concern ourselves below with the formulation of constraints that allow such discrepancies precisely when extraction or pronominal affixation occurs in French.

In order to understand how words give rise to phrasal signs in HPSG, the following two aspects of the theory are of particular relevance:¹³

- (16) a. A head-daughter’s HEAD value is identical to that of its mother.
- b. If a phrase consists of a head daughter and one or more arguments (complement(s), subject or specifier), then its value for the relevant VALENCE feature F (COMPS, SUBJ, or SPR) is the head daughter’s F value minus the elements corresponding to the *synsem*(s) of the non-head daughter(s). Otherwise, a phrase’s F value is identical to that of its head daughter.

(16a) is the Head Feature Principle, a universal constraint familiar from X-Bar Theory (see Gazdar et al. 1985); (16b) is the Valence Principle, analogous to the cancellation of arguments in Categorical Grammar. A small set of principles such as these is sufficient to derive most of the complex properties of phrasal constructions from the properties of words, as illustrated in (17).

¹³ For further discussion, see Pollard and Sag 1994.



Here again, the boxed integers indicate identities, in this case those required by the Head Feature Principle and the Valence Principle. The lexical entry for the word *lave* specifies the part-of-speech *verb* (tagged 3), which the Head Feature Principle identifies as the HEAD value of both VP and S.¹⁴ Nouns select their specifiers via the feature SPR. Verbs select dependents by cancelling off values for both COMPS and SUBJ, as illustrated in (17). Notice that verbs must select a subject via SUBJ, hence the COMPS list of

¹⁴ The information that head movement analyses encode as separate functional projections (e.g. Tense(P), Agr(P)) is thus compressed into a single feature structure that is associated with the verb's lexical entry and projected from there onto VP and S. For comparison of head-movement analyses with those based on trees like (17), with feature structure node labels, see Miller 1995 and Kim and Sag 1996.

lave must be singleton, as indicated in (17) in order to satisfy both Argument Conservation in (15) and the semantically determined ARG-ST properties that the word *lave* inherits from the lexeme LAVE (shown in (14a)).

It should be pointed out that ARG-ST is the locus of binding theory in HPSG. Thus the elements of the ARG-ST list of the verb *lave* in (17) have acquired further information relevant to binding as a side effect of the verb's combining with the dependents *trois chiens* and *Marie*. If, instead, such arguments are anaphors or pronominals, they trigger different side effects for the ARG-ST members of *lave*. These interact with the constraints of the HPSG binding theory (Pollard and Sag 1992, 1994 (ch. 6); Manning 1994) to guarantee the appropriate coindexing or lack of such.

Also relevant in the present context are the constraints on semantic projection. Leaving aside issues of quantification (v. Pollard and Yoo in press), the semantic content (the CONT value) of each node in (17) is identical to that of the head daughter (thus the appearance of features being 'passed up').

This sketch of the version of HPSG we are assuming is brief; yet it should suffice for understanding the treatment of pronominal affixes developed in the rest of this paper. Further aspects of HPSG are introduced on an 'as needed' basis.

3. THE GRAMMAR OF 'CLITICIZED' VERB FORMS

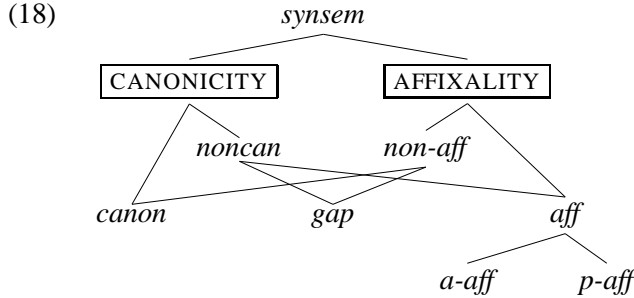
3.1. *Two Types of Verbal Realization*

We propose to analyze the syntactic core of cliticization in terms of a distinction between the two types of verbal realization already mentioned. The first type – *plain-word* – requires each element of a verb's ARG-ST list to correspond to an overt phrase that combines with the verb syntactically (i.e. locally in a head complement or head-subject structure), and hence also to be present on the verb's SUBJ or COMPS list.¹⁵ Words of the second type – *cliticized-word* – are verbs that have at least one argument that is realized affixally, rather than syntactically. Verbal lexemes in French thus give rise to both kinds of inflected word and, as a result, there is a systematic absence of overtly realized complements in the presence of a corresponding pronominal affix.¹⁶

¹⁵ This is not quite right, as the analysis of extraction must also allow certain arguments of verbs of this type to be realized via their SLASH specification. We return to this matter in section 5.2.

¹⁶ Miller (1992a) proposed an analysis of this problem in terms of FOOT features, which are typically used in phrase structure frameworks to analyze unbounded dependencies.

In order to guarantee the presence of the appropriate affixes in the phonological form of *cl-wds*, our analysis relies on the assumption that *synsem* objects are further classified into subtypes as shown in (18):



Here *canonical-synsem* is the type associated with all signs; *noncanonical-synsem* corresponds to an ARG-ST position that is not realized as a local syntactic dependent of the head. The latter subtype is in turn divided into the subtypes *affixal-synsem* and *gap-synsem*.¹⁷ It is the presence of elements of type *aff* on a verb's ARG-ST list that triggers the morphological realization of the corresponding pronominal affixes. The type *non-aff* provides a cross-cutting classification, subsuming all types of *synsem* other than *aff*.

The first type, *pl-wd*, is subject to the following constraints:¹⁸

(19)

$$pl-wd \Rightarrow \left[\begin{array}{c} \text{MORPH} \left[\begin{array}{c} \text{FORM} \quad \boxed{0} \\ \text{I-FORM} \quad \boxed{0} \end{array} \right] \\ \text{SYNSEM} \left[\begin{array}{c} \text{LOC|CAT} \left[\begin{array}{c} \text{VAL} \left[\begin{array}{c} \text{SUBJ} \quad \langle \boxed{2} \rangle \\ \text{COMPS} \quad \boxed{3} \end{array} \right] \\ \text{ARG-ST} \quad \langle \boxed{2} \rangle \oplus \boxed{3} \end{array} \right] \end{array} \right] \end{array} \right]$$

(19) guarantees that *pl-wds* have an argument structure list corresponding to the simple concatenation of the values of the valence features SUBJ and

But there are crucial differences between the behavior of unbounded dependencies (e.g. filler-gap dependencies) and such intermediate distance dependencies as those involving nonlocal pronominal affixes. These differences make it necessary, under Miller's analysis, to add certain constraints on the FOOT feature specifications governing pronominal affix dependencies (v. Miller 1992a: 204–6). The analysis developed here allows us to avoid all such stipulations.

¹⁷ And perhaps PRO for the unexpressed subject of control constructions. We present evidence for the unity of noncanonical synsems in section 6 below.

¹⁸ The sign \oplus means list concatenation (or append). The suggestion to analyze these valence alternations in terms of type constraints (instead of lexical rules) was made originally by Gosse Bouma (see Bouma 1997).

COMPS; the SUBJ list must furthermore contain exactly one element.¹⁹ Since the SUBJ and COMPS values get ‘cancelled’ as a head combines with overt complements and the subject (all of type *canon*), this constraint has the effect of ensuring that the arguments of a *pl-wd* are in general realized syntactically, rather than affixally. Neither the SUBJ nor the COMPS value is explicitly constrained to contain only *non-aff* elements, however, because certain *pl-wds* (infinitives and past participles) may share arguments with other verbs, through raising or composition. Although we allow the first argument and SUBJ of a finite *pl-wd* to be of type *aff* (in order to deal with raising, for example), in fact *pl-wds* so specified are harmlessly impotent, as they have no other syntactic combinatoric potential: they can never combine with an overt subject; they cannot terminate an extraction dependency; they cannot appear in control constructions, nor can they function as independent clauses.

The type *cl-wd* is subject to the constraints shown in (20).²⁰

$$(20) \quad cl-wd \Rightarrow \left[\begin{array}{c} \text{MORPH} \\ \text{SYNSEM} \end{array} \left[\begin{array}{c} \left[\begin{array}{cc} \text{FORM} & F_{PRAF} (\boxed{0} \dots) \\ \text{I-FORM} & \boxed{0} \end{array} \right] \\ \text{LOC|CAT} \left[\begin{array}{cc} \text{HEAD} & verb \\ \text{VAL} & \left[\begin{array}{c} \text{SUBJ} \quad \boxed{2} \\ \text{COMPS} \quad \boxed{3} \text{list}(\text{non-aff}) \end{array} \right] \\ \text{ARG-ST} & (\boxed{2} \oplus \boxed{3}) \bigcirc \text{nelist}(\text{aff}) \end{array} \right] \right] \right]$$

Note first that, since our concern here is verbs, whose SPR list is always empty, we systematically omit this feature from consideration. Second, (20) requires that all the members of the COMPS list be of type *non-aff*, i.e. these complements must either be *gaps* or else *canons* (overt complements). (20) also guarantees that SUBJ and COMPS lists add up to be the ARG-ST list, except that one or more ARG-ST elements of type *aff* must be absent from the SUBJ or COMPS list, i.e. ‘shuffled in’ to constitute the ARG-ST list. Whenever an argument is of type *aff* and does not

¹⁹ If certain verbs, e.g. *voilà* and certain infinitives in the causative construction, must be treated as subjectless, then this constraint on SUBJ should be removed from (19) and associated with a distinct subtype that excludes such infinitives.

²⁰ ‘List(*type*)’ designates a list of objects, all of which are of type *type*; ‘nelist’ stands for ‘nonempty list’. Here \bigcirc designates the ‘shuffle’ operation employed by Reape (1994) and Kathol (1995). The formal definition of the shuffle (or ‘sequence union’) operation is as follows: Given a list A of length m and a list B (disjoint from A) of length n, then ‘A \bigcirc B’ designates the family of lists of length m + n such that (1) the members of ‘A \bigcirc B’ are the set union of the members of A and the members of B, and (2) if X precedes Y in A or in B, then X precedes Y in ‘A \bigcirc B’.

belong to either the SUBJ or COMPS list, then the cliticized verb is realized with appropriate pronominal affixation. This effect is obtained via the function F_{PRAF} . Note, however, that past participles have a life as *cl-wds* in our analysis, yet F_{PRAF} requires that such participles bear no pronominal affixes.

Instances of the type *pl-wd* have a FORM value that is simply identified with their I-FORM value (an inflected form that is constrained in terms of both their grammatical category (their CAT value) and the STEM value supplied by their lexeme type). The phonology of *cl-wds*, by contrast, is determined by the function F_{PRAF} (see below sec. 3.2), which requires that the FORM value be related to the I-FORM value via the appropriate pronominal affixation. As a final point of comparison (crucial for our account of clitic ‘trapping’), notice that whereas the COMPS list of a *pl-wd* is unrestricted, all members of the COMPS list of a *cl-wd* must be *non-aff* and hence must correspond to overt complements or gaps, rather than pronominal affixes of that verb’s ARG-ST list.

The two subtypes of *cl-type* are subject to the following further constraints:

$$(21) \quad su-cl-wd \Rightarrow \left[\text{SYNSEM|LOC|CAT} \begin{bmatrix} \text{VAL|SUBJ} & \langle \rangle \\ \text{ARG-ST} & \langle [aff, nom], \dots \rangle \end{bmatrix} \right]$$

$$(22) \quad ns-cl-wd \Rightarrow \left[\text{SYNSEM|LOC|CAT} \begin{bmatrix} \text{VAL|SUBJ} & \langle \square \rangle \\ \text{ARG-ST} & \langle \square, \dots \rangle \end{bmatrix} \right]$$

These constraints guarantee that a *su-cl-wd* (e.g. *je-lave* or *je-le-lave*) must have an empty SUBJ list and a first argument that is a nominative NP[*aff*] (allowing for the possibility that other arguments are also of type *aff*). The first argument of a *ns-cl-wd* (e.g. *le-lave*), by contrast, must also appear on the SUBJ list. If this argument is an *aff*, it will be impotent (as described above); it may be a *canon* element that combines with a subject syntactically; alternatively it is a *gap* and corresponds to an instance of subject extraction. In addition, there must be an *aff* elsewhere in its ARG-ST list (because the ARG-ST list of all *cl-wds* must include at least one *aff* element that is not on any valence list).

The various subtypes of *aff* (e.g. *3sgm-acc-aff*, *de₁-aff*,...) are all further classified as either *anaphor-affix* (*a-aff*) or *personal-pronominal-aff* (*p-aff*) and are constrained to bear specifications that would be appropriate for overt anaphors or pronouns; however, these affixal *synsems* are never associated with an overt pronoun. Syntactically independent (‘strong’) pronouns are signs and hence always have a SYNSEM value of type *canon*.

The noncanonical subtypes of *aff* (which must be enumerated and associated with appropriate constraints, just as all types are) serve to distinguish various kinds of ARG-ST lists. These diverse list values in turn trigger particular inflectional realizations of the verb, as sketched below.

The following examples are typical of the words allowed by our analysis.²¹

$$(23) \left[\begin{array}{l} pl-wd \text{ \& } \text{DONNER} \text{ \& } 3sg-pres-indic-vb \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \quad \text{donne} \\ \text{I-FORM} \quad \text{donne} \end{array} \right] \\ \text{SS|LOC|CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM} \quad \text{indic} \end{array} \right] \\ \text{VAL} \left[\begin{array}{l} \text{SUBJ} \quad \langle \boxed{1} \rangle \\ \text{COMPS} \quad \langle \boxed{2}, \boxed{3} \rangle \end{array} \right] \\ \text{ARG-ST} \quad \langle \boxed{1}\text{NP}[3sg], \boxed{2}\text{NP}[acc], \boxed{3}\text{NP}[\dot{a}_1] \rangle \end{array} \right] \end{array} \right]$$

$$(24) \left[\begin{array}{l} ns-cl-wd \text{ \& } \text{DONNER} \text{ \& } 3sg-fut-indic-vb \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \quad \text{lui-donnera} \\ \text{I-FORM} \quad \text{donnera} \end{array} \right] \\ \text{SS|LOC|CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM} \quad \text{indic} \end{array} \right] \\ \text{VAL} \left[\begin{array}{l} \text{SUBJ} \quad \langle \boxed{1} \rangle \\ \text{COMPS} \quad \langle \boxed{2} \rangle \end{array} \right] \\ \text{ARG-ST} \quad \langle \boxed{1}\text{NP}[3sg], \boxed{2}\text{NP}[acc], \text{NP}[p-aff, \dot{a}_1, 3sg] \rangle \end{array} \right] \end{array} \right]$$

²¹ For discussion of \dot{a}_1 (the dative \dot{a} -phrase) vs. \dot{a}_2 (the \dot{a} -phrase alternating with *y*), see Miller (1992a:40, fn. 23). We modify the treatment of case presented in Miller (1992a:196ff) by introducing *objective* (*obj*) as a supertype of the CASE values *acc* and \dot{a}_1 . This allows us to refer to NP[*acc*] and NP[\dot{a}_1] as the natural class NP[*obj*]. Similarly, we introduce *direct* (*dir*) as a supertype of the CASE values *acc* and *nom*. NP[*dir*] thus picks out the natural class of NP[*acc*] and NP[*nom*]. We also assume a distinction between de_1 and de_2 (with common supertype *de*) in terms of which we explain a number of contrasts, including the difference between relative *dont* and *d'où*. See Abeillé et al. (in preparation).

$$(25) \left[\begin{array}{l} ns-cl-wd \text{ \& } \text{DONNER \& } 3sg-impf-indic-vb \\ \text{MORPH} \left[\begin{array}{ll} \text{FORM} & \textit{les-donnait} \\ \text{I-FORM} & \textit{donnait} \end{array} \right] \\ \\ \text{SS|LOC|CAT} \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} & \\ \text{VFORM} & \textit{indic} \end{array} \right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{3} \rangle \end{array} \right] \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}[3sg], [p\text{-}aff, acc, 3pl], \boxed{3}\text{NP}[\hat{a}_1] \rangle \end{array} \right] \end{array} \right]$$

$$(26) \left[\begin{array}{l} pl-wd \text{ \& } \text{PENSER \& } 3pl-pres-indic-vb \\ \text{MORPH} \left[\begin{array}{ll} \text{FORM} & \textit{pensent} \\ \text{I-FORM} & \textit{pensent} \end{array} \right] \\ \\ \text{SS|LOC|CAT} \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} & \\ \text{VFORM} & \textit{indic} \end{array} \right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{2} \rangle \end{array} \right] \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}[3pl], \boxed{2}\text{NP}[\hat{a}_2] \rangle \end{array} \right] \end{array} \right]$$

$$(27) \left[\begin{array}{l} ns-cl-wd \text{ \& } \text{PENSER \& } 3pl-pres-indic-vb \\ \text{MORPH} \left[\begin{array}{ll} \text{FORM} & \textit{y-pensent} \\ \text{I-FORM} & \textit{pensent} \end{array} \right] \\ \\ \text{SS|LOC|CAT} \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} & \\ \text{VFORM} & \textit{indic} \end{array} \right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \rangle \end{array} \right] \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}[3pl], \text{NP}[p\text{-}aff, \hat{a}_2] \rangle \end{array} \right] \end{array} \right]$$

$$(28) \left[\begin{array}{l} \text{pl-wd \& VENIR \& 3sg-pres-indic-vb} \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \quad \text{vient} \\ \text{I-FORM} \quad \text{vient} \end{array} \right] \\ \text{SS|LOC|CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM} \quad \text{indic} \end{array} \right] \\ \text{VAL} \left[\begin{array}{l} \text{SUBJ} \quad \langle \boxed{1} \rangle \\ \text{COMPS} \quad \langle \boxed{2} \rangle \end{array} \right] \\ \text{ARG-ST} \quad \langle \boxed{1}\text{NP}[3sg], \boxed{2}\text{NP}[de_2] \rangle \end{array} \right] \end{array} \right]$$

$$(29) \left[\begin{array}{l} \text{ns-cl-wd \& VENIR \& 3sg-pres-indic-vb} \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \quad \text{en-vient} \\ \text{I-FORM} \quad \text{vient} \end{array} \right] \\ \text{SS|LOC|CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM} \quad \text{indic} \end{array} \right] \\ \text{VAL} \left[\begin{array}{l} \text{SUBJ} \quad \langle \boxed{1} \rangle \\ \text{COMPS} \quad \langle \rangle \end{array} \right] \\ \text{ARG-ST} \quad \langle \boxed{1}\text{NP}[3sg], \text{NP}[p\text{-aff}, de_2] \rangle \end{array} \right] \end{array} \right]$$

Note that these words all have the appropriate distribution: their valence is reduced (i.e. their COMPS list is shortened) just in case their argument structure contains an *aff* element that will give rise to the appropriate affixal morphology. The analysis thus immediately accounts for the familiar distributional properties of standard varieties of French, i.e. the complementary distribution discussed in the introduction. In addition, the *cl-wds* give rise to phrasal structures by exactly the same principles as other verbs; there are no further devices needed to account for sentences containing cliticized verbal forms.

Moreover, the analysis just sketched provides a straightforward basis for a principled account of the binding properties of French pronominal affixes. The various subtypes of *aff* (since they are a variety of *synsem*) contain all the information specified in (12) above, which includes distinctions relevant to binding theory. Thus when reflexive morphology is present, one of the members of the argument structure list is an anaphor (an *a-aff* element in our system). As a consequence, the ARG-ST-based formulation of Principle A applies to any verb whose ARG-ST list contains

an *a-aff* element, guaranteeing that two relevant semantic role arguments are linked.²²

$$(30) \left[\begin{array}{c} ns-cl-wd \text{ \& LAVER \& } 3sg-pres-indic-vb \\ \left[\begin{array}{c} MORPH \left[\begin{array}{c} FORM \quad se-lave \end{array} \right] \\ \\ SS|LOC \left[\begin{array}{c} CAT \left[\begin{array}{c} HEAD \left[\begin{array}{c} verb \\ VFORM \quad indic \end{array} \right] \\ VAL \left[\begin{array}{c} SUBJ \quad \langle \boxed{} \rangle \\ COMPS \quad \langle \rangle \end{array} \right] \\ ARG-ST \quad \langle \boxed{} NP[3sg]_i, NP[a-aff,acc,3sg]_i \rangle \end{array} \right] \\ \\ CONT \left[\begin{array}{c} wash-rel \\ ACTOR \quad i \\ UNDERGOER \quad i \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

Similarly, verbs bearing non-reflexive pronominal affixes have ARG-ST members (of type *p-aff*) that must obey Principle B, i.e. they must NOT be coindexed with less oblique elements:

$$(31) \left[\begin{array}{c} ns-cl-wd \text{ \& LAVER \& } 3sg-pres-indic-vb \\ \left[\begin{array}{c} MORPH \left[\begin{array}{c} FORM \quad les-lave \end{array} \right] \\ \\ SS|LOC \left[\begin{array}{c} CAT \left[\begin{array}{c} HEAD \left[\begin{array}{c} verb \\ VFORM \quad indic \end{array} \right] \\ VAL \left[\begin{array}{c} SUBJ \quad \langle \boxed{} \rangle \\ COMPS \quad \langle \rangle \end{array} \right] \\ ARG-ST \quad \langle \boxed{} NP[3pl]_i, NP[p-aff,acc,3pl]_j \rangle \end{array} \right] \\ \\ CONT \left[\begin{array}{c} wash-rel \\ ACTOR \quad i \\ UNDERGOER \quad j \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

Thus, on our analysis of pronominal affixes, the following familiar contrasts follow without stipulation from the principles of binding theory.

²² See Pollard and Sag (1994: ch. 6). French, like many other languages, imposes the more restrictive parameterization of Principle A, according to which *a-aff* anaphors (but not, for example, *canonical* anaphors like *l'un (à) l'autre* ‘each other’) must be coindexed with a subject.

- (32) a. Jean_i sait que Paul_j s'aime. 'Jean_i knows that Paul_j loves himself_{j,*i}.'
- b. Jean_i sait que Paul_j l'aime. 'Jean_i knows that Paul_j loves him_{i,*j}.'

3.2. Morphological Realization

Above, we formulated a constraint on the type *cl-wd* without specifying exactly how the function F_{PRAF} constrains the FORM value. Under the assumption that only HEAD and ARG-ST information are relevant to the realization of pronominal affixation, we may assume that F_{PRAF} is a three argument function that constrains words as illustrated in (33).²³

$$(33) \quad cl-wd \Rightarrow \left[\begin{array}{l} \text{MORPH} \left[\begin{array}{l} \text{FORM} \quad F_{PRAF} (\boxed{0}, \boxed{1}, \boxed{2}) \\ \text{I-FORM} \quad \boxed{0} \end{array} \right] \\ \text{SYNSEM} \left[\text{LOC|CAT} \left[\begin{array}{l} \text{HEAD} \quad \boxed{1} \\ \text{ARG-ST} \quad \boxed{2}_{aff-list} \end{array} \right] \right] \end{array} \right]$$

The first argument of F_{PRAF} is the I-FORM value provided by the inflectional type. The second argument of F_{PRAF} is the verb's HEAD value, and the third argument ($\boxed{2}$) is the word's ARG-ST value.

For expository convenience, we may take the FORM values defined by F_{PRAF} to be structured objects of the type *clitic-form* (*cl-fm*), where this has the two subtypes *proclitic-form* (*procl-fm*) and *enclitic-form* (*encl-fm*). These feature structures specify information in terms of the features BASE, whose value is an inflected form (I-FORM value) and seven slot features whose values are pronominal affixes (or else the empty string):

²³ The approach we sketch is inspired by Stump's (1992) Paradigm Function Theory of morphology. See Abeillé et al. in preparation for more detailed discussion that also deals with affixes of negation, which we ignore here (see also Recourcé 1996), along with such matters as ethical datives, interrogative *que-* (SL-1), and demonstrative *ce-* (SL-1).

$$(34) \left[\begin{array}{ll} cl-fm & \\ BASE & infl-form \\ SL-1 & \left\{ \text{je, tu, il, elle, on, nous, vous, ils, elles, []} \right\} \\ SL-2 & \left\{ \text{me, te, nous, vous, se, []} \right\} \\ SL-3 & \left\{ \text{le, la, les, []} \right\} \\ SL-4 & \left\{ \text{lui, leur, []} \right\} \\ SL-5 & \left\{ \text{moi, toi, nous, vous, []} \right\} \\ SL-6 & \left\{ \text{y, zy, []} \right\} \\ SL-7 & \left\{ \text{en, zen, []} \right\} \end{array} \right]$$

In the style of analysis pioneered by Bird and Klein (1994), we leave the ordering of base and affixes to distinct constraints on the types *procl-fm* and *encl-fm*. These constraints state simply that the affixes of a *procl-fm* appear in order before the base and that those of an *encl-fm* appear in order following the base.

The function F_{PRAF} may now be defined as follows (where X is an inflected form, Y is a HEAD value and Z is an argument structure list):²⁴

$$(35) F_{PRAF} (X, Y, Z) = W, \text{ where } W$$

$$(1) \quad = X, \text{ if } Y = \left[\begin{array}{ll} VFORM & past-p \end{array} \right],$$

$$(2) \quad = \left[\begin{array}{ll} encl-fm & \\ BASE & X \end{array} \right], \text{ if } Y = \left[\begin{array}{ll} VFORM & imp \\ NEG & - \end{array} \right],$$

$$(3) \quad = \left[\begin{array}{ll} procl-fm & \\ BASE & X \end{array} \right], \text{ otherwise.}$$

This definition interacts with a number of further constraints on W . The constraints that determine the form of subject affixes in SL-1 are given in (36):

²⁴ The HEAD feature NEG is used here to distinguish negative forms (e.g. those with the affix *ne*) from other forms.

- (36) W's value for the feature F is v , just in case Z contains α and Y satisfies H, where:

	F	v	α	H
C1a:	SL-1	je	$[p\text{-}aff, 1sg, nom]$	<i>tensed</i>
C1b:	SL-1	tu	$[p\text{-}aff, 2sg, nom]$	<i>tensed</i>
C1c:	SL-1	il	$[p\text{-}aff, 3sgm, nom]$	<i>tensed</i>
C1d:	SL-1	elle	$[p\text{-}aff, 3sgf, nom]$	<i>tensed</i>
C1e:	SL-1	on	$[p\text{-}aff, 3sgm, nom, \dots]$	<i>tensed</i>
C1f:	SL-1	nous	$[p\text{-}aff, 1pl, nom]$	<i>tensed</i>
C1g:	SL-1	vous	$[p\text{-}aff, 2pl, nom]$	<i>tensed</i>
C1h:	SL-1	ils	$[p\text{-}aff, 3plm, nom]$	<i>tensed</i>
C1i:	SL-1	elles	$[p\text{-}aff, 3plf, nom]$	<i>tensed</i>

C1a should be interpreted as guaranteeing that the SL-1 value of the F_{PRAF} output W is *je*, just in case (i) the argument structure Z contains an element of type *p-aff* that is also specified as [PER *sg*], [NUM *1*], and [CASE *nom*] and (ii) the *cl-wd* in question is specified as [VFORM *tensed*] (*tensed* has various subtypes, including *indicative* and *subjunctive*). These constraints, taken together with those on the type *su-cl-wd*, thus guarantee that pronominal subject affixes can appear only when the verb's first argument is a *1sg* nominative subject, as shown in (37).

- (37)
$$\left[\begin{array}{l} su\text{-}cl\text{-}wd \text{ \& } PENSER \text{ \& } 1sg\text{-}pres\text{-}indic\text{-}vb \\ MORPH \left[\begin{array}{l} FORM \quad je\text{-}pense \\ I\text{-}FORM \quad pense \end{array} \right] \\ SS|LOC|CAT \left[\begin{array}{l} HEAD \left[\begin{array}{l} verb \\ VFORM \quad indic \end{array} \right] \\ VAL \left[\begin{array}{l} SUBJ \quad \langle \rangle \\ COMPS \quad \langle \boxed{2}NP[\dot{a}_1] \rangle \end{array} \right] \\ ARG\text{-}ST \quad \langle NP[p\text{-}aff, 1sg], \boxed{2} \rangle \end{array} \right] \end{array} \right]$$
- (similarly for *vous-venez*, *elle-donnerait*, ...)

Also guaranteed (through the interaction with relevant ordering constraints) is the basic fact that subject affixes precede all others that we consider here.

Nonsubject affixes are subject to the following further constraints on (35).²⁵

- (38) W's value for the feature F is v , just in case Z contains α and W satisfies ω , where:

	F	v	α	ω
C2a:	SL-2	me	[<i>aff</i> , 1 <i>sg</i> , <i>obj</i>]	[<i>procl-fm</i>]
C2b:	SL-2	te	[<i>aff</i> , 2 <i>sg</i> , <i>obj</i>]	[<i>procl-fm</i>]
C2c:	SL-2	nous	[<i>aff</i> , 1 <i>pl</i> , <i>obj</i>]	[<i>procl-fm</i>]
C2d:	SL-2	vous	[<i>aff</i> , 2 <i>pl</i> , <i>obj</i>]	[<i>procl-fm</i>]
C2e:	SL-2	se	[<i>a-aff</i> , 3, <i>obj</i>]	[<i>procl-fm</i>]
C3a:	SL-3	la	[<i>p-aff</i> , 3 <i>sgf</i> , <i>acc</i>]	
C3b:	SL-3	le	[<i>p-aff</i> , 3 <i>sgm</i> , <i>acc</i>] \vee [<i>p-aff</i> , +PRED]	
C3c:	SL-3	les	[<i>p-aff</i> , 3 <i>pl</i> , <i>acc</i>]	
C4a:	SL-4	lui	[<i>p-aff</i> , 3 <i>sg</i> , \hat{a}_1]	
C4b:	SL-4	leur	[<i>p-aff</i> , 3 <i>pl</i> , \hat{a}_1]	
C5a:	SL-5	moi	[<i>aff</i> , 1 <i>sg</i> , <i>obj</i>]	[<i>encl-fm</i>]
C5b:	SL-5	toi	[<i>aff</i> , 2 <i>sg</i> , <i>obj</i>]	[<i>encl-fm</i>]
C5c:	SL-5	nous	[<i>aff</i> , 1 <i>pl</i> , <i>obj</i>]	[<i>encl-fm</i>]
C5d:	SL-5	vous	[<i>aff</i> , 2 <i>pl</i> , <i>obj</i>]	[<i>encl-fm</i>]
C6a:	SL-6	y	[<i>p-aff</i> , \hat{a}_2]	[<i>procl-fm</i>]
C6b:	SL-6	zy	[<i>p-aff</i> , \hat{a}_2]	[<i>encl-fm</i>]
C7a:	SL-7	en	[<i>p-aff</i> , <i>de</i>]	[<i>procl-fm</i>]
C7b:	SL-7	zen	[<i>p-aff</i> , <i>de</i>]	[<i>encl-fm</i>]

To take one illustration, C2a guarantees that the SL-2 value is *me* just in case the argument structure Z contains an element of type *aff* that is also first person, singular and *obj* (that is, either *acc* or \hat{a}_1), as long as the further condition is met that W is a proclitic form (i.e. W is not the realization of a positive imperative.). Other constraints in (38) are similar.²⁶ We note in

²⁵ The account of positive imperatives embodied in (38) treats the dialect that has forms of the type *donne-moi-z-en*, *mene-moi-z-y*. We assume that in this dialect, suffixal EN and Y are realized as the allomorphs *zen* (/zã/) and *zy* (/zi/), as indicated in the table. In other dialects one finds, e.g. *donne-m'en*, *mene-m'y* (which are often claimed to be the standard form) or *donnes-en-moi*, *menes-y-moi*. For the latter dialects, the slots for *en* and *y* must be precede the slot for suffixal *moi*, *toi*, *nous*, *vous*. Finally, we ignore a number of related issues here, e.g. we do not resolve the issue of whether the /z/ of forms like *donnes-en* is a liaison vowel or part of the affix's allomorph. See Morin 1979.

²⁶ There is an alternative formulation of the analysis presented here, similar to the analyses sketched by Koenig (1994: ch. 3), where each line of our tables would correspond to

passing that our treatment of the affix y as an \hat{a}_2 argument commits us to treating certain adverbials as arguments.

The constraints just given function without reference to any default constraint requiring feature SL- i to take the empty string as its value. The distribution of the empty string follows directly from the fact that we know the space of values for each SL- i (see (34)). Because the value space for each feature is finite we can infer the fact that the empty string occurs ‘elsewhere’ from the fact that every other value is covered by some ‘just in case’ condition. Whenever none of the various conditions is met, the only other option for the value of the relevant SL- i is the empty string.

Of course, other constraints on the realization of pronominal affixes may be required, e.g. the one in (39):

(39) C8: If SL-2 or SL-6 is nonempty, then SL-4 is empty.

This is motivated by the ill-formedness of such examples as (40).

(40) a.*Il me lui présente. (putatively ‘He presents me to him.’)

b.*Présentez-moi-lui! (putatively ‘Present me to him!’)

c.*Présentez-lui-moi! (putatively ‘Present me to him!’)

d.*Ils se lui présentent. (putatively ‘They present themselves to him.’)

In light of the various constraints just described, F_{PRAF} , through its interaction with the relevant ordering principles, expresses the central generalizations about the morphological realization of $[aff]$ elements. For example, it guarantees: (1) that *me*, *te*, (objective) *nous* and *vous*, and *se* precede all other nonsubject affixes, (2) that *le*, *la*, and *les* precede all affixes other than the SL-1 and SL-2 affixes, (3) that *lui* and *leur* always precede y and *en*, (4) that affixal *moi* and *toi* occur only in positive imperatives, (5) that y precedes *en*, and (6) that no affixes appear except under the indicated conditions. In addition, F_{PRAF} ensures that only one affix can be realized in each slot within a given word. This provides a principled account for the deviance of a host of recalcitrant, unwanted outputs, e.g. those in (41).²⁷

a distinct type and its associated type constraint. It remains unclear what might serve to empirically distinguish these two alternatives.

There is a further issue to be addressed about haplology, e.g. why *Jean vous-présentera* cannot mean ‘Jean will present you to each other.’ One approach would be to tighten the relevant constraints to require that there be a unique ARG-ST member satisfying the relevant α . We leave this matter open here.

²⁷ We make no attempt here to describe the considerable variation that exists with respect to multiple affixation, though our framework provides us with the tools necessary to do so.

- (41) a.*Il me vous présente.
(putatively ‘He presents me to you.’ or ‘He presents you to me.’)
- b.*Ils se vous présentent.
(putatively ‘They present themselves to you.’ or ‘They present you to themselves.’)
- c.*Tu lui leur sembles fidèle.
(putatively ‘You seem to him to be faithful to them or ‘You seem to them to be faithful to him.’)
- d.*Elle y y pensait.
(putatively ‘She was thinking about it there.’)

Finally, it should be observed that certain exceptional properties of clitic morphology (like those discussed in section 1) can be described in terms of constraints that make reference to specific lexemes (or particular forms of those lexemes). As usual, via the logic of the elsewhere convention, these forms take priority over any general morphological rules. This is precisely as expected under our assumption that ‘cliticization’ is entirely a matter morphological realization.²⁸

4. ‘CLITIC CLIMBING’: THE BASICS

4.1. *Nonlocal Pronominal Affixes On Auxiliaries*

Following arguments presented in detail by Abeillé and Godard (1994, 1997), we assume here that French verb phrases have a flat constituent structure, as illustrated in (42a), rather than the classical hierarchical structure (42b), defended by e.g. Pollock (1989) and Manning (1992) for French, and Gazdar et al. (1982) for English.

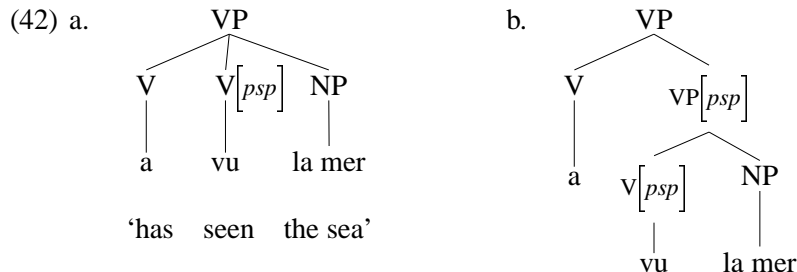
(i), for example, is acceptable in some varieties and would require us to make minor modifications to the constraints in the text both with respect to ordering and to compatibility.

(i) %Il me lui semble fidèle. ‘He seems to me to be faithful to him/her.’

Similarly, most (but not all) French speakers also obey the constraint in (ii):

(ii) C9: If W is a *procl-fm* and SL-3 = *le* or *la*, then SL-6 and SL-7 are empty.

²⁸ For a particularly compatible approach to preemption phenomena, see the discussion in Koenig (1994: ch. 3).



Building on earlier discussion by Emonds (1978) and Fradin (1993), Abeillé and Godard (1994, 1997) contrast the complementation of French tense auxiliaries and that of control verbs, for which they assume a hierarchical structure parallel to (42b). They provide a number of relatively theory-neutral arguments in favor of the flat structure (42a) and against (42b) for the complementation of auxiliaries. Classical constituency tests (pronominalization, VP-ellipsis, VP-preposing, clefting), for example, show that the infinitival verb after a control verb forms a constituent with its complements:

(43) Jean peut venir chez nous, mais il ne le veut pas.

'Jean can stay with us, but he it does not want.'

(44) Que veut-elle ? – Partir au Japon.

'What does-she-want? – To-go to Japan.'

(45) Ce que Jean voudrait, c'est partir immédiatement.

'What Jean would-like, it's to-go immediately.'

But the analogous examples with tense auxiliaries are consistently ill-formed:

(46) a.*Jean n'est pas arrivé hier à l'heure au rendez-vous, mais Marie l'est.

Jean is not arrived yesterday on time at-the meeting, but Marie it-is.

'Jean didn't arrive on time yesterday for the meeting, but Marie did.'

b.*Jean croyait avoir compris, mais il ne l'avait pas.

Jean thought to-have understood, but he it-had not.

'Jean thought he understood, but he had not.'

(47) a.*Qu'est-elle ? – Partie au Japon.

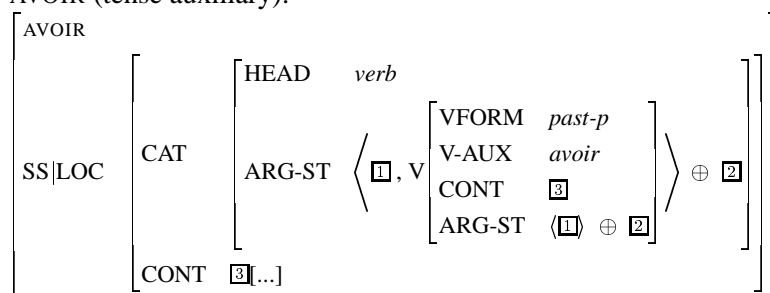
'What is she? – Gone to Japan.'

b.*Qu'a-t-elle ? – Vendu ses livres.
 'What has she? – Sold her books.'

Other arguments not summarized here involve the position and scopal properties of manner adverbials and contrasts involving French bounded dependency constructions (e.g. *tough*-movement and infinitival relatives) and causative constructions.²⁹

In order to derive such flat structures, given the assumptions outlined in section 2, we are led to the conclusion that the lexemes for the tense auxiliary verbs are as described in (48), where elements of the ARG-ST list of the participial complement are also arguments of the auxiliary.³⁰

(48) AVOIR (tense auxiliary):



Note first that verbs select for a particular auxiliary via the feature V-AUX.³¹ The default value for V-AUX is *avoir*, and thus most verbs will be specified in a way that allows their past participle form to be compatible with AVOIR. The lexeme ÊTRE requires a [V-AUX *être*] participle, but is itself [V-AUX *avoir*].³²

Because the tense auxiliaries and their participle complements share arguments (as indicated by $\boxed{2}$ in (48)), the possible ARG-ST values for these verbs include the following:

²⁹ For relevant further discussion of all of these phenomena, see also Abeillé et al. in press.

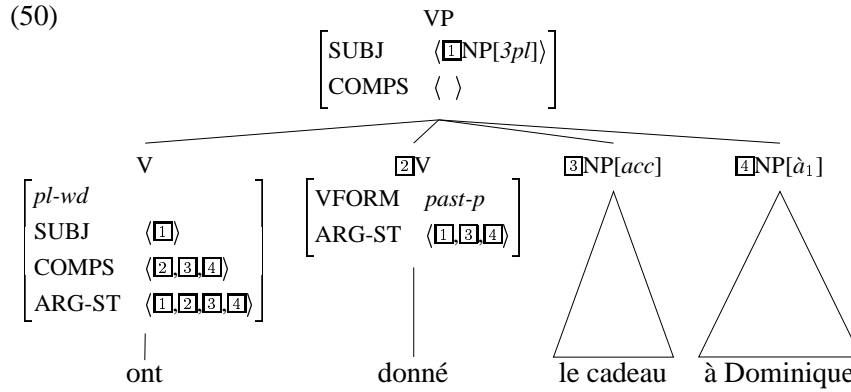
³⁰ This analysis is akin to the notion of 'division categories' in categorial grammar; cf. e.g. Moortgat 1984, 1989. For early proposals incorporating this idea into HPSG, see Hinrichs and Nakazawa (1990, 1994) and the references cited there.

³¹ Implicit in our approach is the denial of any single factor that can predict auxiliary choice in French. Of course, we recognize lexical types that are constrained to be [V-AUX *être*]. These classes are determined in part on semantic grounds and in part by other lexical properties, e.g. the presence of an *a-aff* element in a verb's argument structure.

³² This simplified presentation will not account for all forms of the surcomposé. For further discussion of this problem (and the V-AUX analysis in general), see Abeillé et al. in preparation and Abeillé and Godard (1997). We also ignore here the feature WEIGHT, used by Abeillé and Godard (in press) to distinguish *lite* elements from the *non-lite* ones that they must linearly precede. In their system, the participle selected by the tense auxiliary is required to be *lite*; hence, it must precede *non-lite* complements.

- (49) a.
$$\left[\text{ARG-ST} \left\langle \boxed{1}, \left[\overset{\text{V}}{\text{VFORM } \textit{past-p}} \right], \boxed{2}\text{NP}[\textit{acc}] \right\rangle \right]$$
- b.
$$\left[\text{ARG-ST} \left\langle \boxed{1}, \left[\overset{\text{V}}{\text{VFORM } \textit{past-p}} \right], \boxed{2}\text{NP}[\textit{acc}], \boxed{3}\text{NP}[\textit{\grave{a}_1}] \right\rangle \right]$$
- c.
$$\left[\text{ARG-ST} \left\langle \boxed{1}, \left[\overset{\text{V}}{\text{VFORM } \textit{past-p}} \right], \boxed{2}\text{NP}[\textit{de}_1] \right\rangle \right]$$

Thus the argument structure of the participle determines that of the auxiliary verb's lexeme, and hence the valence of words formed from that auxiliary. The instantiation in (49b), for example, will give rise to the following headed phrase:



This analysis of tense auxiliaries can be described as a case of ‘argument composition’ in the sense that a functor (the auxiliary verb) inherits the ARG-ST requirements of its argument – the participle. This functor thus first combines with an ‘unsaturated’ argument and then with that argument’s arguments.

The argument-sharing analysis of tense auxiliaries just sketched interacts with the analysis of pronominal affixation in the previous section so as to predict a wide range of nonlocal pronominal affixation phenomena. In particular, each of the instantiated argument structures in (49) corresponds to an instantiation of an inflected word of type *cl-wd* formed from AVOIR, e.g. the following:³³

³³ We postpone until section 6 the matter of past participle agreement.

$$(51) \left[\begin{array}{l} ns-cl-wd \text{ \& } AVOIR \text{ \& } 3sg-pres-indic-vb \\ MORPH \left[FORM \textit{l'a} \right] \\ SS|LOC \left[\begin{array}{l} CAT \left[\begin{array}{l} HEAD \left[V-AUX \textit{avoir} \right] \\ SUBJ \left\langle \boxed{1} NP[3sg] \right\rangle \\ VAL \left[\begin{array}{l} COMPS \left\langle \boxed{2} V \right\rangle \left[\begin{array}{l} VFORM \textit{past-p} \\ V-AUX \textit{avoir} \\ CONT \boxed{4} \\ ARG-ST \left\langle \boxed{1}, \boxed{3} \right\rangle \end{array} \right] \end{array} \right] \\ ARG-ST \left\langle \boxed{1}, \boxed{2}, \boxed{3} NP[p-aff, acc] \right\rangle \end{array} \right] \\ CONT \boxed{4} [...] \end{array} \right] \end{array} \right]$$

(similarly for *te/vous-avons*, *les/l'/vous-ai*, *m'/l'avait*, ... (*vu(e)(s)*))

$$(52) \left[\begin{array}{l} ns-cl-wd \text{ \& } AVOIR \text{ \& } 3sg-pres-indic-vb \\ MORPH \left[FORM \textit{lui-a} \right] \\ SS|LOC \left[\begin{array}{l} CAT \left[\begin{array}{l} HEAD \left[V-AUX \textit{avoir} \right] \\ SUBJ \left\langle \boxed{1} NP[3sg] \right\rangle \\ VAL \left[\begin{array}{l} COMPS \left\langle \boxed{2} V \right\rangle \left[\begin{array}{l} VFORM \textit{past-p} \\ V-AUX \textit{avoir} \\ CONT \boxed{5} \\ ARG-ST \left\langle \boxed{1}, \boxed{3}, \boxed{4} \right\rangle \end{array} \right] \end{array} \right] \\ ARG-ST \left\langle \boxed{1}, \boxed{2}, \boxed{3} NP[acc], \boxed{4} NP[p-aff, à_1] \right\rangle \end{array} \right] \\ CONT \boxed{5} [...] \end{array} \right] \end{array} \right]$$

(similarly for *vous-a*, *m'/lui-avait*, ... (*donné le cadeau*))

- (53) $\left[\begin{array}{l} su-cl-wd \text{ \& AVOIR \& } 1pl-pres-indic-vb \\ \text{MORPH} \left[\text{FORM } nous-l'avons \right] \\ \text{SS|LOC} \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD} \left[\text{V-AUX } avoir \right] \\ \text{SUBJ} \langle \rangle \\ \text{VAL} \left[\begin{array}{l} \text{COMPS} \left\langle \begin{array}{l} \text{[2]V} \left[\begin{array}{l} \text{VFORM } past-p \\ \text{V-AUX } avoir \\ \text{CONT } [5] \\ \text{ARG-ST} \langle [1], [3], [4] \rangle \end{array} \right] \right\rangle, [4] \end{array} \right] \\ \text{ARG-ST} \langle [1]NP[p-aff, 1st, pl, nom], [2], [3]NP[p-aff, acc], [4]NP[\grave{a}_1] \rangle \end{array} \right] \\ \text{CONT } [5][...] \end{array} \right] \end{array} \right] \end{array} \right]$

(similarly for *les-avons*, *l'/les-ai*, *l'/les-avoir*, *l'avait*, ... (*donné(e)s à Dominique*))

- (54) $\left[\begin{array}{l} ns-cl-wd \text{ \& AVOIR \& } 3sg-pres-indic-vb \\ \text{MORPH} \left[\text{FORM } le-lui-a \right] \\ \text{SS|LOC} \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD} \left[\text{V-AUX } avoir \right] \\ \text{SUBJ} \langle [1]NP[3sg] \rangle \\ \text{VAL} \left[\begin{array}{l} \text{COMPS} \left\langle \begin{array}{l} \text{[2]V} \left[\begin{array}{l} \text{VFORM } past-p \\ \text{V-AUX } avoir \\ \text{CONT } [5] \\ \text{ARG-ST} \langle [1], [3], [4] \rangle \end{array} \right] \right\rangle \end{array} \right] \\ \text{ARG-ST} \langle [1], [2], [3]NP[p-aff, acc], [4]NP[p-aff, \grave{a}_1] \rangle \end{array} \right] \\ \text{CONT } [5][...] \end{array} \right] \end{array} \right] \end{array} \right]$

(similarly for *nous-l'as*, *vous-l'a*, *me-les-ont*, ... (*donné(e)(s)*))

For each kind of ARG-ST list allowed by the participle, there is at least one kind of ARG-ST value for a *cl-wd* derived from the auxiliary. It follows that the affixes realized on forms of AVOIR or ÊTRE are correctly identified with the arguments of the relevant V[*psp*] arguments once the auxiliary verb combines with it syntactically. Nonlocal pronominal affixes are a direct consequence of the identities derived from the lexemic information specified for the tense auxiliaries AVOIR and ÊTRE, taken together with independently motivated constraints on the type *cl-wd*. Thus what appears to be ‘climbing’ of clitic elements follows immediately from lexical principles and local syntactic combination, without the introduction of

any further devices, e.g. transformational movement of ‘clitic’ NPs from d-structure to s-structure positions.

This analysis of nonlocal pronominal affixes extends to the other Romance languages simply. In many Romance languages, the class of verbs having argument composition lexical entries of the type given in (50) for AVOIR is larger (as it was in older stages of French). Essentially this approach has been successfully applied to Italian clitic climbing by Monachesi (1993a,b, 1996), who argues in favor of a flat structure of type (50) for so-called restructuring verbs.³⁴

4.2. *Argument Composition and Predicative Complements*

Let us now turn to cases where nonlocal pronominal affixes are the (syntactic and semantic) arguments of predicative complements – what are usually analyzed as APs, NPs, PPs, and passive VPs, as illustrated in (55). (We assume, following Couquaux (1979), Milner (1986) and Abeillé and Godard (1997), that copular ÊTRE and passive ÊTRE are the same lexical item, as opposed to the tense auxiliary).

- (55) a. Pierre lui reste fidèle. (= (3c))
 ‘Pierre remains faithful to her/him.’
- b. Pierre en est président.
 ‘Pierre is president of it.’
- c. Pierre leur sera présenté par Marie.
 ‘Pierre will be presented to them by Marie.’

In (55a,b,c) the affixes *lui*, *en* and *leur* are respectively arguments of *fidèle* ‘faithful’, *président* ‘president’ and *présenté* ‘presented’, as shown in the translations.

Following Abeillé and Godard (1997) and Abeillé et al. (in preparation), we account for these and related data by assigning a double analysis to copular ÊTRE and other verbs taking predicative complements. The first lexeme takes a phrasal predicative complement, as shown in (56):

³⁴ More generally, the argumentation in favor of clause-union analyses (cf. Aissen and Perlmutter 1983) can easily be translated into argumentation in favor of the flat structure and argument composition approach defended here as can the similar arguments in favor of a VP complement analysis to restructuring verbs proposed by Moore (1991) for Spanish.

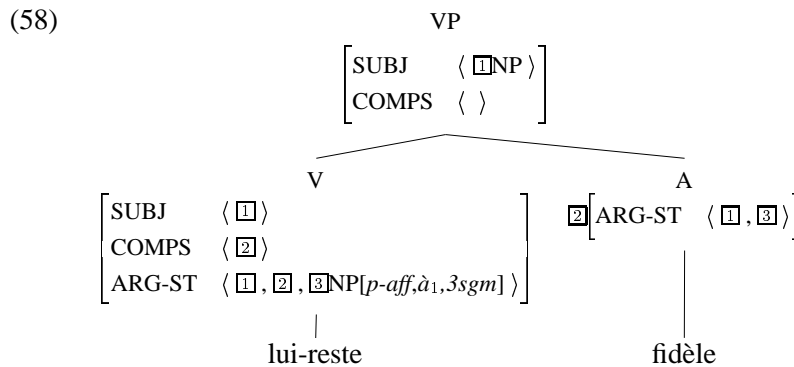
$$(56) \left[\begin{array}{c} \text{ÊTRE/RESTER} \\ \left[\text{SS|LOC} \left[\text{CAT} \left[\text{ARG-ST} \left\langle \boxed{1}, \left[\begin{array}{c} \text{XP} \\ \text{PRD} + \\ \text{SUBJ} \langle \boxed{1} \rangle \end{array} \right] \right\rangle \right] \right] \right] \end{array} \right]$$

The other is a ‘restructured’ lexeme that selects for a lexical argument and the arguments of that argument, just as the tense auxiliaries do:

$$(57) \left[\begin{array}{c} \text{ÊTRE/RESTER} \\ \left[\text{SS|LOC} \left[\text{CAT} \left[\text{ARG-ST} \left\langle \boxed{1}, \left[\begin{array}{c} \text{X} \\ \text{PRD} + \\ \text{ARG-ST} \langle \boxed{1} \oplus \boxed{2} \rangle \end{array} \right] \right\rangle \oplus \boxed{2} \right] \right] \right] \end{array} \right]$$

The former lexeme gives rise to words that head structures with phrasal complements; the latter type allows us to derive words that head flat head-complement structures.³⁵

All the examples in (55) contain words that are *cl-wd* realizations of the restructured lexemes in (57). If X is *adjective*, for example, the NP[\hat{a}_1] that is the argument of the adjective becomes an argument of RESTER, and hence can be realized as a pronominal affix, as in (58) (= (55a)).



For more details of this analysis, see Abeillé and Godard (1996).

4.3. ‘Intrinsic Clitic’ Verbs

A longstanding issue in the study of pronominal affixation is the problem of ‘intrinsic clitic’ verbs – expressions like EN VOULOIR À (‘to be angry with’), one of whose arguments is always realized as a pronominal affix:

³⁵ The competition between these two lexemes introduces a certain amount of ‘spurious’ ambiguity.

- (59) a. Elle en veut à Dominique.
 She of-it wants to Dominique
 ‘She is angry with Dominique.’
- b. Dominique en a voulu à René.
 Dominique of-it has wanted to René
 ‘Dominique was angry with René.’
- c. Dominique lui en a voulu.
 Dominique to-him/her of-it has wanted
 ‘Dominique was angry with him/her.’

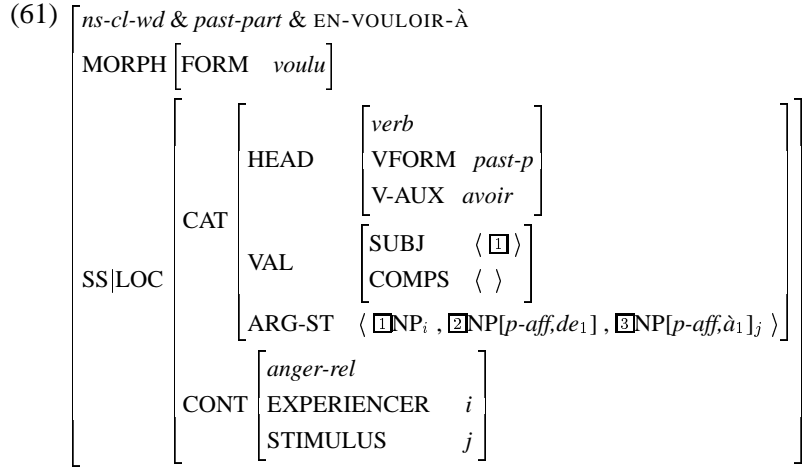
Expressions of this kind (as well as other verbs that are the output of argument reducing lexical processes like medio-passive reflexivization) are treated in terms of lexemes that require one or more argument to be of type *aff*. This is illustrated in (60).³⁶

$$(60) \left[\begin{array}{c} \text{EN-VOULOIR-}\grave{\text{a}} \text{ \& } cl\text{-}wd \\ \text{SS|LOC} \left[\begin{array}{c} \text{CAT} \left[\begin{array}{c} \text{TRANS} \quad + \\ \text{ARG-ST} \quad \langle \text{NP}_i, \text{NP}[p\text{-}aff, de_1], \text{NP}[\grave{a}_1]_j \rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{c} \text{anger-rel} \\ \text{EXPERIENCER} \quad i \\ \text{STIMULUS} \quad j \end{array} \right] \end{array} \right] \end{array} \right]$$

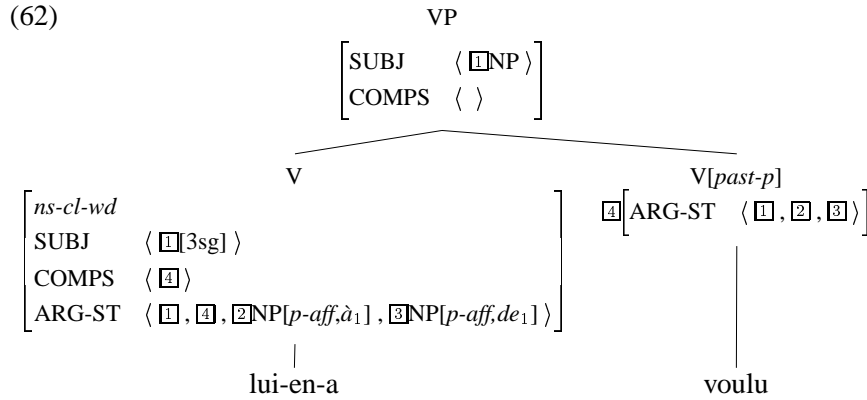
Here the de_1 argument is lexemically specified as *aff*. (60) also requires that all realizations of this lexeme be of type *cl-wd*. Crucially, all instances of this type are constrained to be [COMPS list(*non-aff*)] (see sec. 3.1). Therefore, not only is the de_1 argument barred from appearing on the COMPS list, but so is the $\text{NP}[\grave{a}_1]$ argument, if it is an *aff*. This will be relevant for the account of clitic trapping in causative constructions discussed in the next section.

It might appear that the constraints in (60) entail that the affixal arguments of EN VOULOIR $\grave{\text{a}}$ are always realized on a form of *vouloir*; but in fact this is not the case. The following, for example, is a well formed past participle derived from the lexeme in (60).

³⁶ It should be noted that this lexeme is also unusual in being transitive even though there is no accusative NP on its ARG-ST list.



Note that the *p-aff* arguments do not appear on the COMPS list of this *cl-wd* (because of the constraint on this type in (20)); yet, because this is a past participle, its FORM involves no pronominal affixation (by clause (1) in (35) above). But this form may appear as the complement of AVOIR; and because AVOIR composes elements of the ARG-ST of its past participle complement, the *p-aff* elements labelled $\boxed{2}$ and $\boxed{3}$ in (61) will also be arguments of tense auxiliaries. This in turn means that they will be realized as affixes on inflected forms of AVOIR, as illustrated in (62).



Thus, although intrinsic clitic verbs never give rise to *pl-wd* forms, they nonetheless allow ‘clitic climbing’ in combination with tense auxiliaries.

4.4. Causative Constructions

Another kind of nonlocal pronominal affixation is found in causative constructions, as illustrated in (3e), repeated here as (63). This construction is

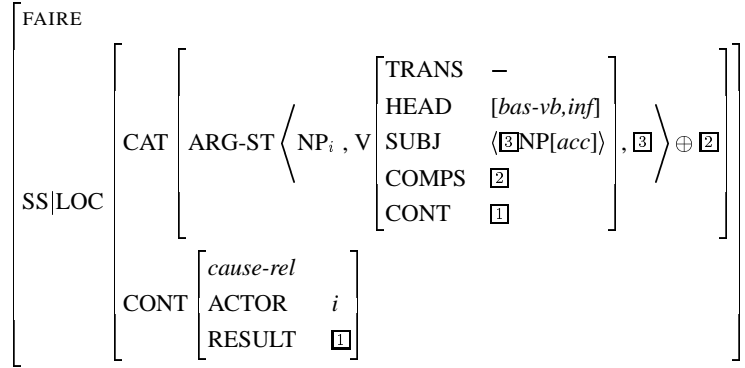
possible for the causative verbs *faire* ('make') and *laisser* ('let'), as well as for perception verbs (*voir* 'see', etc.).

- (63) Marie le fait lire à Paul. 'Marie is making Paul read it.' [*le* argument of *lire*]

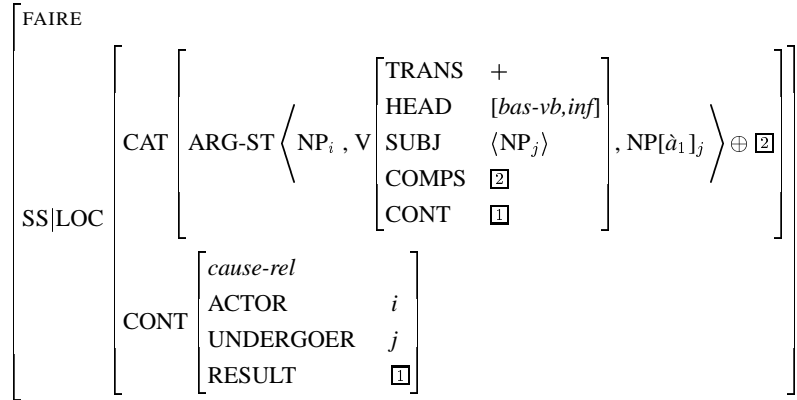
Following the argumentation of Miller (1992a: 234ff) and Abeillé et al. (to appear, in preparation), we propose that causative constructions allow a flat structure in which the causative (or perception) verb, the infinitive, and the arguments of the infinitive are all sister nodes in a single VP.

This structure arises from the existence of two distinct lexemes for 'composition' *faire*:

- (64) a. Composition FAIRE (intransitive complement):



- b. Composition FAIRE (transitive complement):



In both of these patterns for composition FAIRE, the argument structure ends in a sublist (tagged $\boxed{2}$ in both (64a,b)) that is identical to the COMPS list of the infinitive argument. Note that this differs crucially from the tense

auxiliaries, whose analogous ARG-ST sublist is identified with the ARG-ST of the infinitive.

Considerations of space prevent us from doing justice here to the analysis of causatives developed in Abeillé et al. (to appear, in preparation). Two points are noteworthy, however. First, words formed from the either lexeme in (64) allow complements of the infinitive to become part of the argument structure of *faire*, and hence to be realized as pronominal affixes on *faire*, rather than the infinitive. Example (63) is a case of this, as is (65):

(65) Jean y fait aller Paul. ‘Jean makes Paul go there.’

Because *cl-wds* are classified as *reduced-verbs* by default, rather than as *basic-verbs* (Abeillé et al. to appear), the only infinitive *cl-wds* that can serve as complement to composition *faire* are those that override this default (intrinsic clitic verbs, for example). Thus upstairs affixal realization of an *aff*-type argument is possible in the composition causative, but double affixal realization of such an argument is impossible.

Second, there is a crucial difference between the composition indicated in (64a,b) and that of the tense auxiliaries examined above (sec. 4.1). In the case of the causative, the lexical complement’s (the infinitive’s) COMPS list is incorporated into the argument structure of *faire*; in the case of the tense auxiliaries, it is the argument structure of the participle complement that contributes to the ARG-ST list.

This distinction has consequences for clitic ‘climbing’. Whenever a causative verb realizes a clitic associated with its infinitive complement, an *aff* member of the causative’s ARG-ST list is also a member of the infinitive’s COMPS list. The infinitive in this case has at least one argument of type *aff* in its argument structure list, but that infinitive must be a *pl-wd* (since *cl-wds* disallow *affs* on their COMPS list; cf. (20)). Thus intrinsic clitic verbs, as a simple consequence of the fact that they must be of type *cl-wd*, can never give rise to clitic climbing in the composition causative construction – their COMPS list can never contain an *aff* element.

Thus under the analysis of causatives we assume, it is predicted that all the arguments of intrinsic clitic verbs, e.g. the \bar{a}_1 argument of EN VOULOIR \bar{a} , can only be affixally realized on the infinitive complement of composition *faire*, never on *faire*. This clitic trapping effect is in fact a correct prediction:³⁷

(66) a.*Tout leur en fait vouloir à Paul.
 ‘Everything makes them angry at Paul.’

³⁷ See Kayne 1975, Rouveret and Vergnaud (1980: 153-154), Aissen and Perlmutter 1983, and Tasmowski (1985: 330).

- b.*Tout leur en fait vouloir à Paul.
'Everything makes Paul angry at them.'
- c. Tout leur fait en vouloir à Paul.
'Everything makes them angry at Paul.'
- d. Tout leur fait vous en vouloir.
'Everything makes them angry at you.'

In sum, our analysis provides a straightforward treatment of the sharp contrast between the climbing potential in causative and tense auxiliary constructions.³⁸

5. 'CLITIC CLIMBING': FURTHER ISSUES

5.1. *EN-Forms Via Argument Composition?*

Let us now turn to those cases where nonlocal pronominal affixes correspond to a semantic argument of a subject or object Noun Phrase, with realization on a higher verb, as in (67).³⁹

- (67) a. Marie en connaît la fin. (= (3d)) 'Marie knows the end of it.'
- b. La fin en est désagréable. 'The end of it is unpleasant.'

In these sentences, *en* is a semantic argument of the noun *fin* ('end'), as shown by the translations. This type of nonlocal pronominal affixation is restricted to subjects and direct object complements.⁴⁰ It might seem

³⁸ Nothing in what we have said above prevents realization of pronominal affixes on the infinitive complement in the general case. In the analysis of Abeillé et al. (to appear, in preparation), composition *faire* selects for an infinitive that is a *basic-verb*, which is the type of all *pl-wd* verbs and of intrinsic clitic verbs. Because all other *cl-wds*, by contrast, are *reduced-verbs*, it follows that downstairs realization of the pronominal affix is in general not possible in the composition causative construction:

(i)*Marie lui fait le lire. ('Marie makes him/her read it.')

³⁹ Special thanks to Chris Culy for extensive comments and discussion on the material presented in this section.

⁴⁰ It is well known that nonlocal *en* from subjects is lexically restricted depending on the choice of the main verb, but we follow Tasmowski (1990) in assuming that the restriction is pragmatic, rather than syntactic in nature. That is, we reject the accounts of the restriction on nonlocal *en* from subject position based on the unaccusative hypothesis as proposed by Couquaux (1979, 1981) and Belletti and Rizzi (1981) for Italian *ne*. See Morin 1981, sec. 1 and Tasmowski 1990, for a detailed refutation.

initially plausible that such cases should be treated in terms of argument composition, in a way parallel to that proposed for predicative complements in the preceding section. This could be done by assigning an underspecified lexical entry to verbs taking a nominative or accusative NP on their valence lists in order to allow that NP to appear unsaturated, with its missing complement promoted to the status of complement of the verb.

However, a number of facts argue against such a treatment. First, it appears that this type of nonlocal *en* affixation has a status in the grammar of French which is different from other cases of nonlocal pronominal affixation. Indeed, it is the only case which is restricted to a formal register. Second, unlike the nonlocal morphological realization of adjectival complements just considered (e.g. *lui reste fidèle*), the only complements of nouns that can appear as nonlocal pronominal affixes are NP[*de*₁] complements. This is shown in examples (68).

- (68) a.*Marie y choisit un voyage.
 (putatively ‘Marie chooses a trip to there.’)
 b.*Ils en ont retardé le départ.
 (putatively ‘They delayed the departure from there.’)
 c.*Un voyage y serait désagréable.
 (putatively ‘A trip to there would be unpleasant.’)

Whereas *en* in (67) can be interpreted semantically as an argument of the noun *fin*, it is impossible for *y* in (68a) to be interpreted as a semantic argument of *voyage* (of course (68a) does have an irrelevant grammatical reading where *y* is simply a locative adjunct of *choisir*). Similarly, *en* cannot be interpreted as a locative source complement (i.e. NP[*de*₂]) of *départ*, though again there is an irrelevant reading of (68b) where *en* is an NP[*de*₁] complement (e.g. *le départ de la voiture* ‘the car’s departure’). (68c) is similar to (68a) except that it would involve nonlocal morphological realization of an *à*₂ complement within the subject. Third, there is no positive evidence for the composed structures in the case at hand. Verbs taking predicative complements allow pronominal affixation of *le* corresponding to the unsaturated X[+PRD] (leaving behind the raised complement), as in (69) (discussed by Abeillé and Godard (1996, 1997)).

- (69) a. Fidèle, Pierre le restera à ses convictions, mais non à ses amis.
 b. Pierre n’est plus président de la RATP. Il l’est maintenant de Pechiney.
 c. Présenté aux enfants, Pierre l’a certainement été par Marie.

However, the parallel cases in (70) for NP[*nom*] and NP[*acc*] are completely ungrammatical.⁴¹

- (70) a.*La fin, je l'aime de cette version, mais non de l'autre.
 (putatively 'The end, I like it of this version, but not of the other.')
- b.*Elle est désagréable de cette version.
 (putatively 'It is unpleasant of this version.')

On the basis of this evidence, we conclude that an argument composition treatment of nonlocal *en* affixation would create as least as many problems as it would solve, e.g. the problem of explaining the grammaticality contrast between (69) and (70).

There is one major property, however, which nonlocal affixation of *en* shares with other nonlocal affixation, namely a parallelism with extraction. As discussed extensively by Godard (1992), NPs are in general islands for extraction in French. This is illustrated in (71b), where it is impossible to interpret *la clef* as the NP complement of *garçon* (compare (71a)).

- (71) a. J'ai écouté le garçon avec la clef.
 'I heard the boy with the key.'
- b.*la clef_j, avec laquelle_j j'ai écouté le garçon ...
 'the key with which I heard the boy...'

But, there is one set of exceptions to the island-forming status of NPs: NP complements can be extracted from a nominative or accusative NP in sentences of the type illustrated in (72b,d).

- (72) a. Marie lit la fin du livre.
 'Marie is reading the end of the book.'
- b. le livre dont Marie lit la fin...
 'the book of which Marie is reading the end...'
- c. La fin du livre est désagréable.
 'The end of the book is unpleasant.'
- d. le livre dont la fin est désagréable...
 'the book of which the end is unpleasant...'

⁴¹ Examples similar to (70b) can be acceptable if they arise via extraposition of the complement of the subject. This is a separate phenomenon with very different properties, the most important of which is that it is not restricted to NP[*de*₁].

In (72b,d), the relative pronoun *dont*, ‘of which’, *can* be interpreted as the argument of the noun *fin* (compare (72a,c), (67a,b)). However, as shown by Godard, these exceptions correspond precisely to the contexts where nonlocal *en* is possible. This is confirmed by the fact that extraction shows an identical restriction to NP[*de*₁] complements, as shown by the ungrammaticality of (73a,b), analogous to (68a,b).

(73) a.*le lieu auquel Marie a choisi un voyage...
(putatively ‘the place to which Marie has chosen a trip...’)

b.*l’endroit dont ils ont retardé le départ
(putatively ‘the place from which they delayed the departure’)

As we will show, this parallel between extraction and nonlocal *en* affixation poses a dilemma for existing accounts of extraction. We will in fact sketch a modification of the HPSG theory of extraction that provides a solution to this dilemma.

5.2. An Extraction Dilemma

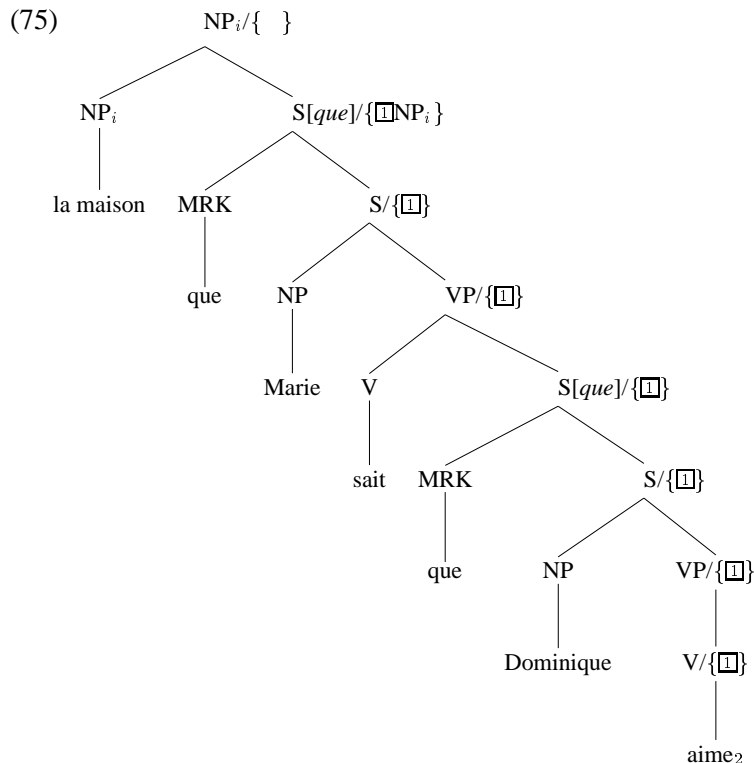
Pollard and Sag (1994: chap. 9) propose a lexical rule for English that removes an element from a word’s COMPS list, placing that element’s LOCAL value within the set-value of the feature SLASH. Intuitively, SLASH encodes the information about elements that are missing (or ‘extracted’) from a phrase. This Complement Extraction Lexical Rule, shown in (74), thus creates lexical items whose valence is reduced by one complement, and whose SLASH value contains precisely the LOCAL information associated with the missing complement (including part-of-speech, valence, case, content, and so forth; see (12) above).⁴²

(74) Complement Extraction Lexical Rule (**CELR**):

$$\left[\begin{array}{l} \text{word} \\ \text{COMPS} \quad \boxed{1} \circ \langle [\text{LOC} \quad \boxed{2}] \rangle \\ \text{SLASH} \quad \boxed{5} \end{array} \right] \mapsto \left[\begin{array}{l} \text{COMPS} \quad \boxed{1} \\ \text{SLASH} \quad \boxed{5} \cup \{\boxed{2}\} \end{array} \right]$$

CELR produces ‘slashed’ verbs, adjectives, and (in English) prepositions that project their nonempty SLASH specification upward through an ‘extraction’ construction, as illustrated in (75):

⁴² \cup designates familiar set union.



La maison que Marie sait que Dominique aime.
 ‘The house that Marie knows that Dominique likes.’

Extraction is thus treated entirely in terms of the inheritance of SLASH specifications, with ‘binding off’ of the SLASH specification occurring at an appropriate point *higher* in the structure.

This analysis of extraction dependencies is a traceless⁴³ variant of the one proposed originally by Gazdar (1981). The examples discussed above involving nonlocal *en*-affixation from subject position present a difficulty for all such analyses. The problem is that in these examples, e.g. (76), the binding off of the nonempty SLASH specification is triggered by a verb that is *lower* in the structure.

(76) La fin en-est désagréable. ‘The end of it is unpleasant.’

That is, assuming the subject *la fin* is an NP[SLASH {NP[*de*₁]}], the verb form *en-est* must be able to bind off the subject’s SLASH value, even

⁴³ For an extended defense of a traceless analysis of extraction such as this, see Sag and Fodor 1994.

though it is lower in the structure. The same problem exists in the case of English slashed postnominal complements associated with prenominal modifiers, e.g. the infinitival VP[SLASH {NP}] indicated in (77).

(77) An easy man [to please $_$] will walk through this door.

More than one solution to this problem is imaginable.⁴⁴ Here, we present a traceless, SLASH-based account of extraction that is adapted from Bouma et al. 1997. In this account, the slashed words needed to produce structures like (75) are provided using constraint satisfaction, rather than lexical rule application. Words are subject to a constraint (originally suggested in Sag (1997)) that defines their SLASH value in terms of the SLASH values of their arguments, i.e. the SLASH values of the members of their ARG-ST list. Assuming that SLASH-binding elements like *tough* are the only elements bearing a nonempty BIND specification, this SLASH ‘amalgamation’ constraint can be stated as follows:

(78) Lexical Amalgamation of SLASH:

word \Rightarrow

$$\left[\begin{array}{l} \text{SS} \left[\begin{array}{l} \text{LOC|CAT} \left[\begin{array}{l} \text{BIND} \quad \boxed{0} \\ \text{ARG-ST} \quad \langle [\text{SLASH } \boxed{1}], \dots [\text{SLASH } \boxed{n}] \rangle \\ \text{NLOC|SLASH} \quad (\boxed{1} \cup \dots \cup \boxed{n}) - \boxed{0} \end{array} \right] \end{array} \right] \end{array} \right]$$

In this way, if a verb’s complement is ‘slashed’, then the verb itself is slashed. For example, the verb *sait* in (75) must be slashed because its sentential complement (*que Dominique aime $_$*) is slashed. This allows us to simplify the statement of the inheritance of SLASH specifications in terms of the following constraint:

(79) SLASH Inheritance Principle (SLIP):

By default, a phrase’s SLASH value is identical with the SLASH value of its head daughter.

SLIP is a defeasible constraint that is contradicted only by certain kinds of phrase (e.g. the *head-filler-phrase*) which effect SLASH binding. Note

⁴⁴ One might posit additional features to be inherited from the binder (*en-est*, *easy*) as proposed, for example, by Chae 1992. These, however, appear to lack independent motivation. Alternatively, one can imagine an analysis of the English problem in terms of linearization theory (Reape 1994, Kathol 1995). This method provides no account, however, for the problem of nonlocal affixation associated with French subjects.

that in this analysis, a phrase never inherits its SLASH value from its subject daughter directly. In any SLASH inheritance that gives such an appearance, the inheritance is in fact mediated by the head daughter, whose SLASH value contains that of the relevant non-head daughter.

The slashed elements that occur at the bottom of an extraction dependency are slashed because one of their arguments is assigned to the type *gap(-synsem)*, which is another kind of *noncanonical-synsem* (see (18) above). *gap* is subject to the further constraint that identifies its LOCAL value with the single member of its SLASH set:

$$(80) \quad gap \Rightarrow \left[\text{SYNSEM} \left[\begin{array}{ll} \text{LOC} & \boxed{1} \\ \text{NLOC|SLASH} & \{\boxed{}\} \end{array} \right] \right]$$

Whenever one of a word's arguments is of this type, that argument becomes combinatorically impotent. That is, though it is lexically permitted on a head's SUBJ or COMPS list, a head so specified will never be able to combine with an overt subject or complement, since overt elements all have SYNSEM values of type *canon*.

But *gaps* present in the argument structure of a word serve the useful function of allowing arguments to be realized nonlocally via SLASH, not SUBJ or COMPS. We accomplish this by modifying our constraints on types *pl-wd* and *cl-wd* given in (19) and (20). The revised versions are as follows:⁴⁵

$$(81) \quad pl-wd \Rightarrow \left[\begin{array}{l} \text{MORPH} \left[\begin{array}{ll} \text{FORM} & \boxed{0} \\ \text{I-FORM} & \boxed{0} \end{array} \right] \\ \text{SYNSEM} \left[\begin{array}{l} \text{LOC|CAT} \left[\begin{array}{l} \text{VAL} \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{2} \rangle \\ \text{COMPS} & \boxed{3} \end{array} \right] \\ \text{ARG-ST} \langle \boxed{2} \rangle \oplus (\boxed{3} \circ \text{list}(gap)) \end{array} \right] \end{array} \right] \end{array} \right]$$

⁴⁵ Miller and Sag (1995) assumed that the lexical rule relevant to pronominal affixation applied only to lexical elements that have undergone the CELR (in (74)). The present proposal, by contrast, treats the two phenomena as independent, though both are analyzed in terms of an argument structure element that is *noncan* (relevant for the treatment of participle agreement and floated quantifiers discussed in section 6 below). A further advantage of the present proposal, pointed out to us by Bob Levine (email of June 22, 1995), is that it allows us to clearly distinguish affixation from extraction for purposes of describing 'stylistic inversion' (e.g. *le livre qu'a aimé Jean...* 'the book that Jean liked...'), which is not triggered by the mere presence of pronominal affixes: **l'a aimé Jean*. For a detailed analysis based on the present proposal, see Abeillé et al. in preparation.

(82) *cl-wd* \Rightarrow

$$\left[\begin{array}{c} \text{MORPH} \left[\begin{array}{cc} \text{FORM} & F_{PRAFF} (\boxed{0}, \dots) \\ \text{I-FORM} & \boxed{0} \end{array} \right] \\ \text{SYNSEM} \left[\begin{array}{c} \text{LOC|CAT} \left[\begin{array}{c} \text{VAL} \left[\begin{array}{cc} \text{SUBJ} & \boxed{2} \\ \text{COMPS} & \boxed{3} \text{list}(\text{non-aff}) \end{array} \right] \\ \text{ARG-ST} (\boxed{2} \oplus \boxed{3}) \circ \text{nelist}(\text{aff}) \circ \text{list}(\text{gap}) \end{array} \right] \end{array} \right] \end{array} \right]$$

By (81), *pl-wds* need not express all arguments on their COMPS list. The ARG-ST may contain *gap* elements that are not in COMPS. In addition, nothing prevents the possibility that the SUBJ (and first ARG-ST member) of a *pl-wd* is of type *gap*. The formulation in (82) not only requires that there be some *aff*-type element that is in the *cl-wd*'s argument structure but absent from its SUBJ and COMPS list, it also allows for the possibility of there being some *gap*-type argument that is also absent from the valence lists. Given the constraints on the subtypes of *cl-wd* (see (21) and (22) above), this *gap* must be an extracted complement, and the word might be of either *cl-wd* subtype. This correctly allows extraction to cooccur with pronominal affixation.

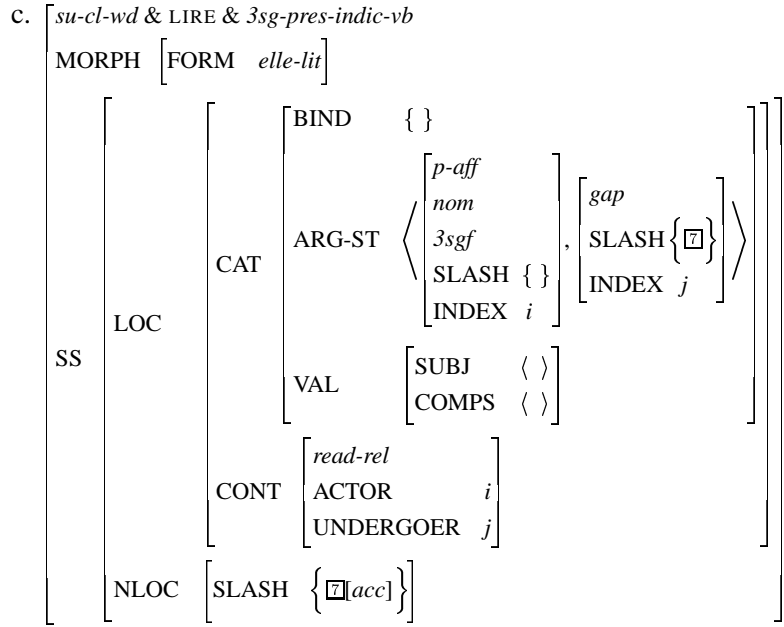
Since elements of type *gap* always have a nonempty SLASH specification (see above) and since words must obey the slash amalgamation constraint in (79), it follows that if a verb's argument structure contains an element of type *gap*, then that verb's SLASH value must be nonempty.

Given a lexeme like (83), (84a,b) illustrate two distinct ways of satisfying the constraints on *pl-wds* derived from that lexeme. And (84c) illustrates one way of satisfying the constraints on the type *cl-wd*.

$$(83) \left[\begin{array}{c} \text{LIRE} \\ \text{SYNSEM} \left[\begin{array}{c} \text{BIND} \quad \{ \} \\ \text{LOC} \left[\begin{array}{c} \text{CAT} \quad \left[\text{ARG-ST} \quad \langle \text{NP}_i, \text{NP}[\text{acc}]_j \rangle \right] \\ \text{CONT} \quad \left[\begin{array}{cc} \text{read-rel}(\text{ation}) & \\ \text{ACTOR} & i \\ \text{UNDERGOER} & j \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

(84) a. $\left[\begin{array}{l} pl\text{-}wd \ \& \ LIRE \ \& \ 3sg\text{-}pres\text{-}indic\text{-}vb \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \ lit \end{array} \right] \\ \left[\begin{array}{l} \text{SS} \\ \left[\begin{array}{l} \text{LOC} \\ \left[\begin{array}{l} \text{CAT} \\ \left[\begin{array}{l} \text{BIND} \quad \{ \} \\ \text{ARG-ST} \left\langle \begin{array}{l} \left[\begin{array}{l} \text{NP} \\ \left[\begin{array}{l} \text{canon} \\ \text{nom} \\ 3sg \\ \text{INDEX} \ i \end{array} \right] \text{NP} \left[\begin{array}{l} \text{canon} \\ \text{acc} \\ \text{INDEX} \ j \end{array} \right] \end{array} \right\rangle \\ \text{VAL} \left[\begin{array}{l} \text{SUBJ} \left\langle \left[\text{NP} \right] \text{SLASH} \left[\text{NP} \right] \right\rangle \\ \text{COMPS} \left\langle \left[\text{NP} \right] \text{SLASH} \left[\text{NP} \right] \right\rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{l} read\text{-}rel \\ \text{ACTOR} \quad i \\ \text{UNDERGOER} \quad j \end{array} \right] \end{array} \right] \\ \text{NLOC} \left[\text{SLASH} \quad \left[\text{NP} \right] \cup \left[\text{NP} \right] \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$

b. $\left[\begin{array}{l} pl\text{-}wd \ \& \ LIRE \ \& \ 3sg\text{-}pres\text{-}indic\text{-}vb \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \ lit \end{array} \right] \\ \left[\begin{array}{l} \text{SS} \\ \left[\begin{array}{l} \text{LOC} \\ \left[\begin{array}{l} \text{CAT} \\ \left[\begin{array}{l} \text{BIND} \quad \{ \} \\ \text{ARG-ST} \left\langle \begin{array}{l} \left[\begin{array}{l} \text{NP} \\ \left[\begin{array}{l} \text{nom} \\ 3sg \\ \text{INDEX} \ i \end{array} \right] \text{NP} \left[\begin{array}{l} \text{gap} \\ \text{SLASH} \left\{ \left[\text{NP} \right] \right\} \\ \text{INDEX} \ j \end{array} \right] \end{array} \right\rangle \\ \text{VAL} \left[\begin{array}{l} \text{SUBJ} \left\langle \left[\text{NP} \right] \text{SLASH} \left[\text{NP} \right] \right\rangle \\ \text{COMPS} \left\langle \right\rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{l} read\text{-}rel \\ \text{ACTOR} \quad i \\ \text{UNDERGOER} \quad j \end{array} \right] \end{array} \right] \\ \text{NLOC} \left[\text{SLASH} \quad \left[\text{NP} \right] \cup \left\{ \left[\text{NP} \right] \text{acc} \right\} \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$



(84a) shows the instantiation of features that results when the word *lit* combines with both a subject and an object (either of which could possibly contain a gap). (84b) illustrates the combination of *lit* with only a subject, as occurs in extraction contexts like (75). And (84c) is an example of a *cl-wd* whose ARG-ST list contains both a *p-aff* element (the 3rd singular feminine nominative that is realized as *elle*) and a *gap*, whose presence renders the verb's SLASH value nonempty. These three ways of resolving grammatical constraints correspond to the three realizations of LIRE in (85).⁴⁶

- (85) a. Jean lit ton livre. 'Jean is-reading your book.'
 b. Qu'est-ce que Jean lit _? 'What is Jean reading?'
 c. Qu'est-ce qu'elle lit _? 'What is she reading?'

5.3. EN-Forms Via Complement Extraction

As argued by Sag and Godard (1994), a complement of a noun can be extracted only if it is the first member of the noun's ARG-ST list. Furthermore, the fact that only NP[*de*₁] phrases can be extracted from NPs is

⁴⁶ (85a) is derived from (84a) with $\boxed{1} = \{ \}$ and $\boxed{2} = \{ \}$; (85b) is derived from (84b) with $\boxed{9} = \{ \}$.

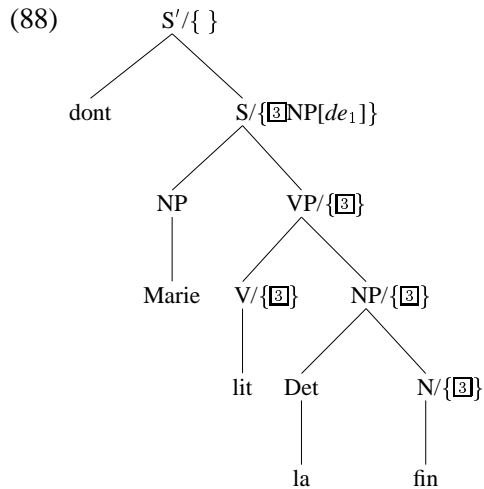
a consequence of this generalization, given that the first item on an NP's ARG-ST list must either be an NP[*de*₁] or else an empty pronominal.

The basic analysis of the extraction of nominal complements proceeds in terms of constraints on words of the sort we have already seen, as illustrated in (86).

$$(86) \left[\begin{array}{l} \text{LEXEME} \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \text{ } fin \end{array} \right] \\ \text{SS|LOC|ARG-ST} \left\langle \text{NP}[de_1] \right\rangle \end{array} \right]$$

$$(87) \left[\begin{array}{l} \text{word} \\ \text{MORPH} \left[\begin{array}{l} \text{FORM} \text{ } fin \end{array} \right] \\ \text{SYNSEM} \left[\begin{array}{l} \text{LOC|CAT} \left[\begin{array}{l} \text{BIND} \quad \{ \} \\ \text{ARG-ST} \left\langle \begin{array}{l} \text{NP}[de_1] \\ \left[\begin{array}{l} gap \\ \text{LOC} \quad \boxed{3} \\ \text{SLASH} \quad \{ \boxed{3} \} \end{array} \right] \end{array} \right\rangle \end{array} \right] \\ \text{SLASH} \quad \{ \boxed{3} \} \end{array} \right] \end{array} \right]$$

The lexeme *fin* ('end') can give rise to a slashed noun (*word*), as shown in (87). And words like (87) give rise to extraction structures like (88).



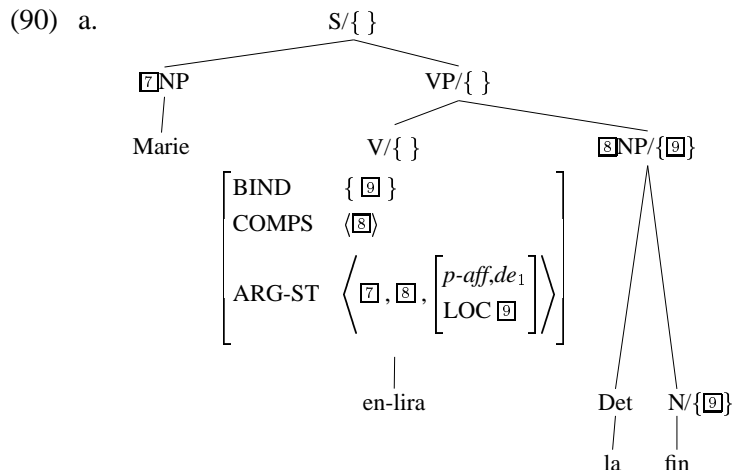
In order to account for the nonlocal affixation of *en*, i.e. for the *en*-affixation involving a verb whose subject or direct object is lacking a *de*-phrase associated with *en*, we propose the lexical rule given in (89).

(89) *EN*-Affixation LR (ENLR)

$$\left[\begin{array}{l} \text{LEXEME} \\ \text{SS|LOC|CAT} \end{array} \left[\begin{array}{ll} \text{HEAD} & \text{verb} \\ \text{BIND} & \{ \} \\ \text{ARG-ST} & \boxed{1} \oplus \langle \boxed{2} \text{NP}[\text{dir}] \rangle \oplus \boxed{3} \end{array} \right] \right] \mapsto$$

$$\left[\begin{array}{l} \text{SS|LOC|CAT} \end{array} \left[\begin{array}{ll} \text{BIND} & \{ \boxed{0} \} \\ \text{ARG-ST} & \boxed{1} \oplus \langle \boxed{2} \left[\begin{array}{l} \text{canon} \\ \text{SLASH } \{ \boxed{0} \} \end{array} \right] \rangle \oplus \boxed{3} \oplus \langle \left[\begin{array}{l} p\text{-aff} \\ de_1 \\ \text{LOC } \boxed{0} \end{array} \right] \rangle \end{array} \right] \right]$$

We take this to be a rule of zero derivation, i.e. one that maps lexemes to lexemes. Here NP[*dir*] designates the class of NPs whose CASE value is either *nom* or *acc*; ENLR thus introduces an NP[*aff*, *de*₁] complement that is associated with the SLASH value of either a nominative or accusative NP on a verb's argument structure list. Note that that NP's SLASH value ({ $\boxed{0}$ }) is not amalgamated into the SLASH value of the rule output, because (89) also specifies that this local object is in the BIND value of the LR output. This entails that there is no inheritance of { $\boxed{0}$ } up from an ENLR output – the ENLR output itself serves as the binder of that SLASH dependency, as shown in (90):



b. ‘Marie will read the the end of it.’

Note that ENLR induces lexical SLASH-binding not only when the object is slashed (as in (90)), but also when it is the subject whose SLASH value is bound off. In the latter case, we have ‘binding from below’, thus solving the extraction theory dilemma (discussed above) posed by the nonlocal *en*-affixation phenomenon.

The lexemes derived by ENLR in general give rise to *cl-wds*, as the [*aff*] element in their ARG-ST list is inconsistent with any other eventuality. In these cases, the ‘climbing’ of *en* is predicted to parallel that of the other affixes we have analyzed. As far as we are aware, this is a correct prediction.⁴⁷

To conclude this section, note that the set of data given in (91) further corroborates the unitary analysis of extraction and nonlocal *en* from subject and object NPs.

- (91) a. J’ai examiné les fenêtres de la façade arrière de la maison.
 ‘I examined the windows of the back wall of the house.’

b.*J’en ai examiné les fenêtres de la façade arrière.
 (putatively ‘I examined the windows of the back wall of it.’)

⁴⁷ This is not quite right. For example, there are infinitives (complements of composition *faire*) that must be treated as *pl-wds* in the analysis we assume. Thus because *fait* requires a *basic-verb* infinitive in (i), it cannot be of type *cl-wd*, because in that case it would have to be a *reduced-verb* (cf. fn. 38).

- (i) Dominique leur en fait lire la fin.
 ‘Dominique is making them read the end of it.

In cases like this, a *pl-wd* (*lire*) has an *aff* element on its COMPS list that is realized morphologically on the causative verb.

- c.*La maison dont j'ai examiné les fenêtres de la façade arrière.
 (putatively 'The house of which I examined the windows of the
 back wall.')

So called 'long extraction' out of NPs is in general impossible in French.⁴⁸ We explain this in terms of an independent constraint on nouns requiring that all members of their COMPS lists have an empty SLASH value. This constraint accounts for the general status of NPs as islands, except for allowing a certain complement of the highest noun in that NP to be extracted. Complex NPs will impose further constraints. For example, the possessive determiner (e.g. *son*, *notre*) must be present as the first member of the argument structure; but since the *gap* corresponding to an extracted element must also be the noun's first ARG-ST member, it follows (through the interaction of conflicting constraints) that the presence of a possessive determiner blocks any extraction from a given NP. Our constraint-based analysis of the distribution of slashed arguments of the noun thus provides a uniform account of the 'island constraint' effects governing extraction and *en*-affixation.

6. THE UNITY OF EXTRACTION AND PRONOMINAL AFFIXATION

In this section, we show how our analysis captures in a principled way the common properties of extraction and pronominal affixation. We discuss two further sets of data – past participle agreement with auxiliary *avoir* and the floating of quantifiers from object position – which only occur in these two contexts. In the analysis we sketch, these two phenomena pattern alike because their treatment involves ARG-ST elements that belong to the common supertype – *noncanon(-ical synsem)*.

6.1. Past Participle Agreement

The past participles of verbs taking a direct object do not in general carry any agreement marking, as is shown in (92a). But, as illustrated in (92b,c),

⁴⁸ It has been known since Kayne (1975: 111–2, fn. 56) that there are exceptions to this constraint, which raise problems for all theories. However these are treated in the end, it is important to note that these exceptions corroborate the link between extraction and nonlocal *en*, in that exceptional cases systematically allow both constructions, never just one of them, as shown in the following:

- (i) On en peindra le bout du pied gauche. 'We'll paint the tip of the left leg of it [e.g. the table].'
- (ii) La table dont on peindra le bout du pied gauche. ... 'The table of which we will paint the tip of the left leg ...'

(92) a. Marie a écrit/*écrite la lettre. 'Marie wrote the letter.'
 b. Marie l'a écrite/*écrit. 'Marie wrote it.'
 [it = the letter (la lettre)]
 c. La lettre que Marie a écrite/*écrit. 'The letter that Marie wrote.'

A more satisfying account can be provided in terms of the analysis presented above. *Gap* and *aff* are the only subtypes of *noncan* that can be objective (i.e. *acc* or *â₁*).⁵⁰ Hence we can specify the class of elements that trigger object agreement in French simply as: [*noncan, acc*]. The analysis of agreement then is a matter of constraining the relevant words derived from a given lexeme. Let us assume morphological functions that specify the four kinds of endings for participles and adjectives; call these: F_[sgm], F_[sgf], F_[plm] and F_[plf]. From every lexeme like LIRE, there must be four distinct agreeing participles, each obeying the following constraint:⁵¹

$$(93) \left[\begin{array}{l} \textit{past-part} \\ \text{MORPH} \left[\begin{array}{ll} \text{I-FORM} & F_{\alpha}(F_{pps}(\boxed{0})) \\ \text{STEM} & \boxed{0} \end{array} \right] \\ \text{SS|LOC|CAT|ARG-ST} & \langle \text{NP, NP}[\textit{noncan, acc, } \alpha], \dots \rangle \end{array} \right]$$

where $\alpha \in \{[\text{sgm}], [\text{sgf}], [\text{plm}], [\text{plf}]\}$

⁴⁹ There is complex dialect and register variation with respect to past participle agreement with the auxiliary *avoir*. However, it does appear that there are dialects in which the prescriptive rules discussed here are systematically followed (though this is hard to confirm, given the impact of schooling).

⁵⁰ We leave open the possibility here that *PRO* might also be a kind of *noncan*.

⁵¹ We assume *past-part* is one of many subtypes of *infl*. Here F_{pps} is the morphological function that maps a lexeme onto its past participle stem, to which agreement endings are suffixed.

These four agreeing forms: *lu, lue, lus, lues*, all require a second ARG-ST member that is *noncanon*, and hence will occur only in contexts of pronominal affixation or extraction.⁵² And because arguments are shared when the past participle is in construction with a tense auxiliary (see sec. 4.1), these participles can occur only with an auxiliary whose pronominal affixation is compatible:

- (94) a. Marie les a vus/*vu/*vue/*vues. ‘Marie saw them.’
 b. Marie m’a vu/*vue/*vus/*vues. ‘Marie saw me.’
 [me = male speaker]’

Similar covariation of form is induced in extraction constructions – *qu*-interrogatives or relative clauses. The agreeing forms occur only when their object NP is realized either as a pronominal affix (a nonlocal pronominal affix, in fact, since pronominal affixes in French are never realized on past participles) or else corresponds to a gap in a long distance dependency.

To complete the treatment of past participles,⁵³ we must also assume that a verbal lexeme can give rise to a nonagreeing participle whose form is identical to that of the singular-masculine agreeing participle. These nonagreeing participles, if they are transitive, require that their direct object be of type *canonical*, as in (95).

$$(95) \left[\begin{array}{c} \text{past-part} \\ \text{MORPH} \left[\begin{array}{cc} \text{I-FORM} & F_{sgm}(F_{pps}(\underline{\text{u}})) \\ \text{STEM} & \underline{\text{u}}/i- \end{array} \right] \\ \text{SS|LOC|CAT|ARG-ST} \quad \langle \text{NP}, \text{NP}[\text{canon}] \rangle \end{array} \right]$$

This form can appear with the unaffixed tense auxiliary in (96a), with a tense auxiliary bearing other affixes, as in (96b), but not with auxiliaries bearing affixes that render the shared object *noncan*, as in (96c).

⁵² The present formulation in terms of second ARG-ST member interacts with the treatment of causatives sketched earlier. Assuming that agreement happens only if the NP[*acc*] is the second member of an ARG-ST list, we correctly predict that the past participles of causatives do not show agreement:

(i) Je les ai fait/*faits aller à Paris. ‘I made them go to Paris.’

⁵³ Note that we are ignoring here the case of past participle agreement with the subject, which occurs in all cases where the auxiliary is *être*, except those where there is an indirect object reflexive, and a noncanonical direct object, in which case the direct object agreement rule applies (e.g. *les maisons qu’il s’est décrites...* ‘the houses that he described to himself...’). As shown by Abeillé and Godard (1997), subject agreement should not be unified with direct object agreement. Further support for this view comes from the fact that subject agreement of the past participle is subject to almost no variation, while object agreement has been almost obliterated in many varieties of French.

- (96) a. Anne a lu ces livres. 'Anne has read these books.'
 b. Anne en a lu la fin. 'Anne read the end of it.'
 c. Anne l'a lu. 'Anne read it.'
 (*lu* must be agreeing form,
 i.e. NOT the form in (95)).

One piece of further confirmation of this analysis of past participle agreement comes from *tough*-movement constructions and infinitival relatives. In French, *tough*-movement and extraction within infinitival relatives are local (cf. Kayne 1974–5, Rizzi 1982) and hence cannot be analyzed in terms of *gaps*. In fact, the analysis of these constructions does not involve the feature SLASH at all. Interestingly, there is no past participle agreement in such cases, even though the (notional) object appears before the participle.⁵⁴

- (97) a. Ce sont des fautes dangereuses à avoir commis/*commises dans sa jeunesse.
 'These are mistakes dangerous to have committed in one's youth.'
 b. Il m'a donne des lettres à avoir remis/*remises aux parents avant son retour.
 'He gave me letters to have delivered to the parents before his return.'

The shared arguments in these examples are all of type *canonical*, and hence occasion no agreement on our analysis. For further details of the agreement analysis just sketched, see Abeillé et al. in preparation.

6.2. Floating Quantifiers From Objects

The well-known distribution of quantifiers floating from object NPs (v. e.g. Kayne 1975, Pollock 1978, Kayne 1984, Sportiche 1988) also crucially connects extraction and pronominal affixation. Such floating only occurs if the object is accusative or dative and is either a pronominal affix or a gap in a long distance dependency, as is shown by the data in (98).⁵⁵

- (98) a. Marie a vu tous les livres. 'Marie saw all the books.'

⁵⁴ These cases are not mentioned in prescriptive grammars of French. The judgements are those of French speakers who appear to have the prescriptive agreement pattern in their grammars. Note that these data argue against the validity of the order based generalization of prescriptive grammars, even for those dialects where agreement is natural.

⁵⁵ All the illustrations in this section will be given for floating out of accusative complements; the behavior of datives is analogous.

- b.*Marie a tous vu les livres. (putatively = (98a))
- c. Marie les a vus tous. ‘Marie saw all of them.’
- d. Marie les a tous vus. ‘Marie saw all of them.’
- e. les livres que Marie a vus tous... ‘the books all of which Marie saw...’
- f. les livres que Marie a tous vus... ‘the books all of which Marie saw...’

Once again, we can capitalize on the fact that only pronominal affixation and extraction introduce *noncan* elements. This allows us to formulate a lexical rule for leftward floating quantifiers, the L-Tous Lexical Rule (LTLR) shown in (99).

(99) L-Tous Lexical Rule (LTLR)

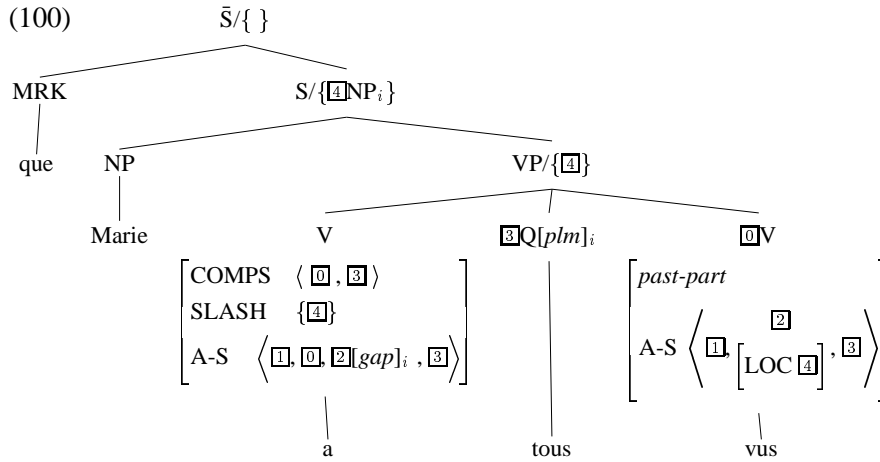
$$\left[\begin{array}{l} \text{LEXEME} \\ \text{SS|LOC|CAT} \left[\begin{array}{ll} \text{HEAD} & \text{verb} \\ \text{ARG-ST} & \boxed{1} \oplus \langle \boxed{2}[\text{obj}] \rangle \oplus \boxed{3} \end{array} \right] \end{array} \right] \mapsto$$

$$\left[\text{SS|LOC|CAT|ARG-ST} \quad \boxed{1} \oplus \langle \boxed{2}[\text{noncan}]_i, Q_i \rangle \oplus \boxed{3} \right]$$

This lexical rule, formulated so as to map lexemes to lexemes, can apply to any verbal lexeme that has an object (NP[*acc*] or NP[*ā*₁]) on its ARG-ST list. The resulting lexeme is just like the input, except that (1) the object in question is constrained to be of type *noncanon* and (2) there is an additional ARG-ST member – a quantifier coindexed with (and hence agreeing with) the noncanonical object. The words formed from an LTLR output will realize this object either as a *gap*, or else as an *aff*. The Q will be realized like any canonical non-subject argument, i.e. on the word’s COMPS list.⁵⁶ In this way, LTLR guarantees that the floated Q is possible only in combination with an extracted element or a pronominal affix.

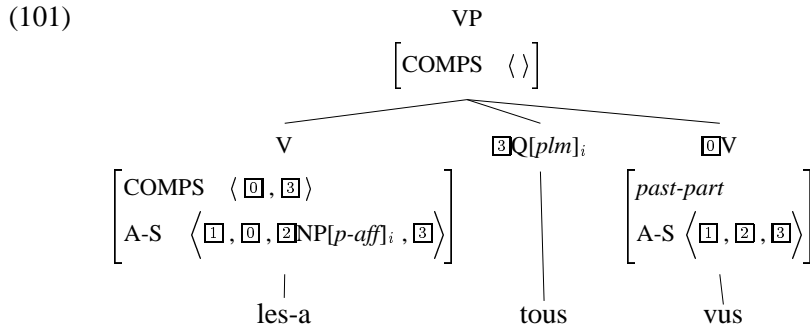
This analysis interacts correctly with our treatment of tense auxiliaries to allow structures like the following:

⁵⁶ We assume that *gaps* are *non-lite* (In the sense of Abeillé and Godard (in press)). Hence if we further require that Q is *lite*, we correctly predict that it can never itself be extracted in French.



Here the Q argument of the participle *vus* is also an argument of the tense auxiliary. The head noun modified by this relative clause will have the same index as the clause's SLASH value – *i*; hence the modified noun, the gap, and the floated quantifier must all be masculine plural in this example.⁵⁷

Examples involving pronominal affixation of tense auxiliaries and the presence of floated quantifiers work similarly:



Here it is the information associated with the affix *les* that must be compatible with that present in the lexical entry of the quantifier *tous*. Examples like (98b) are ruled out on our analysis because the *synsem* type of the overt object is *canonical*, which is incompatible with the *noncan* type required

⁵⁷ Note that the relative linear order of the Q and the participle in this example is different from their relative ARG-ST order. For a discussion of such discrepancies, and the ordering of such *lite* elements in general, see Abeillé and Godard in press and Abeillé et al. in preparation.

of any Q-controlling object in the argument structure of a word realizing an LTLR output.

Let us now turn to certain further data on quantifier floating out of object positions pointed out by Kayne (1975, chap. 1). It is possible for quantifiers to exhibit unbounded floating over certain control and raising verbs that take infinitival VP complements. This happens only if the relevant VP complement has undergone extraction or contains a pronominal affix, as illustrated in (102a,b), where *tous* quantifies over the object argument of *voir*. The sentences in (103) illustrate the positions available for floated quantifiers and the unboundedness of the floating.

- (102) a. Marie a tous voulu les voir.
 'Marie has wanted to see all of them.'
- b. les livres que Marie a tous voulu voir...
 'the books that Marie wanted to see all of...'
- (103) a. Marie a cru devoir tous les prendre.
 b. Marie a cru tous devoir les prendre.
 c. Marie a tous cru devoir les prendre.
 'Marie has believed that she must take all of them.'

Interestingly, there are only certain verbs that allow 'long' floating, e.g. *vouloir* ('want'), *devoir* ('must'), *croire* ('believe'), *refuser* ('refuse'), *oser* ('dare'), It is not at all clear that there is any coherent semantic characterization that will distinguish these verbs from those that do not allow long floating, e.g. *aimer* ('like'), *avouer* ('admit'), *admettre* ('admit'), *affirmer* ('state'), *certifier* ('certify'), *permettre* ('permit'), Furthermore, there is considerable interspeaker variation as to which verbs do or don't allow long floating. Kayne (1975) proposed to account for this distinction in terms of the ordering of equi NP deletion and quantifier floating transformations. He proposed that there were two equi type transformations in French, one applying before his quantifier floating transformation (L-*tous*) and the other after. For those verbs where equi applies after quantifier floating, long floating is blocked by the presence of the subject; for those where equi applies before quantifier floating, the subject is not present when floating applies and long floating is possible. The central problem with this account is that both the distinction between these two equi transformations and the proposed ordering stipulation are completely unmotivated.⁵⁸

⁵⁸ Pollock (1978) accepts the essence of Kayne's double equi analysis, but provides no new motivation. The discussions of Kayne (1984) and Sportiche (1988) ignore this problem

We propose that this distinction is best understood as a lexical matter. Assuming that the grammar of French allows the construction of ‘semisaturated’ VPs, i.e. VPs that have not yet combined with all their complements, then a verb like *vouloir*, may be lexically specified to allow argument composition, even though it combines with a VP[*inf*] complement. This can be accomplished in terms of the following argument structure for *vouloir* and other verbs permitting long floating.

$$(104) \left[\text{ARG-ST} \left\langle \text{NP}, \begin{array}{c} \text{VP} \\ \left[\begin{array}{cc} \text{VFORM} & \text{inf} \\ \text{COMPS} & \boxed{1} \end{array} \right] \end{array} \right\rangle \oplus \boxed{1} \langle (Q) \rangle \right]$$

Because the head of the VP[*inf*] complement of *vouloir* can be formed from a lexeme that has undergone LTLR, it follows from the possibility of the argument structure in (104) that a ‘floated’ quantifier argument of that verb can become an argument of *vouloir*. This allows for the examples in (102) and (103) in essentially the same way that floated quantifiers may occur with tense auxiliaries, except that the second argument of *vouloir* is always a VP.

This analysis shares the classical advantages of non-transformational analyses of quantifier floating (see Dowty and Brodie 1984), explaining the fact that certain floating quantifiers cannot occur NP internally, as illustrated in (105a,b), or have different morphological forms and agreement properties in floated and NP-internal positions, as illustrated in (105c,d).

- (105) a.*J’ai vu tous les deux garçons. (putatively ‘I have seen both of the boys.’)
 b. Je les ai tous les deux vus. ‘I have seen both of them.’
 c. Le professeur a interrogé chaque garçon/*chaque garçons/*chacun garçon
 pendant 15 minutes.
 ‘The professor has questioned each boy for 15 minutes.’

altogether. Kayne claims that the trace of the ‘clitic’ or *wh*-phrase is a variable, and that *tous* must move to a position where it binds that variable at LF, in order for the sentence to be grammatical. However, this provides no explanation as to why some verbs allow long floating and others do not. Kayne also predicts that long *tous* floating over a tensed S is possible, and has no account of why many speakers find such sentences unacceptable. Similarly, Sportiche proposes that leftward *tous* floating is an instance of quantifier raising, and gives no explanation for why the choice of verbs should constrain the possibility of floating.

- d. Le professeur les a chacun/*chaque interrogés.
 ‘The professeur questioned each of them.’

In addition, the analysis immediately extends to the floating of direct object nominal *tout* and *rien*, as illustrated in (106).

- (106) a. Pierre a tout mangé. ‘Pierre has eaten everything.’
 b. Pierre a tout voulu manger. ‘Pierre wanted to eat everything.’
 c. Pierre n’a rien mangé. ‘Pierre didn’t eat anything.’
 d. Pierre n’a rien voulu manger. ‘Pierre didn’t want to eat anything.’

As pointed out by Abeillé and Godard (in press), the flat structure hypothesized for tense auxiliaries allows the ordering of complements to be treated in terms of Linear Precedence statements, which apply among sister constituents within the VP. If we then assume (following Kayne 1975) that *tout* and *rien* also belong to the class of elements that instantiate the category ‘Q’, then we correctly predict that these elements can float over the same verbs as prenominal *tous/toutes*, as in (106b–d).

Finally, parallel to examples like (97) for past participle agreement, floating from object position is impossible in *tough*-movement constructions, as illustrated in (107a).

- (107) a.*Ils sont faciles à tous voir. (putatively same as (107b))
 b. Ils sont tous faciles à voir. ‘They are all easy to see.’

This corroborates the hypothesis that it is specifically the presence of *non-canonical* arguments that makes floating possible, rather than the mere absence of an object. Note by contrast that (107b) shows that floating from subject position *is* possible in these constructions, with the same expected meaning.

7. CONCLUSION

In this paper, we have proposed a lexicalist theory of French pronominal affixes within HPSG – an explicitly formalized, constraint-based grammatical framework. Lexemes and words, systematized by types and type constraints that we have laid out in detail, bear the brunt of the descriptive

generalizations. These lexical constructs, together with a small set of principles governing phrasal 'projection', allow us to derive a coherent analysis of complex syntactic phenomena from minimal assumptions. Moreover, similar analyses of pronominal affixes in other Romance languages are giving similar results (e.g. Monachesi 1993a,b, 1996).

The most striking contrast between familiar Principles and Parameters (P&P) analyses and those made available within HPSG can be briefly stated as follows: P&P analyses involve highly complex hierarchical constituent structures with a relatively simple labeling of constituents, whereas HPSG proposes simple constituent structures, labeled with hierarchical feature complexes. P&P studies have tried to justify their uniform hierarchical structures by showing that similar principles of syntax apply to both functional and lexical heads, e.g. the Head Movement Constraint (HMC) and the Empty Category Principle (ECP), leading to a significant level of generality. For simplicity, we can call this idea the Uniformity Hypothesis (UH). One of the central predictions made under these assumptions, the Mirror Principle of Baker (1988: 13), concerns the relation between the hierarchy of functional projections and the ordering of the corresponding morphemes in morphological structure. It specifies that morphological derivations must directly reflect syntactic derivations (and vice versa). Specifically, the ordering of affixes on a stem is predicted to reflect the order in which the stem picks up those affixes via head to head movement.

In this respect, we believe that the question of Romance pronominal affixes provides decisive evidence against the UH. Most lexicalist frameworks have argued against the UH, claiming on the contrary that there is autonomy between different kinds of linguistic information, morphological, syntactic, argument structure, etc. A considerable amount of evidence for this conclusion has been provided by work carried out within the framework of Lexical Functional Grammar (cf. Bresnan 1982, Manning 1994, Alsina 1996, Sells 1996, Butt 1995, and Bresnan and Mchombo 1995).

P&P studies of the syntax of Romance pronominal affixes have made systematic reference to the Mirror Principle, using it to rule out various analyses on the ground that they lead to violations of the Mirror Principle (cf. e.g. Haverkort (1992: chaps. 1 & 2) Sportiche 1992). But, it is clear that in fact the constraints enforced by the Mirror Principle are too strong to be tenable. Of course, P&P studies typically provide various escape hatches that allow violations of its strictest interpretation (e.g. excorporation, relaxation of the HMC, etc.).⁵⁹

⁵⁹ Such problems are not limited to the domain of Romance pronominal affixes; see e.g. Speas 1991, Hyman and Mchombo 1992, Janda and Kathman 1992, Joseph and Smirniotopoulos 1993.

The question then arises as to why certain choices of exceptions should be preferred to others. Until a principled account motivating such choices is provided, there remains serious doubt as to the validity of any conclusions about the hierarchical ordering of functional projections that are obtained as predictions of the Mirror Principle. Indeed, before accepting such predictions, a criterion is needed for deciding whether or not the Mirror Principle should be expected to apply in the case at hand.

But, there is an even more important problem specific to the question of Romance pronominal affixes. It has been known since Perlmutter 1970 that the ordering and compatibility of pronominal affixes among themselves (rather than with respect to the verbs) is an extremely difficult problem to approach from a syntactic perspective. In fact, as noted earlier, to the best of our knowledge no one has proposed a syntactically based analysis of the ordering and compatibility of pronominal affixes since 1978. It is striking, in the light of the preceding discussion, that the P&P approach has no light to shed on this topic.⁶⁰ Whatever the status assigned to pronominal affixes, the UH should predict something about their ordering. Note in this respect that one of the central points of Kayne (1991) is to account for the ordering of pronominal affixes with respect to the verb. It is hard to see how the theory can be assumed to make relevant predictions on this point, but not on the question of the ordering of pronominal affixes among themselves.

Problems like these and similar ones that have been discussed in the literature have led some P&P theorists to a significant reinterpretation of the relationship between syntactic and morphological structure, specifically abandoning the tight link enforced by the Mirror Principle. This trend finds its central incarnation in Chomsky's Minimalist Program (Chomsky 1995). Interestingly, this move was first made in the P&P framework, for the analysis of Romance pronominal affixes, by those who were concentrating on their morphological and phonological properties (e.g. Bonet (1991), Cummins and Roberge (1994a,b)). However, we would like to suggest that abandoning the strict interconnection between morphology and syntax, which was the hallmark of the P&P studies between 1985 and 1990, has much more far reaching consequences than has heretofore been assumed. In fact, we claim that it leads to a radical underdetermination of the ordering of functional projections in the constituent structure, as noted by Sportiche (1992), for the ordering of clitic projections once they are considered not to be constrained by the Mirror Principle.⁶¹ But as pointed

⁶⁰ In fact, Sportiche (1992) discusses the possible syntactic bases for pronominal affix ordering and compatibility, but the discussion is quite inconclusive: as Sportiche himself states (p. 41): 'we have no explanation to offer as to why the ordering is what it is.'

⁶¹ Of course the Mirror Principle is not the sole argument that has been offered in favor of the functional projections assumed in the P&P framework. Various other types of dis-

out above, it is specifically the hierarchical ordering properties of functional projections that crucially distinguish the P&P framework from extended phrase structure frameworks like HPSG.

In sum, we suggest that much of the inconclusive discussion that has taken place within the P&P framework as to the correct inventory and ordering of functional projections is in fact a purely theory-generated artifact of the assumptions of the mid to late 1980s, which lead to a radical underdetermination of theory by data. If the idea that there is a constituent structure based hierarchy of functional information is abandoned, these questions become moot. The reinterpretation we propose also has the advantage of allowing a uniform and straightforward intended interpretation for constituent structure, in the sense of Miller (1993, to appear), according to which it accounts for classical distributional generalizations. Finally, it permits a radical simplification of the interface between syntax and morphology, phonology, and prosody.

The present study exhibits all of these advantages. It eschews the quagmire of the hierarchy of functional projections. Because constituent structure is not involved in accounting for morphological structure, we have been able to treat the generalizations about French pronominal affixes in terms of morphologically autonomous templatic principles. The lexicalist program that we have embraced leads to an empirically motivated increased modularity and to a streamlined conception of the interface among the various components of grammar.

tributional evidence have been brought to bear on the question, most famously perhaps the ordering of adverbials (see Pollock 1989 and Chomsky 1991). It should be noted however that in these domains also the hierarchy and inventory of functional projections is fundamentally underdetermined by the data, as shown in the discussion of Pollock's hypotheses by Iatridou (1990). See also the discussion by Abeillé and Godard (1997) and Kim and Sag (1996), who raise significant objections to Pollock's head movement analysis of negation and inversion phenomena in French and in English.

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