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NEGATION WITHOUT HEAD MOVEMENT*

This paper presents a lexicalist analysis of negation in French and English. In both languages, negation in finite clauses is grammatically distinguished from constituent negation. Lexical idiosyncrasy motivates treating finite negation as a verbal complement, while constituent negation is treated in terms of a familiar modifier-head construction. General principles ordering lexical and phrasal heads ensure that negation (the adverbs *not* and *pas*) follows the finite verb (the finite auxiliary verb in English), while only constituent negation appears preverbally. Our constraint-based account, cast within the framework of Head-driven Phrase Structure Grammar (HPSG), provides a viable alternative (with broader coverage, fewer devices and simpler principles) to analyses based on head movement, which seek to explain the syntax of negation and adverbial positions in terms of the interaction of morphological properties, verb movement, and functional projections.

1. INTRODUCTION

The similarities and systematic differences between English and French grammar have received considerable attention in the recent syntactic literature. Central to this inquiry has been the following set of contrasts:

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Position of Negation:

(1) a. *Kim likes not Lee.

b. Kim does not like Lee.

(2) a. Robin n'aime pas Stacey.
Robin (n')likes NEG Stacey
'Robin does not like Stacey.'

b.*Robin ne pas aime Stacey.

Position of Adverbs:

(3) a. *Kim kisses often Lee.

b. Kim often kisses Lee.

(4) a. Robin embrasse souvent Stacey.

b. *Robin souvent embrasse Stacey.

Subject-Verb Inversion in Questions:

(5) a. *Likes he Sandy?

b. Does he like Sandy?

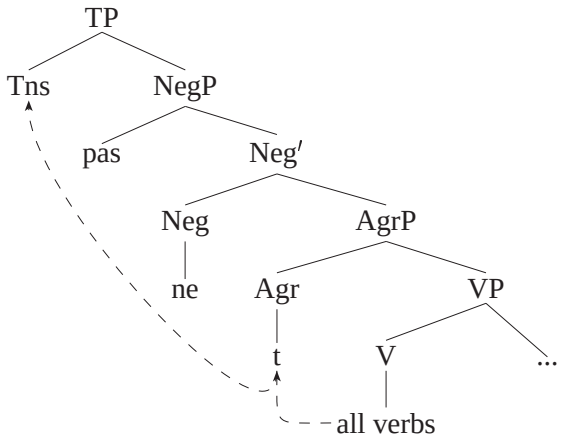
(6) a. *Likes Lou Sandy?

b. Aime-t-il Sandy?

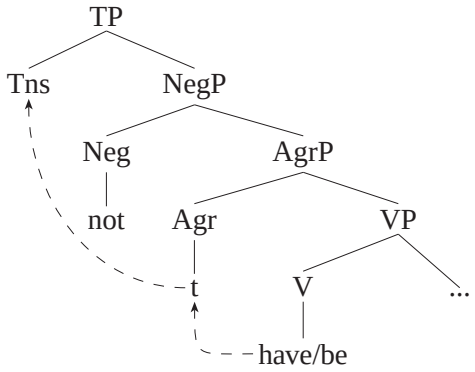
Drawing on the earlier insights of Emonds (1978), Pollock (1989), and a number of subsequent researchers (Belletti (1990), Zanuttini (1991, 1997), Chomsky (1991, 1993), Lasnik (1995), Vikner (1997), and Haegeman (1997), inter alia) have interpreted these contrasts as providing critical motivation for the process of head movement and the existence of functional categories such as MoodP, TP, AgrP, and NegP. It has been widely accepted that the variation between French and English illustrated here can be explained only in terms of the respective properties of verb movement and its interaction with a view of clause structure organized around functional projections.

For example, in Pollock's (1989) proposal, all verbs in French move to a higher structural position, whereas this is possible in English only for the auxiliaries *have* and *be*, as shown in (7):

(7) a. French:



b. English:



Why does V-movement happen when it does? This question has been answered in diverse (and sometimes inconsistent) ways in the literature (cf. Pollock 1989, 1994, 1997a, and 1997b, Vikner 1997). In Pollock 1989, it is the strength of the Agr feature that determines V-movement: unlike French, English non-auxiliary verbs cannot undergo V-movement because Agr in French is 'transparent' (or 'strong') whereas Agr in English is 'opaque' (or 'weak'). The richness of French verbal morphology is assumed to provide the motivation for the strength of French Agr, in consequence of which the raised verb in French can transmit theta roles to its arguments through Agr, thus avoiding any violation of the theta criterion. But the weakness of English Agr (assumed to follow from the paucity of English verbal morphology) is what blocks lexical verbs from assigning theta roles once they have moved to Tns. Hence movement of a theta-assigning verb in

English would result in a violation of the theta criterion. The basic spirit of this analysis—that 'morphology determines syntactic movement'—has remained essentially unchanged in subsequent research (Pollock 1997a, 1997b, Chomsky 1995) though what triggers V-movement has varied considerably in subsequent work.[1] As far as we are aware, there is no agreed upon movement-based analysis of either the English or French systems. In fact, as Lasnik (2000: 181–190) stresses, the Minimalist Program as articulated in Chomsky (1993) not only fails to deal with the ungrammaticality of simple examples like **John left not* or **John not left*, it also provides no basis for explaining the French/English contrasts in adverb position discussed by Pollock (e.g. *embrasse souvent* vs. *often kisses*).

In this paper, we offer a radically different perspective on the grammar of negation and related phenomena. The surface-based, lexicalist treatment we develop—which makes no appeal to head movement or any other movement operation—provides a detailed, transparent account of negation in each language and allows us to elucidate the similarities and systematic differences between the two systems. We will limit our attention here to French and English (as did Pollock (1989)), though in so doing it will no doubt seem to some readers that we have ignored massive independent cross-linguistic evidence for head movement. So vast, in fact, is the literature based on head movement and functional projections, that by now it appears to many that those analytic constructs have been firmly established on empirical grounds. But such appearances can be deceptive, as we will attempt to show. Though space requirements dictate that we carefully delimit the scope of the present inquiry, we hope that our results will lead others to rethink the transformational orthodoxy that underlies conventional approaches to related phenomena in other languages as well.

2. Theoretical Foundations

2.1. *Overview*

A descriptively adequate theory of grammar must include at least the following components:

[1] In Pollock 1997a, V-movement is driven by 'mood' distinctions, where modals, *have* and *be* are interpreted as mood markers. In Pollock 1997b, by contrast, V-movement is dependent upon 'interpretable' or 'uninterpretable' 'person' features. From Haegeman's (1997) perspective, English and French are both claimed to have V-movement. The difference between the two languages comes from the fact that French verbs move to I at S-structure and English finite lexical verbs move to I at LF. The English verbs can wait until LF because their features are 'interpretable'.

(8) a. A system of lexical representation.

b. Principles specifying the nature of headed phrases and their relation to those lexical representations.

c. Principles of linear order.

d. A 'root clause' definition.

There are many competing accounts of (8)a, of course, all of which seek to organize lexical representations (minimally) in terms of part of speech information and constraints on argument structure and argument selection. We will assume one such organization here, but others are possible. The most common assumptions about (8)b include a version of X-Bar Theory, augmented by some mechanism requiring that the sisters of a lexical head be categorially nondistinct from the appropriate arguments selected by that head. Linear order is usually derived from headedness parameters (e.g. head first) and their interactions with other grammatical constructs, such as transformational movement. The definition in (8)d, analogous to the stipulation of an 'initial symbol' in a context-free grammar, usually goes unmentioned in the literature, but some such principle must be included in any complete grammar in order to guarantee, for example, that only finite sentential structures (e.g. trees rooted in TP[+fin]) may function as *root* (or independent, 'stand-alone') clauses.

The theory of grammar we advocate is truly compact, in that it includes little or nothing more than a precise specification of the devices in (8).[2] Our theoretical point of departure is HPSG, roughly as presented by Ginzburg and Sag (2000) or (in simplified form) in Sag and Wasow 1999. We begin by reviewing the particular theoretical constructs that will be relevant to our proposed analysis.

2.1.1. *Lexicon*

In HPSG, lexemes—in fact, all linguistic objects—are organized in terms of classes, or *types*. The hierarchical organization of linguistic types allows constraints to be stated over various natural classes of words (those that correspond to superordinate types). Lexical entries are partial descriptions of lexemes that provide only the information that is not given by more general constraints on the lexeme's maximal (most-specific) type or by one of its supertypes. A lexical entry of course includes syntactic, semantic

[2] Transformational theories, by contrast, including (somewhat paradoxically) those that fly a 'minimalist' banner, embrace the view that grammatical theory includes much more. For relevant critical discussion, see Johnson and Lappin 1999.

and phonological constraints, but for present purposes we will focus on relevant syntactic information specified in terms of valence features and the feature HEAD. The combination of lexeme-specific and more general type constraints yields a lexical entry for a nonauxiliary English verbal lexeme like *love* that includes the information shown in (9):

(9) *love*

$$\begin{bmatrix} \textit{v-lxm} & \\ \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & - \end{bmatrix} \\ \text{SUBJ} & \langle\ \text{NP}\ \rangle \\ \text{COMPS} & \langle\ \text{NP}[\textit{acc}]\ \rangle \end{bmatrix}$$

Note that here the value of the feature HEAD, identifying inherent properties of a given lexeme, is itself a feature structure (of type *verb*) that includes various feature specfications that will be 'passed up' from head daughter to mother in a headed construction, according to the Head Feature Principle discussed below.

Verbal lexemes like (9) give rise to (inflected) words. Word formation can be thought of in terms of applying an inflectional rule to a lexeme description to produce a word description or (equivalently, for present purposes) as building a word from a lexeme via a non-branching lexical construction.[3] The lexeme in (9) will give rise to nine distinct words, assuming that we distinguish 3rd-singular-present-indicative, non-3rd-singular-present-indicative, past-indicative, subjunctive/imperative, base, present-participle, gerund, perfect-participle, and passive-participle. The 3rd-singular-present-indicative form is sketched in (10):

(10) *loves*

$$\begin{bmatrix} \textit{word} & \\ \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & - \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{SUBJ} & \langle\ \text{NP}[\textit{nom,3rd,sg}]\ \rangle \\ \text{COMPS} & \langle\ \text{NP}[\textit{acc}]\ \rangle \end{bmatrix}$$

Here the SUBJ and COMPS features specify constraints on the number and kind of valents that *loves* must combine with. In addition, finiteness is lexically encoded as a projected lexical property.

[3] For more on different approaches to expressing lexical regularities in HPSG, see Meurers 2000, Koenig 1999, Copestake and Briscoe 1992, Bouma et al. 2000 and (for a more elementary presentation) Sag and Wasow 1999.

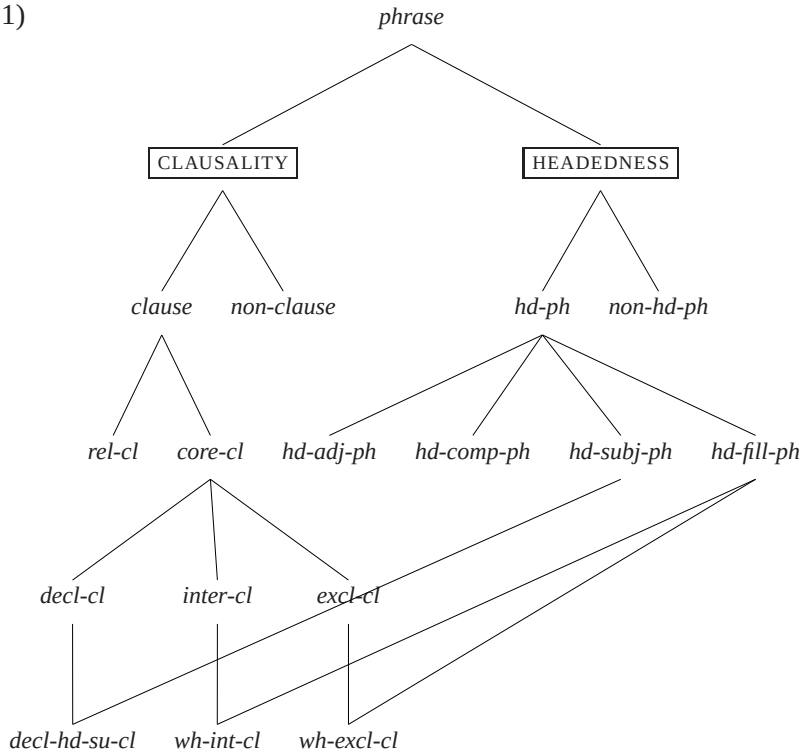
Given this rich encoding of lexical information, HPSG is able to incorporate the principle of *Strong Lexicalism* (Scalise 1984: 101ff) and the closely related *Lexical Integrity Hypothesis* of Bresnan and Mchombo (1995). That is, the principles of word formation are independent from those governing syntax and internal word structure and morphological elements and morphological structure are invisible to syntactic constraints and operations.

2.1.2. *Phrasal Construction*

In the version of HPSG assumed here, a grammar includes an inventory of construction types. This organization serves to organize constraints on phrases: each maximally specific type of phrase inherits constraints from its superordinate types. These constraints impose restrictions on the mother of the construction and on its daughters; hence together they function much like a rewrite rule in a standard context-free grammar. But the construction types, some of which are universal (see Ackerman and Webelhuth's (1998) discussion of 'archetypes'), are organized into a cross-classifying multidimensional hierarchy, so that 'family resemblance' properties of constructions can be expressed as generalizations: constraints on a common supertype. Ginzburg and Sag (2000) offer a two dimensional classification of phrasal construction types, a portion of which is illustrated in (11):[4]

[4] Here and throughout, we use the following abbreviations: *core-cl* (*core-clause*), *decl-cl* (*declarative-clause*), *inter-cl* (*interrogative-clause*), *excl-cl* (*exclamative-clause*), *rel-cl* (*relative-clause*), *decl-hd-su-cl* (*declarative-head-subject-clause*), *wh-int-cl* (*wh-interrogative-clause*), *wh-excl-cl* (*wh-exclamative-clause*), *hd-ph* (*headed-phrase*), *hd-adj-ph* (*head-adjunct-phrase*), *hd-comp-ph* (*head-complement-phrase*), *hd-subj-ph* (*head-subject-phrase*), *hd-fill-ph* (*head-filler-phrase*), *non-hd-ph* (*non-headed-phrase*).

(11)



A type-based classification allows some generalizations to be stated in very general terms (e.g. as a constraint on the type *phrase*), in maximally specific terms (e.g. as a constraint on a maximal construction type), or as holding over a particular family of constructions (e.g. as a constraint on an intermediate-level phrasal type such *hd-adj-ph*, *hd-comp-ph*, or *inter-cl*). As noted by Ginzburg and Sag (2000), there is considerable evidence that this is precisely the way natural languages are organized, in terms of constraints that characterize diverse, cross-cutting classificatory grains.

As shown in (11), each maximal phrase type is cross-classified, inheriting both from a CLAUSALITY type and from a HEADEDNESS type. That is, each type of phrase is classified in one dimension as a particular kind of clause or else as a nonclause. At the same time, each type of phrase is classified as an unheaded[5] phrase or else as a particular kind of head-

[5] Coordination constructions are one example of an unheaded phrase type. See Pollard and Sag 1994 and Borsley 1994.

ed phrase (head-subject phrase, head-complement phrase, etc.) With the phrasal multiple-inheritance hierarchy, the theory need not posit phantom formatives, such as the inaudible functional heads that are assumed in many competing analysis of clausal structure (see Ginzburg and Sag 2000 for discussion). The work done by these elements is replaced by constraints associated with the various types of clause. For example, phrases are subject to the following general constraints:

(12) a. The Generalized Head Feature Principle (GHFP), which—by default—identifies the value of all features of the mother with that of the head daughter in all headed phrases.

b. The Empty COMPS Constraint (ECC), stating that all phrases have the empty list as the value of the feature COMPS.

c. Valence constraints on particular kinds of headed phrase. These identify the selectional properties of the head daughter (i.e. the head daughter's values for the feature SUBJ or COMPS) with the appropriate non-head daughter.

The GHFP, formulated in (13), simply enforces the identity between 'X' and 'XP' that is familiar from X-theory:[6]

(13) Generalized Head Feature Principle:

hd-ph:

[SYNSEM / 1] → ... **H**[SYNSEM / 1] ...

Since the GHFP governs all headed constructions, it also applies to head-complement constructions, which are further constrained as shown in (14):

(14) *hd-comp-ph*:

$$[\,] \rightarrow \mathbf{H}\left[\begin{array}{ll} \textit{word} & \\ \text{COMPS} & \boxed{A} \oplus \textit{list} \end{array}\right], \ \boxed{A}\textit{nelist}$$

[6] Here we follow the standard practice of using boxed integers (or 'tags') to indicate feature structure identities. Note that boxed capital letters are used to identify feature values that are not feature structures, but rather lists of feature structures. We adopt the theory of defaults (and the '/' notation for default values used in (13)) outlined in Lascarides and Copestake 1999.

This construction permits a lexical head daughter to combine with complements that it selects via the COMPS feature.[7] Hence complements are introduced as sisters of the lexical head, i.e. lower in a structure than either a subject or a specifier. The ECC in (12)b guarantees that the COMPS value of any phrase is the empty list. This interacts with the valence constraints mentioned in (12)c to ensure that the head daughter's SUBJ and COMPS values are either 'cancelled off' or else simply inherited by the mother in a headed phrase. For example, the ECC interacts with the constraints in (14) to ensure that a *hd-comp-ph*'s COMPS value is the head daughter's COMPS list 'minus' whatever complements are realized inside the *hd-comp-ph* (or else left unexpressed in ellipsis). By contrast, since the constraints in (14) say nothing about SUBJ, the GHFP guarantees that the *hd-comp-ph*'s SUBJ value is identical to that of its head daughter. In the case of verb phrases, this value will be a list whose single member corresponds to the subject of that VP.

Principles like those in (12)b,c thus replace the notion of 'bar-level' with a notion of 'cancellation of arguments', familiar from work in categorial grammar. The result is a somewhat unusual 'barless' $\bar{X}$-theory.

2.1.3. *Stand-Alone Phrases*

To specify which clauses can function as independent utterances, we also posit a principle stating simply that stand-alone (or 'root') phrases must be consistent with the information in (15).[8]

(15)
$$\begin{bmatrix} \textit{phrase} & \\ \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{SUBJ} & \langle\ \rangle \\ \ldots & \end{bmatrix}$$

Of course, our account must ultimately be extended to allow other kinds of utterances, including fragments, short answers to questions, interjections, and so forth, but we will ignore such complications here.

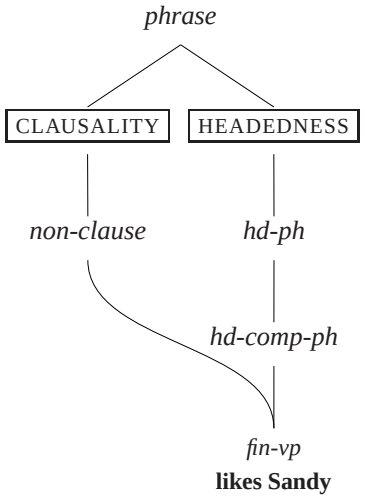
[7] The constraint in (14) says that a *hd-comp-ph* must contain a non-empty list (*nelist*) of complement daughters and that these complements must correspond to an initial sublist of the head daughter's COMPS value. The type *fin-vp* discussed below (a subtype of *hd-comp-ph*) imposes the further requirement that all selected complements be realized, but the elliptical verb phrase construction discussed by Sag (to appear) explicitly requires that some complement selected by the head not be realized within the VP.

[8] This constraint is incomplete in various ways that are explained more fully in Ginzburg and Sag 2000 and Sag and Wasow 1999. Finite clauses satisfying the description in (15) can of course also appear in appropriate embedded environments.

2.2. *Two Construction Types of English*

Our system of constraint inheritance accounts for the shared properties of individual constructions in a principled fashion. For example, a VP like *likes Sandy* is an instance of the type *finite-verb-phrase* (*fin-vp*), whose place in the construction hierarchy is shown in (16):[9]

(16)



Because *fin-vp* is a subtype of *hd-comp-ph*, which in turn is a subtype of *hd-ph*, it follows that an instance of the type *fin-vp* must simultaneously satisfy the more general constraints on those supertypes, as well as the particular constraint stated in (17):

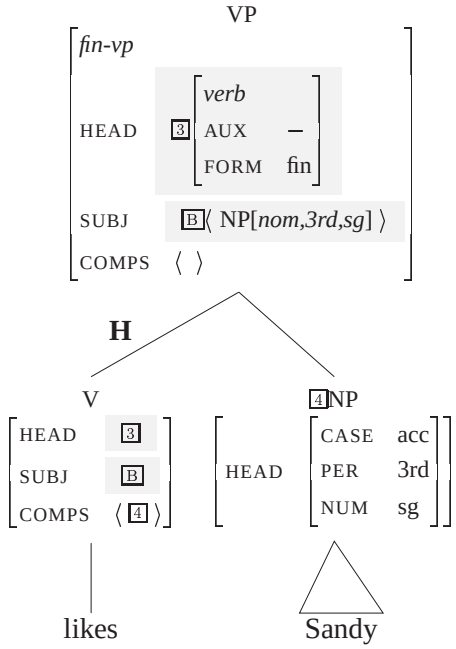
(17) *fin-vp* (preliminary version):

$$[\,] \rightarrow \mathbf{H}\begin{bmatrix} \text{FORM} & \textit{fin} \\ \text{COMPS} & \boxed{A} \end{bmatrix}, \boxed{A}$$

The effect of the various constraints placed on finite verb phrases is illustrated in (18):

[9] We discuss the motivation for distinguishing finite VPs from other head-complement constructions in section 7 below.

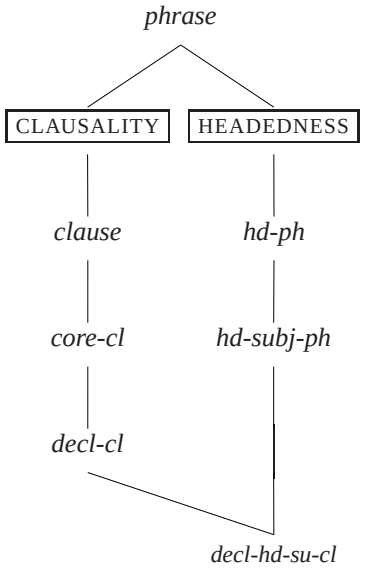
(18)



As (18) shows, the GHFP causes the lexically encoded HEAD information discussed above to be 'passed up' from the lexical head daughter to the mother. Other information (e.g. the SUBJ value) is passed up from the lexical head as well, unless some constraint says otherwise. The constraint in (14), for example forces the head daughter's COMPS value to be nonempty, while the ECC in (12b) forces the mother's COMPS value to be empty, thus overriding the GHFP in this one case: mother and head daughter must have distinct COMPS values. In addition to the GHFP, lexically encoded selectional information interacts with constraints like (17) so as to narrow down the set of elements that a given lexical head may cooccur with.

The basic structure of declarative clauses is determined by the type *declarative-head-subject-clause*, mentioned earlier, whose relevant supertypes are repeated in (19):

(19)



Decl-hd-su-cl is a subtype of both *decl-cl* and *hd-subj-ph*. Hence clauses of this type must satisfy the constraints governing both supertypes, as well:

(20) *hd-subj-ph*:

$$\left[\text{SUBJ}\ \langle\ \rangle\right] \rightarrow \boxed{2}\ ,\ \mathbf{H}\left[\begin{array}{ll} \textit{phrase} & \\ \text{SUBJ} & \langle\ \boxed{2}\ \rangle \end{array}\right]$$

(21) *decl-cl*:

$$\left[\begin{array}{ll} \text{HEAD} & \textit{verb} \\ \text{CONT} & \left[\begin{array}{ll} \textit{proposition} & \\ \text{SOA} & \boxed{1} \end{array}\right] \end{array}\right] \rightarrow \ldots\ \mathbf{H}\left[\text{CONT}\ \ \boxed{1}\right]\ \ldots$$

Note that (20) specifies local combinatorics (the phrasal head daughter combines with a subject daughter) and (21) specifies the appropriate semantics (a proposition constructed from the state of affairs (*soa*) provided by the head daughter.

These more general constraints—applicable to other types of phrase as well—leave only the following constraint as specific to the type *decl-hd-su-cl*:

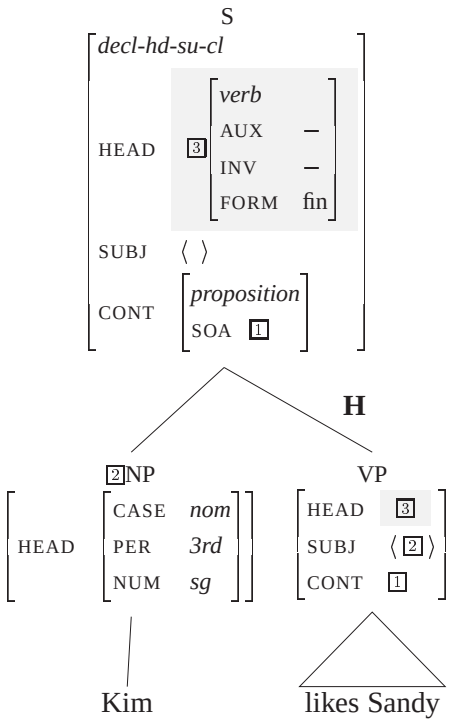
(22) *decl-hd-su-cl*:

$$[\,] \rightarrow \ldots \mathbf{H}\begin{bmatrix} \textit{phrase} \\ \text{HEAD} \quad \begin{bmatrix} \text{FORM} & \textit{fin} \\ \text{INV} & - \end{bmatrix} \end{bmatrix}$$

The feature INVERTED (INV), motivated by lexical considerations discussed briefly in section 7.2 below, is used here to prevent 'inversion-only' verbs (e.g. first-person *aren't*) from appearing in this kind of uninverted clause.

The type constraints in (20)–(22) combine with each other and with more general principles outlined above (e.g. the GHFP). In consequence of these constraints, a VP like (18) will give rise to a declarative clause like (23) (GHFP effects again illustrated by shading):

(23)



Note that individual constructions do not stipulate the linear order of the daughters. This is determined by linear precedence rules of greater generality, for example, the following:

(24) LP1: **H**[*word*] ≺ X

LP2: $\boxed{1} \prec \mathbf{H}\left[\begin{array}{ll} \textit{phrase} & \\ \textsc{subj} & \langle\, \boxed{1} \,\rangle \end{array}\right]$

To complete our sketch of the basic theoretical framework, we must consider one more type of phrasal construction—the *modifier-head-phrase* (*mod-hd-ph*) sketched in (25):

(25) *mod-hd-ph*:

$[\,] \rightarrow \left[\textsc{head}\ \left[\textsc{mod}\ \boxed{1}\right]\right],\ \mathbf{H}\boxed{1}$

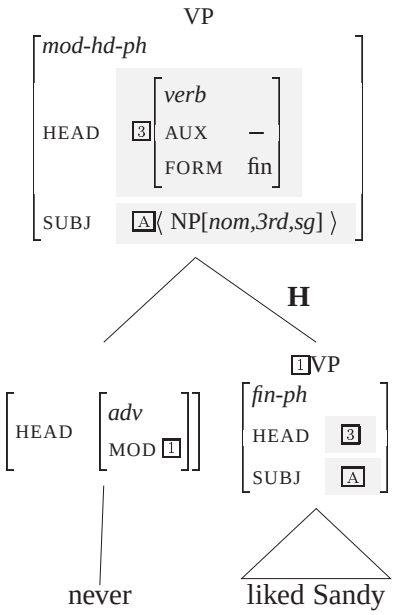
This construction type is both a *head-adjunct-phrase* and a *non-clause*.

The analysis of modifiers works as follows. Certain words bear nonempty specifications for the feature MOD (one of the features specified within HEAD). A modifier-head structure involves the combination of such a modifier with a head daughter whose features are compatible with (or 'unify' with) the modifier's MOD value. The adjective *never* is one such modifier. In virtue of its lexical representation in (26), it may appear as the non-head daughter in the *mod-hd-ph* sketched in (27):

(26) *never*

$\left[\textsc{head}\ \left[\begin{array}{ll} \textit{adv} & \\ \textsc{mod} & \text{VP} \end{array}\right]\right]$

(27)



This VP can be embedded within the *decl-hd-su-cl* construction to form sentences like *Our director never liked Sandy*.

The system of grammar we assume here thus generates grammatical structures (surface forms) directly. Each piece of a grammatical structure instantiates some type of construction—just as each node in a well-formed context-free tree structure is sanctioned by some grammar rule. The nodes in our structures, however, are labelled by feature structures embodying syntactic and semantic information of considerable subtlety. Moreover, though transformations and transformational derivations are entirely eliminated from the theory of grammar, the organization of phrasal types into an inheritance hierarchy allows generalizations that cut across families of constructions to be succinctly expressed.

3. *Not* AND *Ne-pas* AS CONSTITUENT MODIFIERS

When English *not* negates an embedded constituent, it behaves much like the negative adverb *never*. The similarity between *not* and *never* is particularly clear in nonfinite verbal constructions (participle, infinitival and bare verb phrases), as illustrated in (28) and (29) (cf. Baker 1989):

(28) a. Kim regrets [never [having read the book]].

b. We asked him [never [to try to read the book]].

c. Duty made them [never [miss the weekly meeting]].

(29) a. Kim regrets [not [having read the book]].

b. We asked him [not [to try to read the book]].

c. Duty made them [not [miss the weekly meeting]].

French *ne-pas* is no different in this regard. *Ne-pas* and certain other adverbs precede an infinitival VP:

(30) a. [Ne pas [repeindre sa maison]] est une négligence.
ne not paint one's house is a negligence
'Not to paint one's house is negligent.'

b. [Régulièrement [repeindre sa maison]] est une nécessité.
regularly to paint one's house is a necessity

To account for these properties, we regard *not* and *ne-pas* not as heads of their own functional projection, but rather as adverbs that modify nonfinite VPs. The lexical entries for *ne-pas* and *not* include the information shown in (31).[10]

(31) *not*/*ne-pas*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{adv} & \\ \text{MOD} & \text{VP}[\textit{nonfin}]:\boxed{2} \end{bmatrix} \\ \text{CONT} & \textbf{NOT}\ (\boxed{2}) \end{bmatrix}$$

The lexical entry in (31) specifies that *not* and *pas* modify a nonfinite VP and that this modified VP serves as the semantic argument of the negation. This simple lexical specification correctly describes the distributional

[10] Here we assume that both languages distinguish between *fin(ite)* and *nonfin(ite)* verb forms, but that certain differences exist regarding lower levels of organization. For example, *prp* (*present participle*) is a subtype of *fin* in French, whereas it is a subtype of *nonfin* in English.

For ease of exposition, we will not treat cases where the negation modifies something other than VP, e.g. adverbs (*not surprisingly*), NPs (*not many students*), or PPs (*not in a million years*). Our analysis can accommodate such cases by generalizing the MOD specification in the lexical entry for *not*.

similarities between English *not* and French *ne-pas*: neither element can separate an infinitival verb from its complements.[11] And both *ne-pas* and *not*, like other adverbs of this type, precede the VPs that they modify:

(32) a. [Ne pas $_{VP[inf]}$[parler français]] est un grand désavantage
ne not to speak French is a great disadvantage
en ce cas.
in this case

b.*Ne parler pas français est un grand désavantage en ce cas.

(33) a. [Not [speaking English]] is a disadvantage.

b.*[Speaking not English] is a disadvantage.

c.*Lee likes not Kim.

(34) a. Lee is believed [not $_{VP[inf]}$[to like Kim]].

b.*Lee is believed to $_{VP[inf]}$[like not Kim].

Independent principles guarantee that modifiers of this kind precede the elements they modify, thus ensuring the grammaticality of (32)a, (33)a and (34)a, where *ne pas* and *not* are used as VP[*nonfin*] modifiers. (32)b, (33)b, (33)c and (34)b are ungrammatical, since the modifier fails to appear in the required position—i.e. before all elements of the nonfinite VP.

The lexical properties of *not* thus ensure that it cannot modify a finite VP, as shown in (35), but it can modify any nonfinite VP, as is clear from the examples in (36):

(35) a.*Pat [not $_{VP[fin]}$[left]].

b.*Pat certainly [not $_{VP[fin]}$[talked to me]]

c.*Pat [not $_{VP[fin]}$[always agreed with me]].

(36) a. I saw Pat acting rude and [not $_{VP[prp]}$[saying hello]].

b. I asked him to [not $_{VP[bse]}$[leave the bar]].

c. Their having [not $_{VP[psp]}$[told the truth]] was upsetting.

[11] The exception to this generalization, where *pas* follows an auxiliary infinitive (*n'avoir pas d'argent*), is discussed in section 5.3 below.

And much the same is true for French, as the following contrast illustrates:

(37) a.*Robin [(ne) pas $_{VP[fin]}$ [aime Stacey]].
Robin [(ne) not likes Stacey]

b. Il veut [ne pas publier dans ce journal].
'He wants not to publish in this journal.'

Note that transformational (head-movement) analyses stipulate that negation is generated freely, even in preverbal position in finite clauses, and that a post-negation verb must move leftward because otherwise some 'need' would be unfulfilled. Proposals along these lines have involved the need to bind a tense variable, the need to overcome some morphological deficiency with respect to theta assignment, and so forth. On our account, no such semantic or morphosyntactic requirements are stipulated; instead, what is specified is a lexical selection property. There is no a priori reason, as far as we are aware, to prefer one kind of stipulation over the other. It should be noted, however, that our proposal makes reference only to selectional properties that are utilized elsewhere in the grammar.

In addition to these distributional properties, there is further evidence that *not* and *ne-pas* both modify (adjoin to) nonfinite VPs.

3.1. *Double Negation*

Given the general assumption that modification is recursive, our treatment predicts the possibility of double occurrences of negation in infinitival phrases. This prediction appears to be correct (see Abeillé and Godard [henceforth A&G] 1997 and the references cited there), though the acceptability of some of these examples is somewhat reduced, presumably for nonsyntactic reasons (e.g. the fact that an unnegated phrase conveys essentially the same content, but more concisely):

(38) a. Il est recommandé de [ne pas [ne pas [travailler]]], malgré le beau temps.
'It is advisable to not not work, in spite of the beautiful weather.'

b. Il est recommandé de [ne jamais [ne pas [travailler pendant plus de 15 jours]]].
'It's advisable to never not work more than 15 days.'

The same is true of analogous examples in English:

(39) (Everyone's turning the offer down, but I'm wavering...)
?I can't believe you would consider [not [not [taking advantage of the offer]]].

3.2. *VP Fronting*

In addition, negated VPs can be fronted in French:

(40) a. Le Général a osé ne pas obéir aux ordres.
the General has dared ne not to obey to the orders
'The general dared [not to obey the orders].'

b. [Ne pas [obéir aux ordres]], le Général a osé.

(41) a. Je peux ne pas partir à l'école immédiatement.
'I can [not go to school immediately].'

b. [Ne pas [partir à l'école immédiatement]], je le peux.

The preposed sentences in (40)b and (41)b illustrate that *ne-pas* and the VP it modifies do form a constituent that can undergo VP preposing.

The VP-fronting construction in English is highly stylized and hard to draw conclusions from. Nonetheless, it seems to provide at least a modicum of support for the VP-adjunction structure. Negated VPs can sometimes front, as in (42):

(42) a. They told him to not divulge the secret and [not divulge the secret] he must, if he ever wants to gain their trust.

b. (?)They suggested that she not go on the mission and [not go on the mission] she might.

3.3. *Clefting*

Clefting constructions provide further supporting evidence for VP-adjunction:

(43) a. (?)C'est [ne pas publier dans ce journal] qu'il veut.
'It is not to publish in this journal that he wants.'

b. Ce que Kelly voudrait, c'est ne pas partir immédiatement.
'What Kelly would like, it's [not go immediately].'

The example (43)a demonstrates that the negation *pas* and the VP it modifies form a syntactic unit and thus can appear as the focussed element of a *ce*-cleft. Pseudocleft (*ce que*) constructions display similar behavior, as in (43)b.

The English clefting data in (44) and (45) are harder to interpret, as many VPs resist clefting entirely, as shown in (46):

(44) a. It's [not being invited to the party] that they resent.

b. It's [not to be invited to the party] that they resent.

c. *It's [not go to the party] that they should.

d. *It's [not been to the party] that they must have.

(45) a. What they resented was [not being invited to the party].

b. What they resented was [not to be invited to the party].

c. *What they should is [not go to the party].

d. *What they must have is [not been to the party].

(46) a. *It's [go to the party] that they should.

b. *It's [been to the party] that they must have.

c. *What they should is [go to the party].

d. *What they must have is [been to the party].

The relevant conclusion about English clefting may be that it is restricted to those VPs that can also function as NPs (infinitivals and gerunds). In any case, despite confounding factors, there is evidence in both French and English to support the claim that the negation-nonfinite VP sequences considered here form a syntactic constituent, as we have claimed.

3.4. *Scope*

It is in general true that a VP modifier is outscoped by a higher verb and is never outscoped by a verb within the VP it modifies. Thus in examples like (47) and (48), the finite verb outscopes the adverb:

(47) a. Kim seems [never [to be alone]].

b. Kim seems [not [to like anchovies]].

c. Pat considered [always [doing the homework assignment]].

d. Pat considered [not [doing the homework assignment]].

(48) a. Kim veut ne pas repeindre la maison
Kim wants not to-paint the house
'Kim wants not to paint the house'

b. Il est recommandé de [ne jamais [travailler pendant plus de 15 jours]].
'It's advisable to never work more than 15 days.'

A VP formed via adjunction of *not* or *ne-pas* must have negation as its highest operator (modulo quantification), so that it will be outscoped by any higher predicate that selects it. And in examples like (49), the lower verb must be outscoped by the negative adverb:

(49) a. [Never [wanting [to speak French]]] is a problem. (≠ [Wanting [to [never [speak French]]]] is a problem.)

b. Kim seems [not [to enjoy [reading Proust]]]. (≠ Kim seems [to enjoy [not [reading Proust]]].)

The lexical entry for *not* and *ne-pas* must therefore include the information that the modified element (the content of the element that the negation adjoins to) be within the scope of the negation.

3.5. *Coordination*

The fact that that *not* must outscope what it adjoins to also plays a role in explaining the interaction of coordination and negation:

(50) a. Dana will [[not [walk]] and [talk]].

b. Dana will [not [[walk] and [talk]]].

c. Dana will [[walk] and [not [talk]]].

d. You can [[walk for miles] and [not [see anyone]]].

In each of the examples in (50), the negation modifies a base-form (*bse*) VP, satisfying the *nonfinite* specification given above. Because *not* is a VP modifier, it may modify either the coordinate VP or one of its conjuncts, thus allowing for the various scopings sketched in (50)a and (50)b. Notice,

by contrast, that if we accept the general assumption that only categorially identical constituents can be coordinated, then these same facts pose a dilemma for the NegP hypothesis: the examples in (50) would be coordinations of NegP and VP or VP and NegP.[12]

The nonfinite VP modification of *pas* exhibits similar behavior:

(51) a. Paul dit ne pas [[lire le journal] ou [regarder la télévision]].
'Paul pretends (to) not read the newspaper or watch televison.'

b. Il dit [[ne pas lire le journal] mais [regarder la télévision]].
'He pretends (to) not read the newspaper but watch television.'

As represented in the bracketed structure, the VP-modifying negation in (51)a scopes over both conjuncts (see the lexical entry in (31)), whereas *pas* is outscoped by the conjunction *mais* in (51)b. As noted by A&G-97, these different scope possibilities follow naturally from the assumption that (*ne*-)*pas* modifies nonfinite VPs.

4. FINITE NEGATION

The analysis of *not* and *ne-pas* as nonfinite VP modifiers provides a straightforward explanation for much of their distribution, as just illustrated. We may simply assume that French and English have essentially the same modifier-head construction and that *not* and *ne-pas* have near-identical lexical entries. With respect to negation in finite clauses, however, there are important differences between English and French.

4.1. *Two Possible Analyses of Finite Negation*

It is a general fact of French that *pas* must follow the finite verb, in which case the verb optionally bears negative morphology (*ne*-marking):

(52) a. Dominique (n')aime pas Alex.

b.*Dominique pas aime Alex.

[12] And even if these nonidentical constituents are somehow allowed, we still lack an explanation for the impossibility of other cross-categorial coordinations, e.g. CP and IP. One solution to this dilemma might be to posit an additional functional projection such as PolP (Polarity Phrase, Culicover 1991) or Σ Phrase (cf. Laka 1990). This would of course entail generating a phonetically unexpressed element as the head of such a phrase in every nonnegative sentence, a consequence that lacks independent justification.

In English, *not* must follow the finite verb, which must in addition be an auxiliary verb:

(53) a. Dominique does not like Alex.

b.*Dominique not does like Alex.

c.*Dominique likes not Alex.

One approach to the analysis of French finite negation, suggested by Di Sciullo and Williams (1987), involves the claim that *not* and *pas* form a morphological unit with a preceding finite verb. Although this account might be able to capture the contrast in (52), there is empirical evidence against it. In French, adverbs of doubt or affirmation such as *certainement* ('certainly'), *apparemment* ('apparently'), *peut-être* ('perhaps'), and the like, can intervene between the finite verb and the negation *pas*:

(54) a. Dominique n'aime apparemment pas Ronnie.
Dominique likes apparently not Ronnie

b. Dominique n'a intelligemment pas répondu à la question.
Dominique has intelligently not answered to the question

Moreover, for many speakers, pauses setting off the adverb make sentences like (54)b more natural.[13] And this casts further doubt on the claim that the finite verb forms a (morphological) unit with *pas*.

In English, we find similar problems with the possibility of adverbs coming between the finite verb and *not*:

(55) a. They will obviously not have time to change.

b. You are usually not thinking about the right problem.

c. They are obviously not good citizens.

Moreover, if *not* were to form a morphological unit with the preceding finite auxiliary, then we would incorrectly predict that *not* would appear in inverted structures along with the verb, as illustrated in (56):[14]

(56) a. He [would not] leave the city.

[13] As pointed out to us by Paul Hirschbühler (personal communication).

[14] These inversions, though historically attested and apparently still acceptable in certain British dialects (cf. Warner 2000), appear to be unacceptable in the American varieties we are familiar with.

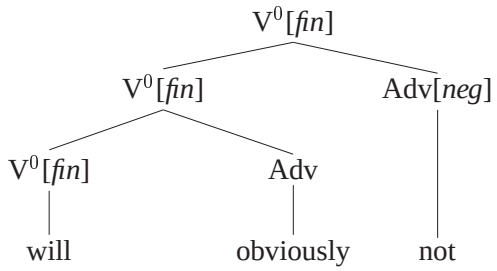
b.*[Would not] he leave the city?

c. He [need not] leave the city.

d.*[Need not] he leave the city?

An alternative account of *not* as a syntactic V^0-modifier runs into some of the same difficulties, e.g. the problem of why inversions like those in (56)b,d are not possible. Note further that under this modifier analysis, the structure implied for sentences like (55) would be the nested modification structure in (57):

(57)



But making standard assumptions about the relation between modification and scope (noted in the previous section), this structure gives the wrong semantics for (55)a, whose scoping is (58)a, not (58)b:[15]

(58) a. OBVIOUS (NOT (WILL (...)))

b. *NOT (OBVIOUS (WILL (...)))

In addition, the analysis in (57) provides no mechanism for ruling out multiple finite negation, which seems impossible in both French (see A&G 1997) and English:

(59) a. *Paul ne travaille pas pas quand il fait beau
Paul ne works not not when it makes beautiful
'Paul doesn't work when the weather's nice.'

b. *Kim is not not Sandy.

[15] Note the scope restrictions on what are normally analyzed as right-adjoined VP-modifiers:

(i) Kim [[[visits Sandy] infrequently] because of the storm].

Here the outermost modifier (BECAUSE) must outscope the lower modifier.

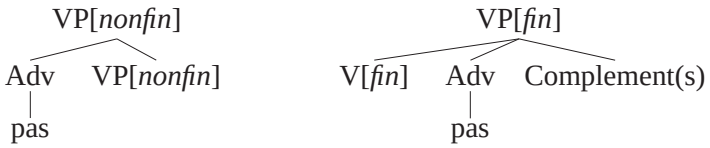
The syntactic V^0-modifier analysis thus appears deficient in more than one way. The generalizations about scope of negation seem to be that, first, negation generally outscopes the main verb (though see below) and, second, an adverb that precedes the negator in a finite clause also outscopes it.

There are two further properties of finite negation to consider before we present our analysis. The first concerns constituency; the second has to do with Verb Phrase Ellipsis (VPE).

4.2. *The Constituency of Finite Negation*

There is evidence that the modifier-head structure we have posited for *ne-pas* is not correct for finite negation in French. In particular, constituency tests, such as they are, tell us that in finite negation, *pas* does not form a constituent with the following phrase, i.e. that the two kinds of negation should be distinguished structurally as follows:

(60) a. Modifier *pas*: b. Finite Negation:



Several constituent tests, especially VP preposing (discussed also by Williams (1994)) and clefting in French, support this distinction in structure. Consider the examples given in (61) and (62).[16]

(61) a. Jean ne veut pas manger d'escargots.
'John does not want to eat snails.'

b. Manger des escargots, Jean ne le veut pas, (mais ...)

c.*Pas manger des escargots, Jean ne le veut.

(62) a. Je ne peux pas partir à l'école immédiatement.
'I cannot go to school immediately.'

b. Partir à l'école immédiatement, je ne le peux pas.

[16] Following Di Sciullo and Williams (1987), Williams (1994) argues, on the basis of examples similar to (61), that the finite verb and the negation *pas* following it forms a syntactic unit. See above for arguments against this view.

c.*Pas partir à l'école immédiatement, je ne le peux.

The contrast between (62)b and (62)c suggests that *pas* does not form a syntactic constituent with the VP complement of a finite verb: the two may not front together.[17] This contrasts sharply with the behavior of what must be analyzed as the negative modifier, as we saw earlier:

(63) a. Le Général a osé ne pas obéir aux ordres.
the General has dared ne not to obey to the orders
'The general dared not to obey the orders.'

b. Ne pas obéir aux ordres, le Général a osé.

c.*Obéir aux ordres, le Général a osé ne pas.

Clefting constructions provide further support for this structural distinction. First consider cleft constructions with finite negation:

(64) a. Il ne voudrait pas partir à l'école tout de suite.
'He wouldn't like to go to school immediately.'

b.*C'est pas partir à l'école tout de suite qu'il ne voudrait.

c. C'est partir à l'école tout de suite qu'il ne voudrait pas.

Examples in (64) again show that *pas* does not form a constituent with the finite verb's VP complement; hence the two cannot be clefted together. Again, recall the contrasting behavior of the modifier *ne-pas* discussed above:

(65) a. Il veut [ne pas publier dans ce journal].
'He wants not to publish in this journal.'

b.*C'est publier dans ce journal qu'il veut ne pas.
*It is to publish in this journal that he wants not.'

c. (?)C'est [ne pas publier dans ce journal] qu'il veut.
'It is not to publish in this journal that he wants.'

[17] One might argue that these facts should be explained on the independent grounds that a phrase with a constituent dependent on *ne* can never be dislocated. But this argument is questionable when we consider that *ne* is usually absent in colloquial French. With the deletion of *ne*, (61)c and (62)c are acceptable, but in this case *pas* clearly functions as constituent negation.

Finally, pseudocleft (*ce que*) constructions display a similar contrast between finite negation and modifier *ne-pas*:

(66) a. Ce que Terry ne voudrait pas, c'est partir immédiatement.
'What Terry wouldn't like, it is to-go immediately.'

b.*Ce que Terry ne voudrait, c'est pas partir immédiatement.

(67) a.*Ce que Kelly voudrait ne pas, c'est partir immédiatement.
*What Kelly would like not, it is to-go immediately.'

b. Ce que Kelly voudrait, c'est ne pas partir immédiatement.
'What Kelly would like, it is [not to-go immediately].'

Comparable English data unfortunately provide no clear support for the structural distinction, because, as noted earlier, both VP-Fronting and VP-clefting are highly restricted. However, we may observe that negation always has narrow scope in fronted examples. In the examples we considered earlier in (42), negation always had narrow scope with respect to the sentence-final auxiliary. But when negation outscopes the finite auxiliary, as in (68)a, then VP-Fronting is never possible; in fact, the negation must remain unfronted:

(68) They said they wanted to join us,

a. *but not join us they can.

b. but join us they cannot.

The available evidence thus provides a modicum of support for the same structural distinction in English.

4.3. *Negation and VP Ellipsis (VPE)*

An important constraint on VPE (first studied in detail by Baker (1971)) is that it cannot take place immediately after an adverb:

(69) a.*Kim has never studied French, but Lee has always__ .

b.*Kim has written a novel, but Lee has never__ .

And, as noted by Kim and Sag (1995) and Warner (2000), constituent negation obeys this same constraint, as expected:

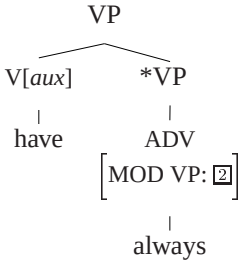
(70) a. *Kim said we should have heard the news, but Lee said that we should have not __ . (cf. ... that we should not have __)

b. *They haven't filed their income tax, and to have not __ means they're in big trouble. (cf. ... and not to have __ means ....)

c. Kim wants me to go; *Sandy wants me to not __ . (cf. Sandy wants me not to __ .)

One elegant way of accounting for these facts is to treat VPE (following Sag and Fodor (1994), Kim (1995, 2000), and Sag (ms.,to appear)) as simple complement omission, i.e. as involving no 'empty categories'. If ellipsis involves no phonetically unrealized constituents, then the ungrammaticality of these examples is a simple consequence of there being no VP constituent in (70)a,b for an adverb to adjoin to. Without an element to serve as the syntactic head, there is no way to construct a modifier-head structure like the one indicated in (71):[18]

(71)



These predictions of the traceless ellipsis theory are strikingly accurate.[19]

Although adverbs cannot directly precede an ellided VP, as we have just seen, in the case of finite negation, *not* can precede an ellipsis site (Sag 1976, Ernst 1992):

[18] Sag and Fodor (1994) and Sag (2000,ms.) reexamine the putative independent empirical motivations for phonetically empty categories, including auxiliary contraction, *wanna* contraction, weak crossover and constraints on the positioning of floated quantifiers.

[19] There is a key contrast between these examples and those where a post-verbal adverbial can be stranded:

(i) Kim won't finish her book on Monday, but she will __ on Tuesday.

On our approach, following McConnell-Ginet 1982 and the extension in Bouma et al. 2001, the adverbial *on Tuesday* is selected by the verb essentially like a complement is selected. These examples are thus analogous to pseudogapping of the sort found in (ii):

(i) It doesn't bother us, but it does __ them.

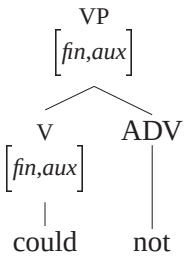
Adverbs are discussed in further detail in section 6.

(72) a. Although you want to have another cookie, you may not__ .

b. Please do that! I will not __ .

The stranding of *not* in VPE appears to be possible only when the preceding verb is finite and only when *not* does not express constituent negation. If *not* were treated as a modifier in (72), then the observed contrast would be quite surprising, as in both cases there would be no VP for *not* to modify. However, in the flat structure we propose for sentential negation, *not* is a sister of the finite auxiliary and may simply cooccur with ellipsis of the auxiliary's complement, as illustrated in (73):[20]

(73)



Thus all auxiliary verbs in English participate in VP Ellipsis, which should be treated as simple omission of the auxiliary verb's complement. Though constituent negation cannot license ellipsis of the VP, an auxiliary whose complement has been elided can project a VP that is negated, as shown in (74):

(74) a. Lee may have been studying too much recently, but I think that Kim [may [not [have __]]].

b. Lee may have been studying too much recently, but I think that Kim may have [not [been __]].

These are well-formed because there is a VP that the *not* modifies (even in the absence of empty categories).[21]

[20] It is interesting that ellipsis-stranded constituent negation (e.g. *I should have not* __) seems to be possible in certain varieties. This may indicate that *should have* and the like are being reanalyzed as a single (finite) verb form.

[21] Following Bresnan (1976), Sag (1976), and Gazdar et al. (1982), we assume that it is an auxiliary element that 'licenses' VP ellipsis, not the head of ΣP, as suggested by López (1994). Under his assumptions, cases like (74) present a dilemma. If it is assumed that the head of ΣP must properly govern the elided (phonetically empty) VP, then the existence of phonetically overt heads such as *have* and *been* would block the negation from head-

4.4. *Scope Idiosyncrasy*

Finite negation is lexically idiosyncratic in a number of ways. Indeed, much of the literature on English negation, inversion, and ellipsis has focussed on the fact that the only elements that allow finite negation are the modals, the verbs *have*, *be*, and *do*, and a handful of other 'semiauxiliaries', e.g. *dare* and *need*. But particular to sentential negation is the fact, documented in detail by Warner (2000) (see also Horn 1972, Gazdar et al. 1982, Ernst 1992), that modals exhibit considerable variation with respect to scope of negation.

In the more common pattern—that found, for example, with *could*, *will*, deontic *may*, *can*, and *dare*—negation takes wide scope:

(75) a. Paul could not have worked as hard, could he?
No, he could not __ .

b. They will not attend the reception, will they?

c. Kim may not drink the wine on the table. 'Kim is not permitted to drink.'

Note the polarity of the tags in Warner's carefully constructed examples. When the polarity of the tags is reversed, we see that these same modals also allow *not* to function as constituent negation, as illustrated in (76):

(76) a. Paul could [not accept the offer], couldn't he?

b. They will [not accept the offer], won't they?

c. Kim may [not drink the wine] if she doesn't like it. 'Kim is permitted not to drink.'

This is of course just what one would expect, if there are two kinds of negative construction, as we claim. In addition, one would expect the two constructions to cooccur, as they do in the following examples, discussed by Akmajian et al. (1979), Gazdar et al. (1982), and Kim (1995), inter alia:

(77) a. They cannot (just) [not take advantage of that offer], can they?.

governing the VP trace. The only apparent solution, to allow negation to govern the empty category across other heads, would violate the head-government condition, presumably stated in terms of Relativized Minimality (Rizzi 1990). It has also been suggested, by Zagona (1988), that Infl (Tense), rather than the functional head *not*, licenses the trace of the elided VP. But this again provides no explanation for the contrasts between finite and constituent negation regarding VPE, nor for the grammaticality of cases like (74).

b. You children may not (simply) [not do your homework] (and still pass the course).

The idiosyncratic pattern of finite modal-negation scope, where the modal outscopes negation, is illustrated by epistemic *may*, and deontic *must*, *should*, *ought*, *better*, and *shall*:

(78) a. Kim may not drink the wine if she doesn't feel like it. 'Kim possibly won't drink the wine.'

b. Paul must not accept the offer.

c. They should not have been drinking.

One might think that these examples are instances of constituent negation (which would explain the narrow scope of negation), but they are not. Note the following instances of VPE:

(79) a. Sandy may not accept the offer and Kim may not__ either. 'Kim possibly won't accept.'

b. They want Paul to accept the offer, but he must not__ . 'He is obligated not to accept the offer.'

c. Should they drink? They should not__ . 'They are obligated not to drink.'

As we have seen, VPE cannot strand the *not* of constituent negation. Hence these examples must be instances of finite negation, even though the modal outscopes the negation. Moreover, there is a certain lexical arbitrariness—Warner (2000) shows at length that there is no straightforward way to completely predict these scopal patterns on semantic grounds.

There is parallel idiosyncrasy in French, though there is a smaller class of verbs with meanings like the English modals. In finite negation constructions, *pas* usually outscopes the verb, as in (80):

(80) Kim ne peut pas faire ça.
Kim ne-can not to-do that
'Kim cannot do that.' (is not able to do that)

But in certain cases, e.g. conditional deontic uses of *devoir*, we find exceptions like the English examples just discussed, e.g. the following:

(81) Kim ne devrait pas faire ça.
Kim ne-should not to-do that
'Kim should not do that.' (is obliged not to do that)

In the case of the verb *falloir* and indicative deontic uses of *devoir*, many speakers find the relevant examples to be ambiguous:

(82) a. Kim ne doit pas faire ça.
Kim ne-must not to-do that
'Kim must not do that.' (is obligated not to do that) or
'Kim is not obligated not to do that'

b. Il ne faut pas crier.
It ne-is-necessary not to-shout
'It is forbidden (necessary not) to shout.' or
'It is not necessary to shout.'

These peculiarities are thus similar to the English facts, but not identical. We conclude that the scope idiosyncrasy exhibited by French and English must be lexicalized differently in the grammar of each language.[22] These scope irregularities, we claim, provide evidence for treating both *pas* and *not* in finite clauses as a complement selected by the finite verb,[23] a position corroborated by independent evidence, as we will now show.

5. A Lexicalist Approach to Negation

5.1. *Finite Negation*

More than one analysis is available that would accommodate the 'flat' structure we have just motivated for finite negation. Kasper (1994), for example, proposes a head-complement-adjunct phrase type for analyzing

[22] Note further that Modern German exhibits a slightly different pattern. In the following sentence, due to Stefan Kaufmann (p.c.), negation must outscope *müssen*, the analogue of English *must*:

(i)
Kim muß das nicht tun.
Kim must that not to-do.
'Kim is not obligated to do that.'

[23] The argument from scope idiosyncrasy parallels one of Zwicky and Pullum's (1983) arguments for the lexical treatment of negative contracted forms in English—see below.

the word order freedom of complements and adjuncts in embedded German clauses. Adapting his proposal to the problem at hand, *not* or *pas* would be treated as a modifier, but they would be allowed to appear as sister of the head and its complements. An alternative account, following a long tradition in the HPSG literature,[24] involves treating finite negation not in terms of modification, but rather via lexical selection. That is, finite (auxiliary) verbs would be allowed to select an ADV as a complement (in addition to their normal complement(s)).

A&G (1997) provide three arguments in favor of the latter proposal for French finite negation. First, as noted earlier (see (59) above), only one *pas* per finite verb is possible. This is behavior characteristic of complements, not modifiers. A&G's second argument is based on the well known differences in the realization of pronominal affixes in positive and negative imperatives:

(83) a. Lis-le!/*Le lis! 'Read it!'

b. Ne le lis pas!/*Ne lis-le pas! 'Don't read it!'

Elements like *le* in such examples have been shown to be inflectional affixes, rather than clitics.[25] Hence, given the principle of *Strong Lexicalism* which A&G take as axiomatic in the theory of grammar (correctly, in our view), the two verb forms *lis-le* and *(ne)-le-lis* are distinct words of French. If *pas* were a modifier, it would have to be restricted so as to disallow modification of *lis-le*. But this restriction, which is quite difficult even to formulate, is easily eliminated if *(ne)-le-lis* and the other negative imperative verb forms select for an obligatory negative adverbial as their complement.

Finally, A&G note that negative finite verbs differ from their positive counterparts with regard to the mood of their complement clause:

(84) a. Je crois qu'il est/*soit venu. 'I think that he has come.'

b. Je ne crois pas qu'il est/soit venu. 'I don't think that he has come.'

Again, such contrasts are straightforwardly accounted for if the positive and negative verb forms are distinct lexical items.

A&G thus propose a lexical rule that gives rise to lexical entries like the following:

[24] See Warner 1993, 2000; Kim and Sag 1995; A&G 1997; and Sag and Wasow 1999.
[25] See Miller 1991, Auger 1994, and Miller and Sag 1997.

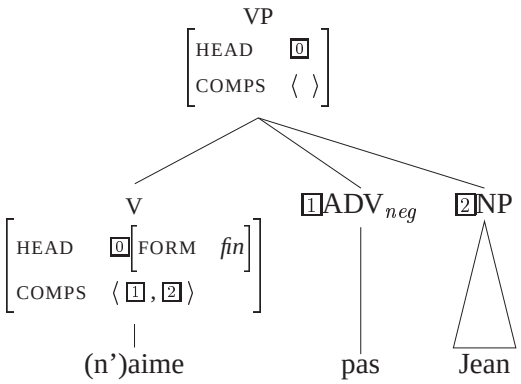
(85) *(n')aime*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{FORM} \quad \textit{fin} \end{bmatrix} \\ \text{COMPS} & \langle\, \text{ADV}_{neg}\,,\, \text{VP}[\textit{inf}] \,\rangle \\ \text{SUBJ} & \langle\, \text{NP}[\textit{nom}] \,\rangle \end{bmatrix}$$

Note that the category ADV_{neg} includes not just *pas*, but also *plus* '(any)more', *point* 'at all', and *guère* 'scarcely', whose behavior is identical to that of *pas* in relevant respects. The optional *ne*-morphology on the verb can be accommodated in much the same way as pronominal affixes (often incorrectly regarded as 'clitics') are treated in recent work. (See, for example, Miller and Sag 1997.)

Once the appropriate finite lexical forms are included in the lexicon (by appeal to the appropriate principles of lexical construction), then the finite negated structure can be analyzed as a head-complement construction, as illustrated in (86):

(86)



The ADV_{neg} is ordered after the lexical head, just as other complements are.

Sag (to appear) reaches a similar conclusion about English finite negation, which, he argues, must be understood in the broader context of what he calls 'polarized' verbal forms. That is, English has certain finite auxiliary verb forms that express either positive or negative polarity. Most familiar among these are the *not*-contracted forms which have lexical entries like (87):[26]

[26] This analysis follows in the main Zwicky and Pullum (1983) in assuming that *not*-contracted finite auxiliaries are formed lexically, not via cliticization. Kim and Sag (1995) propose a lexical rule to achieve this effect; Warner's (2000) analysis uses lexical types and no lexical rules. Under either analysis, partial formal regularities can be accommodated,

(87) *won't*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \textit{fin} \\ \text{POL} & + \end{bmatrix} \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{VP} & \\ \text{FORM} & \textit{bse} \\ \text{CONT} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{SUBJ} & \langle\, \text{NP}[\textit{nom}] \,\rangle \end{bmatrix}$$

Here and throughout, the feature POL(ARIZED) distinguishes polarized auxiliaries from other verbal forms.

A second type of polarized auxiliary selects for a polar adverb, much like the lexical entry for French *(n)aime* just illustrated. For example, the auxiliary *can* will have a lexical entry like (88):[27]

(88) *can*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & + \\ \text{POL} & + \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{COMPS} & \left\langle \text{ADV}_{pol}\,, \begin{bmatrix} \text{VP} & \\ \text{FORM} & \textit{bse} \end{bmatrix} \right\rangle \\ \text{SUBJ} & \langle\, \text{NP}[\textit{nom}] \,\rangle \end{bmatrix}$$

exceptional forms (e.g. *won't*, *don't*) can be listed, anomalies like **amn't* and **mayn't* can be treated as paradigmatic gaps, and idiosyncratic scope patterns can be accommodated. In addition, dialectal variants (e.g. *%usen't*, *%ain't*) are treated as simple lexical differences.

[27] The idea of allowing verbs to select for elements that otherwise serve as modifiers of VPs is closely related to the categorial grammar notion of type raising. In the standard presentation of this idea, an element X that ordinarily serves as a semantic argument of some modifier Y is assigned a 'higher order' meaning $F(X)$ that can take Y as its semantic argument. Though the function-argument relations are reversed in type raising, the meaning expressed by applying $F(X)$ to Y is exactly the same as the result of applying Y to X. For general discussion of type raising, see Partee and Rooth 1983, Dowty 1988, or Wood 1993. For concrete proposals within HPSG, see Manning et al. 2000 (Japanese causatives), Bouma and Van Noord 1994 (Dutch complex predicates); Warner 1993 and Kim 1995, 2000 (English negation), Miller 1991 and A&G 1997 (French negation), and Przepiórkowski 1999a (diverse languages). Note that in categorial grammar, type raising is usually presented as a general combinatoric principle. The lexicalist type-raising analysis, by contrast, changes the mode of combination only in limited instances, those controlled by application of the lexical rule. For some discussion of this issue, see Carpenter 1992.

The positive adverbs *too* and *so* are also of category ADV_{pol}. Sag's (to appear) analysis[28] thus provides a unified account of the uniform distribution of positive and negative polar adverbs, including their inability to iterate or cooccur:[29]

(89) a. Kim will not believe that.

b. Kim will so/too believe that.

c. *Kim will not not believe that.

d. *Kim will so so believe that.

e. *Kim will not so/too believe that.

f. *Kim will so too believe that.

A further property of ADV_{pol}-selecting auxiliaries is that they cannot be focused (See Kim 2000.):

(90) a. *They WILL not be there. (Will they?)

b. *Leslie CAN not do that. (Can she?)

c. *Leslie CAN so/too do that.

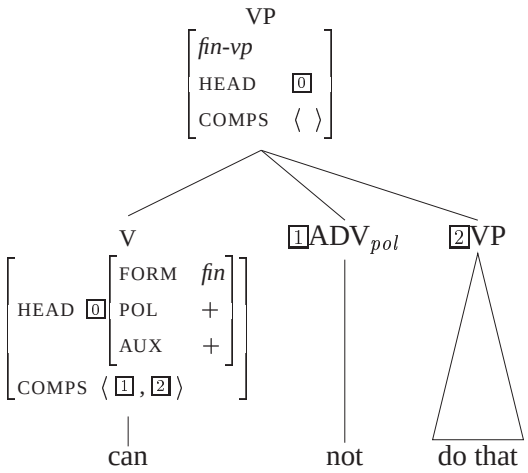
This 'antifocus' property is presumably also lexically registered, either as a constraint on the lexical type that (88) is assigned to, or else as a condition on the output of the lexical rule that creates such forms.

Polarized forms like (88) thus project conventional head-complement structures like (91) by the universal and language-particular principles of our theory:

[28] See also Kim's (2000) analysis in terms of 'ADV_I'.

[29] This approach should be contrasted with that of Kayne (2000), who treats emphatic *so*, *too* and *not* uniformly as functional heads.

(91)



Again, the position of the adverbial is determined by general principles that order complements after a lexical head.

Note that we treat the ADV_{pol}-selecting verbal forms as positively specified for the feature POL. Since these are derived from basic verbal lexemes that are [POL $-$], an ADV_{pol}-selecting form cannot give rise to a form selecting more than one ADV_{pol}. This correctly predicts that English allows only one sentential ADV_{pol} per clause. The second *not* in examples like (92) is analyzed as constituent negation.[30]

(92) Kleptomaniacs cannot NOT steal.

There is semantic motivation for this treatment: if both occurrences of *not* were instances of sentential negation, the sentence would mean 'kleptomaniacs can steal'. Though (92) clearly has this as an entailment, it is actually used to assert something stronger, namely, that kleptomaniacs MUST steal. This is the interpretation predicted by our approach, as the first *not* negates the whole sentence whereas the second one negates only the following VP: *steal*.

Finally, incorporating Jackendoff's (1972) observation that focussed auxiliaries idiosyncratically make reference to the 'affirmation-negation' distinction, Sag proposes an account of the fact that pairs like (93)a,b share a common reading, one where the disputed proposition that Kim will leave is being reaffirmed:

[30] Since the polar adverbs *so* and *too* (unlike *not*) do not function as VP modifying adverbs, our analysis predicts the nonexistence of sentences like (i):

(i) *Kleptomaniacs cannot so/too steal.

(93) a. Kim will so/too believe that.

b. Kim WILL believe that.

Sag's analysis posits distinct lexical entries for focussed finite auxiliaries (essentially the positive analogs of *not*-contracted forms). These entries, again analyzable in terms of lexical types or lexical rules, correlate the auxiliary focus with the reaffirmation of an appropriate contextually-salient proposition. This analysis of focussed [POL +] auxiliaries plays an important role in Sag's treatment of unfocussed *do*, sketched in Section 7 below.

So far, we have examined the following: (1) evidence for a 'flat' structure where *not* or *pas* is the sister of the finite verb it cooccurs with; (2) the possibility of stranding *not* only in finite instances of VP ellipsis; (3) the lexically idiosyncratic nature of the scope of finite negation, (4) the impossibility of iterating ADV_{pol} in finite constructions; (5) the correlation of negative adverbs in French with idiosyncratic positioning of 'clitic' pronouns (known to be inflectional affixes); (6) selectional differences correlating with the presence of finite negation in French; (7) the uniform ordering of finite negation in complement position; and (8) a system of 'polarized' finite auxiliaries in English. All of these phenomena, we have suggested, are naturally accounted for if finite verbs in both English and French are allowed to select these adverbs as complements.[31]

We have also seen two differences between French and English: (1) all finite verbs in French allow ADV_{pol} as a complement; in English this phenomenon is restricted to indicative auxiliary verbs; and (2) In French, the adverbs in the class ADV_{pol} are all negative (e.g. *jamais*, *plus*),[32] whereas in English, *not* and the positive adverbs *so*, and *too* all belong to this class. A third difference between English and French, which we have not yet motivated, concerns the nature of the constructions in which ADV_{pol}-selecting verbs are realized. We return to this issue in subsequent sections.

[31] Note further that adverbial complements are nothing out of the ordinary in many languages, including English. All of the following examples arguably involve adverbials that are selected as complements:

(i) This book reads *(easily).

(ii) I worded the letter *(carefully).

(iii) The management has treated Sandy *(contemptuously).

[32] Hence, we will continue to use the abbreviation ADV_{neg} in discussing French adverbials.

5.2. *Have/Be and Avoir/Être*

The position of *not* and *pas* is highly flexible in infinitival constructions headed by the auxiliaries *have/be* and *avoir/être*. This section extends the proposed analysis to account for the observed patterns.

In English infinitives, the position of *not* is variable:

(94) a. It was foolish for him not to have been watching more carefully.

b. It was foolish for him to not have been watching more carefully.

c. It was foolish for him to have not been watching more carefully.

d. It was foolish for him to have been not watching more carefully.

Our analysis of *not* as a modifier of VP[*nonfin*] is sufficient to account for all the structures in (95).[33]

(95) a. ... [not [$_{VP[inf]}$ to have been watching more carefully]].

b. ... to [not [$_{VP[bse]}$ have been watching more carefully]].

c. ... to [have [not [$_{VP[psp]}$ been watching more carefully]]].

d. ... to [have [been [not [$_{VP[prp]}$ watching more carefully]]]].

That is, each modified VP in (95) is a nonfinite VP of some sort, and hence each negated VP in (95) is already predicted to be a possible head-modifier structure in the analysis we have sketched.[34]

[33] We assume, following Pullum (1982), that the infinitival word *to* is a defective nonfinite ([FORM *inf*]) auxiliary verb and hence projects a nonfinite VP structure.

[34] Given the fixed position of functional projections and movement in a head-movement analysis, it is not easy to capture this ordering flexibility. In an effort to deal with this problem, Pollock (1989: 375) suggests that English employs Affix Movement (Chomsky's (1981) "rule R") to adjoin the infinitival marker *to* to the lower VP (in fact onto the initial V of the VP). (Chomsky (1981: 255–257) applies rule R at S-structure in pro-drop languages like Italian and Spanish, hence allowing PRO subjects to be ungoverned.) The ordering of *not to VP* in (95)a is derived from the base ordering of *to not VP* in (95)b via application of rule R to the marker *to*.

There are potential difficulties here posed by the ECP as well as the general problem of motivating such a movement. But even leaving these concerns aside, there remains the problem of accounting for the position of *not* in examples like (94)c and (94)d, for neither rule R nor head movement allows these orderings. Pollock (1989: 375) suggests in a footnote that the marker *to* in (94)a should be generated under Tense and the one in (94)b under Agr. But this account also fails to capture the distribution illustrated in (94)c and (94)d. Pollock (1997a) suggests a different solution, with different unresolved consequences.

The possible position of auxiliaries in French infinitive clauses is flexible, as (96)a–b and (97)a–b show, a fact that led Pollock (1989) to the propose the 'Split Infl' Hypothesis (Pollock 1989).

(96) a. Ne pas avoir eu d'enfance heureuse est une condition ...
'To have not had a happy childhood is a condition ...'

b. N'avoir pas eu d'enfance heureuse est une condition ...

(97) a. Ne pas avoir d'idée sur le sujet...
'Not to have any idea about the matter...'

b. N'avoir pas d'idée sur le sujet...

But our lexicalist account readily accommodates such variation.

We begin with the observation that in French the relative position of infinitival *avoir*/*être* and the negative adverbs *pas*/*jamais*, etc. has evolved over time from *Ne* V[*inf*] *pas* to *Ne pas* V[*inf*] (see Hirschbühler and Labelle 1994). In Modern French, the acceptability of the *Ne V[inf] pas* ordering (e.g. (96)b and (97)b) is restricted to certain conservative (perhaps archaic) varieties. Thus we might also describe these varieties in terms of a lexical class of auxiliary verbs whose basic valence pattern includes an optionial ADV$_{neg}$, as shown in (98):

(98) *être/avoir,...*

$$\begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \langle\ \text{NP}\ \rangle \\ \text{COMPS} & \langle\ (\text{ADV}_{neg},)\ \text{VP}\ \rangle \end{bmatrix}$$

This proposal, similar to the one made by A&G (1996), correctly allows structures like (99)b:

(99) a. $_{VP}$[Ne pas $_{VP[inf]}$[avoir d'idée sur le sujet]] ....

b. $_{VP[inf]}$[$_{V[inf]}$[N'avoir] $_{Adv}$[pas] $_{NP}$[d'idée sur le sujet]] ...

The auxiliary/nonauxiliary distinction has eroded in most varieties of Modern French, which do not allow such examples because no lexical class allows the basic valence pattern shown in (98).

This explanation also applies to the distribution of *pas* in modal constructions. Hirschbühler and Labelle (1994) note that, as in the case of infinitive auxiliaries, the ordering Modal-V[*inf*] + *pas*, as in (100)b, has gradually given way to *pas* + Modal-V[*inf*], as in (100)a:

(100) a. Je pensais ne pas devoir partir à l'école aujourd'hui.
I thought ne not 'have to' go to school today
'I thought I must not go to school today.'

b. Je pensais ne devoir pas partir à l'école aujourd'hui.

The present analysis allows us to treat modal negation like (100)b simply by assuming that *devoir*, *vouloir* and the like are auxiliary verbs in the varieties that allow such sentences.[35]

Since our analysis in no way relies on role assignment (see below), it avoids a further unintuitive consequence of Pollock's (1989) head-movement analysis. As Hirschbühler and Labelle (1994) point out, Pollock's analysis entails that even the main verb usage of verbs like *vouloir* ('want') failed to theta-assign in older varieties of French. We treat the variation and diachrony very simply here—in terms of erosion of the auxiliary/nonauxiliary distinction. Changes in certain syntactic phenomena such as clitic climbing and 'Aux-to-Comp movement' imply that modals have become recategorized as lexical (rather than auxiliary) verbs.[36] When modals are treated as auxiliaries, they may take an ADV_{neg} as their complement, predicting that *pas* can follow the infinitival modal, as in (100)b.

5.3. *Negation with Semi-Auxiliary Verbs*

The English negative element *not* can also follow the so-called semi-auxiliary verbs *dare* and *need*. The contrast between *need* and *dare* given in (101) and (102) shows that *dare* assigns a theta role (AGENT, let us assume) to its subject:

[35] Pollock, by contrast, suggests (1989: 390) that these verbal elements (which have full verbal paradigms) must be treated essentially as modifiers.

[36] Such phenomena, though attested in earlier stages of French as in (i), are not available in Modern French as shown in (ii) (data from Roberts (1994: 233)):

(i) a. Nous lui devons rendre gloire
We to-him must give glory

b. Ayant ce bon homme fait tout son possible...
Having this good man done everything possible...

(ii) a.*Je le peux faire
I it can do

b.*Ayant Jean fait cela,...
Having John done that...

(101) a. It need not be raining.

b. It need not bother you that we will be absent.

c. There need not be any independent motivation.

(102) a.*It dare not be raining.

b.*It dare not bother you that we will be absent.

c.*There dare not be any independent motivation.

The possibility of its theta-role assignment is further attested by examples like (103):

(103) a. The child dare not contact her.

b. They dare not move.

In terms of theta-roles, semi-auxiliary verbs are thus different from (most) modals or *have* and *be*, implying that the negative placement in this construction cannot be attributed to theta theory, as suggested by Pollock (1989).[37]

The solution made available within our analysis turns on the feature AUX, which semi-auxiliary verbs such as *dare* and *need* may be positively specified for. This predicts that they allow *not* as a complement.[38] Thus *not* in (102) and (103) can be either a nonfinite VP modifier or a complement. As a complement of *dare*, *not* is predicted to allow VP ellipsis. This prediction is correct:

[37] If the possibility of a verb's movement depended on whether or not it can assign a theta role, then verbs like *dare* would require an explanation. One approach might be to generate *dare* directly under Tense, like other non-theta-assigning modals, but this raises new problems, e.g. how theta roles can be assigned to arguments embedded within VP. Though technical solutions to this problem may exist, examples like (i) cast further doubt on the attempt to explain alternations of verb position in terms of theta theory:

(i) They *dared not* carry out their threat. (from Quirk et al. 1985: 138)

The problem here is that *dare* occurs in inflected form, yet assigns a theta role to the phrase *carry out their threat.* The inflection on *dare* would have to be sufficiently 'strong' to transmit theta role assignment, contradicting Pollock's claim that this can never happen in English. For further arguments that morphological strength in Pollock's sense is historically at odds with observed morphological richness, see Baker 1991.

[38] In many varieties, the [AUX +] *dare* (taking an infinitival VP complement) is in competition with the [AUX −] *dare*.

(104) a. Lee wants me to contact them, but I dare not__ .

b. It was suggested that we contact them, but we dared not__ .

6. ADVERBIAL POSITIONS

6.1. *English Adverbial Positions*

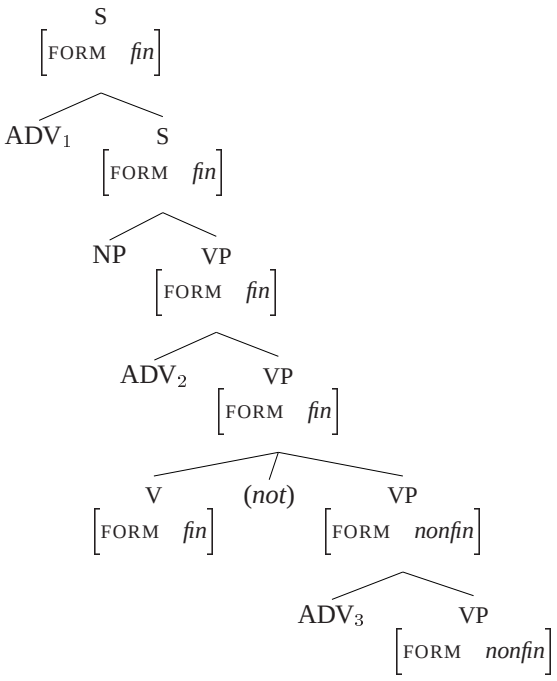
The modifier-head construction formulated in (25), repeated here as (105), allows many kinds of modifier-head phrases, depending on what constraints are included in the lexical entries of English modifiers:

(105) *mod-hd-ph*:

$$[\,] \rightarrow \left[\text{HEAD} \left[\text{MOD} \boxed{1}\right]\right], \mathbf{H}\boxed{1}$$

In finite clauses, then, our grammar already allows all the following possibilities:

(106)



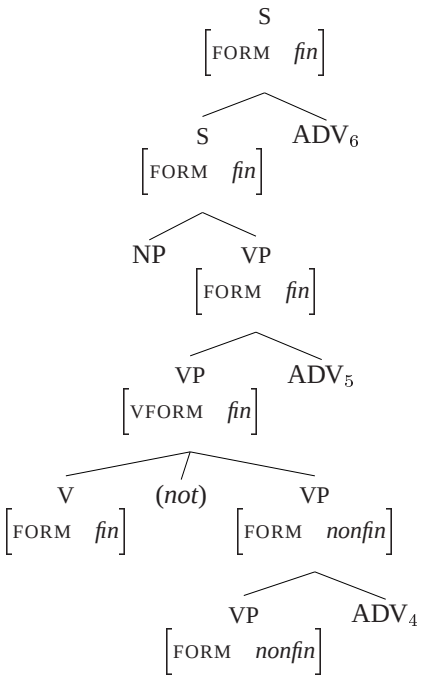
All of these positions are attested (though it is sometimes unclear whether a particular adverbial should be treated as in a given position or as a parenthetical).[39]

In the absence of linear precedence constraints ordering modifiers and head daughters, the account presented so far might also allow adverbs to follow the phrases they modify, as shown in (107):

[39] Cinque (1999) presents a competing conception of clause structure. His head-movement analysis assumes crucially that adverbs are base-generated in different functional positions (according to their meaning) and can be moved to other non-*wh*-operator positions. These assumptions lead Cinque to postulate more than two dozen different functional projections (see Cinque 1999: 106). On his theory, the hierarchies of adverbial specifiers and clausal functional heads also match in a one-to-one fashion. The surface order of adverbs thus depends on the the order of functional heads in UG, features linking a specific class of adverbs to each head, and the existence of movement operations.

A system like Cinque's could solve some of the problems that we discuss for Pollock's (1989) analysis. However, as Cinque (1999: 127) himself admits, such a system raises numerous questions. For example: should the entire array of functional projections be present in every sentence of every language, even when there is no overt morphological realization? Is the order of functional projections really invariant cross-linguistically, and if not, how much variation should UG allow? In addition to these concerns, there is the further worry that Cinque's system must appeal to a large number of abstract, phantom formatives, thus making the task of language learning more complicated than it would be under a system like ours. The proposals we make here lead to a grammar that has at least comparable empirical coverage, but which is constraint-based, surface-oriented, and hence more likely to be learnable on the basis of experience—a highly desirable result. For a discussion of further problems facing Cinque's analysis, see Ernst 1998.

(107)



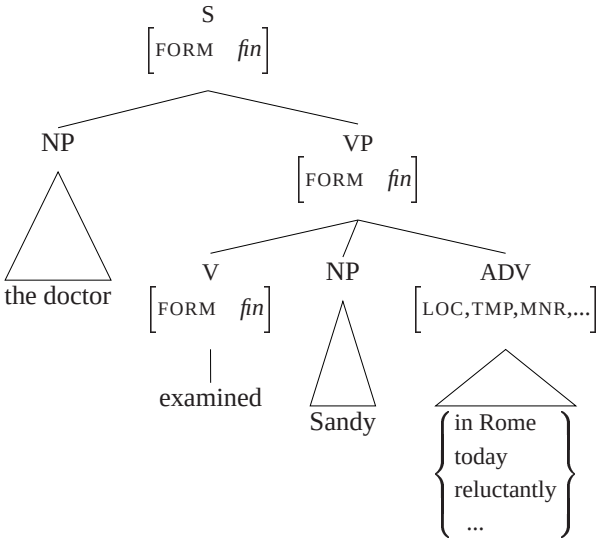
There are clearly modifiers that appear in the ADV_6 position – typically preceded by a pause. But since these have very little interaction with the issues of the auxiliary system, we will pay little attention to them here. More relevant are the ADV_4 and ADV_5 positions. In a number of recent studies,[40] it has been argued that the reanalysis of adverbials as optional complements suggested by McConnell-Ginet (1982) for manner adverbials should be extended to certain other kinds of adverbials, including temporals and locatives. The evidence for this 'adverbs as complements' analysis is diverse and intriguing, ranging from the case-marking patterns in languages such as Korean and Finnish (Wechsler and Lee 1996, Przepiórkowski 1999a) to the morphological marking of long-distance dependencies in Palauan, Chamorro, and Irish. Bouma et al. (2001) argue that a unified analysis of English extraction constructions (one that eliminates separate stipulations for subject, complement and adjunct extraction) is possible precisely if one treats postverbal adverbials as dependents

[40] See Manning et al. 2000; Bouma and Van Noord 1994; Warner 1993, 2000, Kim 1995, and Bouma et al. 2001, Miller 1991 and A&G 1997; Wechsler and Lee 1996; Przepiórkowski 1999a,b.

selected by the verb, arguably eliminating the need for true modifiers to occur in positions ADV_4 and ADV_5.[41]

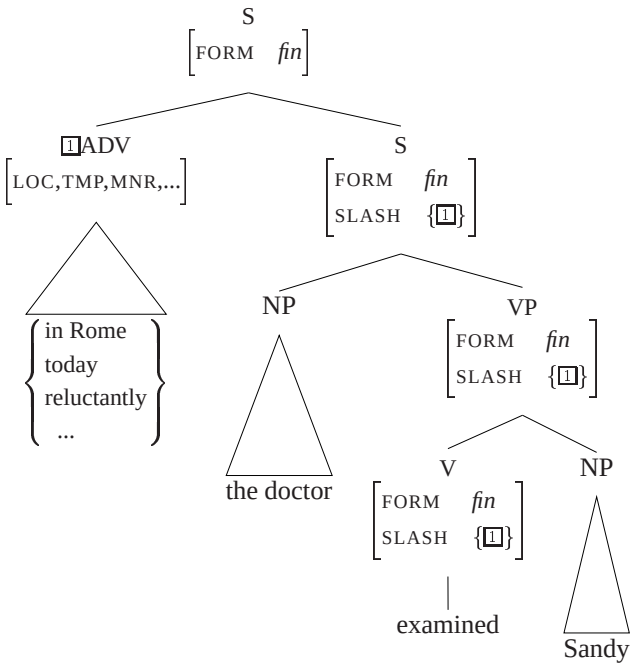
Thus assuming that at least locative, temporal, and manner adverbials are selected as optional complements, and hence may be extracted by the same mechanisms that account for complement extraction, we get structures like (108)a and corresponding structures like (108)b, where the complement appears in the ADV_1 position as an extracted element (a 'filler'), rather than as a modifier:

(108) a.



[41] Note that the syntactic distinction between complements and modifiers has no exact correspondence to any semantic distinction. In fact, given the semantics of type-raising discussed in footnote 27 above, an adverbial selected as a complement by a verb may yield exactly the same semantics that would result if that adverbial were modified the verb.

b.



This basic approach deals with a wide range of adverbials that can occur in ADV_1 position as well as postverbally.[42] Nonetheless, there are various kinds of adverbials (e.g. *unfortunately, obviously, usually, apparently*,...) that are not allowed as optional complements, but which may appear as modifiers in the ADV_1, ADV_2, or ADV_6 positions:[43]

[42] A residual concern, pointed out by Bob Levine (in remarks made at the 2000 Berkeley Formal Grammar Conference), involves sentences like the following:

(i) Leslie entered the room, grabbed a book, and jumped into bed in 30 seconds flat.

(ii) Terry sang bizarre sea chanteys and danced in circles for two hours.

In these examples, the adverbial can outscope the conjunction, a fact that follows naturally from the standard modificational treatment of these adverbials, but which seems inconsistent with the 'adverbs as complements' analysis. It should be noted, however, that analogous examples can be constructed involving uncontroversial complements:

(iii) Leslie sent flowers and subsequently brought candy to thirty hospital patients.

(iv) Terry faxed her mother and (then) mailed my sister thirty tasteless jokes.

Though the proper treatment of all these examples remains somewhat mysterious, it is not apparent that examples like (i) and (ii) are inconsistent with the analysis of the adverbs in question as complements.

[43] This should be compared with Cinque's (1999) analysis, where ADV_1 adverbs like *(un)fortunately, regrettably, surprisingly,* and *(un)expectedly* are generated in the specifier

(109) a. Kim will not run *(,) usually.

b. Usually Kim will not run.

c. Kim usually will not run.

d. Kim finds them to usually be trustworthy.

This pattern follows if (1) the MOD value of these adverbials underspecifies the SUBJ value (i.e. is compatible with [SUBJ ⟨NP⟩] or [SUBJ ⟨ ⟩] and (2) we have a linear precedence rule like (110):

(110) LP3: $\left[\text{MOD } \boxed{1}\right] \prec \overset{\boxed{1}\text{VP}}{\left[\text{SUBJ } \langle \text{ XP} \rangle\right]}$

In this treatment, VP-adjoined adverbials must precede the phrase they modify, but an S-adjoined adverbial may follow the sentential head. The intent is to allow (109)a as an S-modified structure, assuming the required pause is characteristic of right-adjoined S-modifiers.

There are also adverbials (such as *never, merely, really, almost*, etc.) that only appear in the ADV_2 or ADV_3 position:[44]

(111) a. *Kim opened the door merely.

b. *Merely Kim opened the door.

c. Kim merely opened the door.

d. We want him to merely open the door.

Again, these are not selected as optional complements of the verb and hence cannot undergo extraction. Rather, these elements appear as modifiers in only the appropriate places because they are lexically specified as in (112):

(112) $\left[\text{MOD } \overset{\text{VP}}{\left[\text{SUBJ } \langle \text{ XP} \rangle\right]}\right]$

position of an evaluative mood head. Adverbs such as *usually* and *regularly* are in the specifier position of the habitual aspect head.

[44] Cinque's (1999) analysis generates adverbs such as *almost* and *merely* in the specifier position of prospective aspect. Movement processes are required to generate two different positions for these adverbs with the same interpretation.

Each class of adverbials instantiates a lexical type where a constraint on the MOD value may be stated. Our approach thus predicts there will be generalizations over lexical classes, but it allows syntactic or semantic exceptionality.[45]

This observation provides a new perspective on issues discussed in the literature. For example, Pollock (1989) seeks to explain contrasts like (113)a,b in terms of head movement.[46]

(113) a.*John completely will lose his mind.

b.*John completely has lost his mind.

Pollock's (1989) explanation for the contrasts in (113) involves the claim that *completely* can be adjoined only to VP, not to TP. Because the auxiliaries move to Tense in his system, VP-adjoined adverbs like *completely* cannot precede them. But this cannot be the right solution, as pointed out by Iatridou (1990), because of the positional constraints on the adverb *completely* in infinitive clauses:

(114) a. Mary is believed to be completely revising her dissertation.

b.*Mary is believed to completely be revising her dissertation.

According to the head-movement analysis, (114)b would be the unmoved version of (114)a. In (114)a, *be* moves to Agr across the adverb *completely*, as shown in the derivation of (115). Since verb movement is optional in infinitive clauses (see (116) and (117)), the verb *be* does not have to move, and may stay in situ. But this then incorrectly predicts that example (114)b should be acceptable.

[45] For example, the adverb *completely* imposes semantic conditions on the phrase that it modifies, as the following examples suggest:

(i) a.*Leslie completely remained at home.

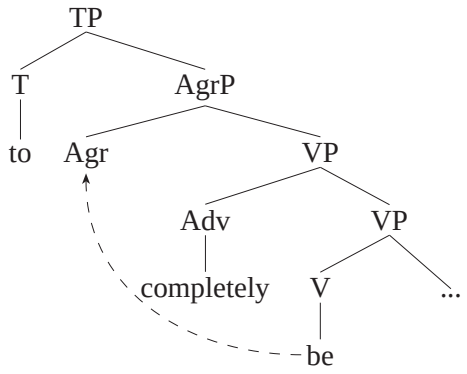
b. Leslie remained completely silent.

c. That suggestion seemed to be completely off the wall.

Adverbs like *completely* can only modify phrases whose semantics is in a certain sense 'gradable'.

[46] According to Cinque (1999: 100–104), *completamente* in Italian and *completely* in English both occupy two distinct functional specifier positions, associated with two distinct interpretations. This analysis may solve certain of the problems encountered by Pollock's (1989) analysis.

(115)



In order to exclude cases like (114)b, the movement of *be* to Agr must somehow be made obligatory, which raises the crucial question of how movement can be made sensitive to particular lexical items.[47] And if the movement of *be* or *have* to Agr were obligatory in all cases in English, we would not be able to generate sentences like (116)a and (117)a, where the adverb precedes the auxiliary verbs:

(116) a. Mary is believed to frequently have criticized Bill.

b. Mary is believed to have frequently criticized Bill.

(117) a. Mary is believed to frequently be criticizing Bill.

b. Mary is believed to be frequently criticizing Bill.

It might be suggested that adverbs preceding the infinitive *have* and *be* are base-generated as adjoined to TP, whereas those following them are base-generated adjoined to VP. But this solution would undermine the very existence of verb movement, since the relevant surface orderings could then be obtained without any movement at all, as argued by Iatridou (1990: 555).

Our treatment encounters no such difficulties. Because the surface structures are generated directly, different adverbs are 'base'-generated in different surface positions according to the syntactic and semantic specifications in their MOD value. This method of analysis, endorsed in essence by Iatridou (1990), Bouchard (1997), and A&G (1996) (among others), provides a simple way of capturing the distribution of adverbs. The adverb *frequently* lacks the semantic restriction of *completely* and hence may modify any of the VPs that follow it in (116)a,b and (117)a,b. The verb *be*—whether finite or nonfinite—heads a VP that is semantically inconsistent

[47] It should be noted that Pollock (1997a) attempts to answer some of Iatridou's criticisms by appeal to a version of 'checking theory'.

with the semantic demands of *completely*. Hence Pollock's contrast in (113) is related to and (semantically) accounted for in just the same way as the contrast in (118):

(118) a. Mary is believed to be [completely [revising her dissertation]].

b.*Mary is believed to [completely [be revising her dissertation]].

Our grammar relies on lexical information and a carefully articulated theory of lexical organization. Once the lexical information is properly organized, the appropriate surface phrases are directly generated by the theory of phrasal constructions (the 'barless' $\bar{X}$-theory) in accordance with universal principles such as the GHFP and valence theory.

6.2. *French Adverbial Positions*

The basic structure of the French clause is much the same as that of English. A&G-97 posit head-subject and modifier-head constructions that are essentially the same as those discussed above for English. Many adverbials in French are thus lexically specified in such a way (via their MOD value) that they can modify only phrases satisfying certain conditions, thus allowing the problem of restricted distributions to be approached lexically, as in English.

In the head-movement analysis, all French verbs undergo movement to T, whereas in English, only the auxiliary verbs *have* and *be* undergo this process. The head-movement analysis thus predicts that the English/French auxiliaries *be/être* and *have/avoir* will show similar behavior. But there are differences between English and French, especially with respect to adverb position. As Pollock (1989: 370) notes, English adverbs such as *rarely*, *often*, and *seldom*, can precede the auxiliary verbs *have* or *be*:

(119) a. My friends rarely/often/seldom are unhappy for long periods.

b. My friends rarely/often/seldom have helped me.

However, the corresponding French adverbs *souvent/rarement* cannot appear before *être* and *avoir*:

(120) a.*Mes amis souvent/rarement sont malheureux très longtemps.
My friends often/rarely are unhappy for long periods

b. Mes amis sont souvent/rarement malheureux très longtemps.

(121) a.*Mes amis souvent/rarement m'ont aidé.
My friends often/rarely have helped me

b. Mes amis m'ont souvent/rarement aidé.

To address this contrast, Pollock (1989: 370) suggests another parameter distinguishing the two languages: English has two adverb positions—the VP-adjoined and TP-adjoined positions, whereas French has only VP-adjoined adverbs.[48]

Under our approach, however, it is a general property of many French adverbs that they modify only nonfinite VPs. We thus unify the account of (120) and (121) with that of examples like the following:

(122) a.*Mes amis [souvent/rarement [$_{VP[fin]}$ se voient.]].

b. My friends [rarely/often/seldom [$_{VP[fin]}$ see each other]].

Our analysis also avoids a problem for Pollock's (1989) analysis that was pointed out by Kayne (1991). This concerns examples like the following:[49]

(123) a. John is never satisfied.

b. John never is satisfied.

(124) a. Jean (n')est jamais content.

b. *Jean jamais (n')est content.

Given an analysis like that of Pollock (1989), in (123)a and (124)a the auxiliaries move to the topmost functional position. This does not predict the contrast between (123)b and (124)b. Main verbs behave differently:

(125) a. John never seems happy.

b. *Jean jamais (ne) semble heureux.

[48] In allowing only the VP-adjoined position for French adverbs, this system fails to capture the possibility of ordering adverbs between a finite verb and *pas*. See section 4.1 for examples.

[49] See also Pollock 1997a.

As Kayne notes, we presumably want to have a uniform account of the contrast between (123)b and (124)b and the contrast between (125)a and (125)b. Yet such an account is unavailable in Pollock's system.

In our theory, where the lexical properties of *never* determine its position, it is straightforward to provide a uniform account of its behavior: *never* may modify any VP—finite or not. The adverb *jamais*, by contrast, behaves like *pas*, as in our earlier discussion. That is, *jamais* can be the negative complement of a finite verb, as shown in (124a); and *ne-jamais* can modify a nonfinite VP, as shown in (126):

(126) Jean regrette de [ne jamais [venir à Paris]].
Jean regrets of ne-never to-come to Paris
'Jean regrets never coming to Paris.'

A&G-97 consider a number of different adverb classes. They argue that certain adverbs (which they call simply 'V-adverbs') have a dual function, as negative adverbs do. V-adverbs like *trop* 'too much', *peu* 'little, *assez* 'enough', and *à peine* 'hardly' may adjoin to the left of an infinitival verb (i.e. to a word), as in (127)a. Alternatively, they may be selected by a verb as an optional complement, as in (127)b:

(127) a. Paul croit [[bien [déclamer]] Proust].
Paul believes well of-to-recite Proust
'Paul believes he recites Proust well.'

b. Paul croit [déclamer bien Proust].
Paul believes of-to-recite well Proust
'Paul believes he recites Proust well.'

As A&G show, this dual analysis is motivated by a number of otherwise peculiar facts, for example the contrast between (128)a,b:

(128) a. Paul espérait mieux manger et boire.
Paul hoped better to-eat and to-drink
'Paul hoped to eat better and to drink.'

b. Paul mange et boit mieux aujourd'hui.
Paul eats and drinks better today
'Paul eats and drinks better today.'

As the gloss in (128)a indicates, preverbal *mieux* cannot outscope the conjunction—it must be lexically attached. However, the example in (128)b,

like its English counterpart, is ambiguous. This ambiguity follows naturally if one assumes that postverbal occurrences of *mieux* and the like are complements selected by the verbal head ((128)b may then involve either V coordination or VP coordination).

A&G-97 do not spell out their full account of French adverbials, but it is reasonable to assume, following Bouma et al. (2001), that extractable adjuncts (temporal, locatives and some manner adverbials, as well as the postverbal V-adverbs) should also be treated as complements selected by the verb. Assuming these adverbials are selected as complements, it is no surprise that they can sometimes be ordered between the verb and its other complements, as in examples like (129):

(129) a. Paul écoutera attentivement l'orateur.
Paul will-listen(-to) attentively the-speaker
'Paul will listen to the speaker attentively.'

b. Marie lit souvent Proust.
Marie reads often Proust
'Marie often reads Proust.'

Indeed, the 'adverbs as complements' style of analysis—defended at length by Przepiórkowski (1999a,b)—is able to predict many facts about linear order from independently motivated ordering principles, e.g. the LP rules considered earlier.

But there are certain other adverbials that can separate verbs from their complements, e.g. *evidemment* 'obviously', *probablement* 'probably', *sincèrement* 'sincerely', *malheureusement* 'unfortunately':

(130) a. Paul a apparemment donné ce livre à Marie.
'Paul has apparently given this book to Mary'

b. Paul a donné apparemment ce livre à Marie.

c. Paul a donné ce livre apparemment à Marie.

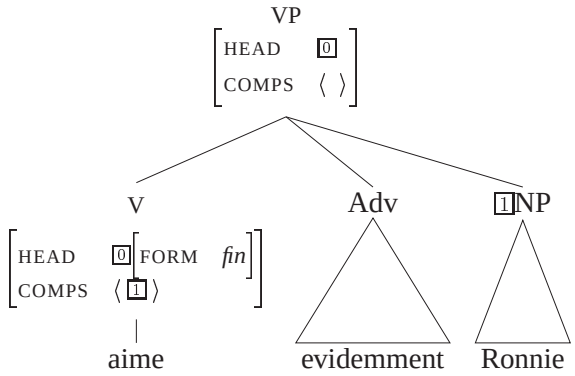
d. Paul a donné ce livre à Marie apparemment.

(131) Dominique aime evidemment Ronnie.
Dominique likes evidemment Ronnie
'Dominique obviously likes Ronnie.'

These adverbs are not treated as complements by A&G-97. Their reluctance to treat them as such is based (Danièle Godard, personal communication) on the fact that these elements do not extract. Hence they do not fit the general pattern observed by Bouma et al.—that the only extractable adverbials are those that can also be selected as complements.

To deal with examples like (130) and (131), A&G-97 adopt Kasper's proposal to replace the head-complement construction with a head-complement-adjunct construction. This phrasal type allows adverbials to appear as sisters of the head and its complements, but does not require that the head select those adverbials as complements. LP rules, partly stated in terms of the key notion of *lite* vs. *non-lite* elements developed in A&G 2000, allow lite adverbials to precede their complement sisters. In A&G's analysis, the VP in an example like (131) is assigned the following structure:

(132)



But in fact, it is possible to provide a uniform account of the dual positioning of French adverbials in terms of the adjunct-complement distinction. In short, adverbs have various MOD values, which means that when they function as modifiers, they adjoin to diverse kinds of verbal constituents: V^0, VP, S, or some combination of these. In addition, subject to various lexically modulated conditions, adverbs may appear as complements selected by the verb. In this case, a flat head-complement structure like (132) results. The various constraints on adverb order are then handled via LP rules (which only affect the relative order of sister constituents). The fact that certain complement adverbials cannot be extracted is accounted for by placing restrictions on the type *adv-gap*, which is the type that a verb's adverbial argument must assume when it corresponds to an extracted element (assuming the extraction analysis of Bouma et al. 2001). We believe that the system just sketched simplifies the account of A&G-97, while preserving its insights.

There are interesting facts about the distribution of French adverbs and negation that support an approach of this kind. *Pas* behaves differently

from adverbs like *à peine* in several respects, in particular in infinitive clauses:

(133) a. Parler à peine le français est un grand désavantage en ce cas.
to speak hardly French is a great disadvantage in this case

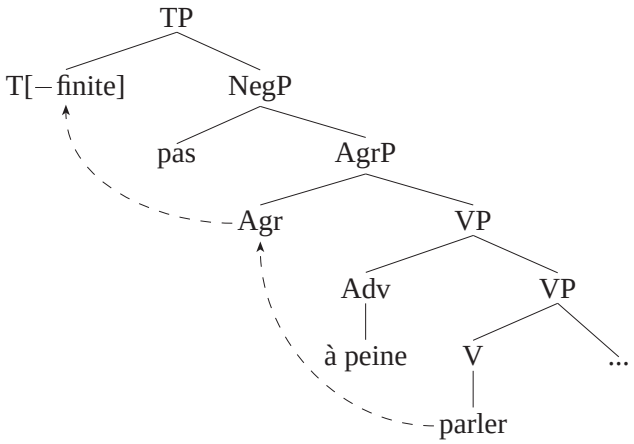
b. A peine parler le français est un grand désavantage en ce cas.

(134) a. Ne pas parler le français est un grand désavantage en ce cas.
ne not to speak French is a great disadvantage in this case

b.*Ne parler pas le français est un grand désavantage en ce cas.

The distributional contrast between these two types of adverb is the basic motivation for Pollock's proposal to split Infl into Tense and Agr and his assumption of 'short movement' in infinitives, as sketched in (135):

(135)



The short movement from V to Agr is meant to apply to auxiliaries and to lexical verbs alike. But given the assumption that [−finite] is opaque to theta role assignment, theta-assigning verbs cannot move from Agr to [−finite] Tense, since this would yield violations of the theta-criterion. In this way, the head-movement analysis bars the main verb from preceding the negation *pas* in infinitive clauses, e.g. in (134)b. But the movement to Agr is permitted, allowing the verb to precede adverbs like *à peine*.

An unfortunate consequence of Pollock's system is that it is not able to describe dual adverb positions in a clause, as pointed out by Iatridou (1990). There is no other position between TP and VP where another adverb can be located in examples like (136):

(136) a. Fréquemment parler bien le français est un grand avantage.
frequently speak well French is a great advantage
'To frequently speak French well is a great advantage.'

b. Fréquemment parler parfaitement le français...
frequently speak perfectly French ...
'To frequently speak French perfectly,...'

And the ordering of manner adverbs shown in (137) illustrates a second defect of the head-movement analysis of French adverbs, as pointed out by A&G:

(137) a. ?*Attentivement lire ce texte est une condition pour réussir l'examen.
'Carefully to read the text is a condition for succeeding the exam.'

b. Lire attentivement ce texte est une condition pour réussir l'examen.

c. Lire ce texte attentivement est une condition pour réussir l'examen.

d.*Attentivement avoir lu ce texte est une condition pour réussir l'examen.

e. Avoir attentivement lu ce texte est une condition pour réussir l'examen.

f. Avoir lu attentivement ce texte est une condition pour réussir l'examen.

g. Avoir lu ce texte attentivement est une condition pour réussir l'examen.

Unlike sentential adverbs, manner adverbs like *attentivement* cannot precede an infinitive (lexical or auxiliary) verb, as shown in (137)a (see Bouchard 1997). In order to block such examples, the head-movement analysis must find some way to make verb movement to Agr obligatory in just this environment. But it remains obscure how Move-α (the central

explanatory device assumed in the theory) can be made obligatory in such particular environments.[50]

A related issue concerns the scope of manner adverbs, as noted by A&G (1994a, b). Consider (138):

(138) Jean a attentivement écouté son professeur et pris des notes.
'John has attentively listened to his teacher and taken notes.'

Assuming that the adverb adjoins to a VP, we would expect the manner adverb *attentivement* to be able to scope over the whole coordination. However, in such examples, the adverb's scope is confined to the first conjunct; thus (138) conveys only the reading that can be paraphrased as (139):

(139) What John did was listen to his teacher attentively and take notes.

Moreover, the existence of an ordering restriction between certain adverbs casts further doubt on the existence of a VP-adjoined analysis, as noted by A&G (1994a,b):

(140) a. ??Jean a bruyamment immédiatement contre-attaqué.
'Jean has loudly immediately counter-attacked.'

b. Jean a immédiatement bruyamment contre-attaqué.

In an analysis like Pollock's, where all adverbs are taken to be VP-adjoined, it is unclear how to state the condition that a time adverb must precede a manner adverb.

Given these observations about the position, scope, and word order properties of French adverbs, it seems necessary to treat postverbal adverbs in general as sisters of the verbal head. Under our proposal, principles of linear precedence have access to the lexical head, its complements, and the VP-modifiers, as these are all sister constituents.

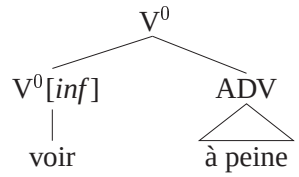
We have already outlined our account of negative adverbs. These are inherently modifiers of nonfinite VPs that are also pressed into service as the optional complement of a finite verb. As for adverbs like *à peine* (again following A&G), these may be treated uniformly as V^0 modifiers, specified lexically as in (141):

[50] Another alternative might be to generate such manner adverbs in VP-final position, and to assume rightward movement of the object NP, as Pollock (1989: 379–381) suggests. But this again makes the grammar more complicated by allowing an additional movement process whose effect is to produce spurious ambiguities (given verb movement) in many crucial cases (see A&G 1994a).

(141)
$$\begin{bmatrix} & \text{ADV} \\ \text{MOD} & \text{V}^0\text{: } \boxed{1} \\ \text{CONT} & \textbf{ADV'} \ (\boxed{1}) \end{bmatrix}$$

This proposal makes available an account of all cases of short movement in terms of structures like (142):

(142)



It also immediately provides a treatment of contrasts like the following:

(143) a. Ils ont à peine donné du secour aux enfants.
They have barely given help to the children

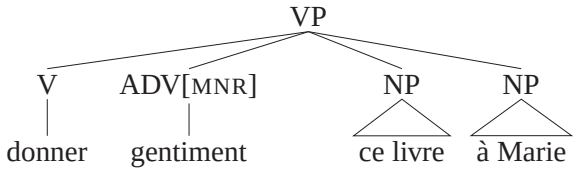
b. Ils ont donné à peine du secour aux enfants.
They have given hardly help to the children

c.*Ils ont donné du secour à peine aux enfants.
They have given help hardly to the children

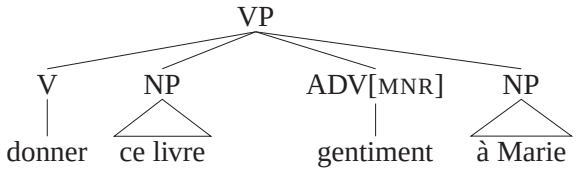
(143)c is ungrammatical precisely because *à peine* is not adjacent to, and hence not adjoined to, any verb. Notice that all of this follows from the interaction of the various principles of HPSG and the partial lexical information sketched in (141). No other machinery is required.

As for adverbs of time and manner, once these are treated as sisters of the lexical head and its complements, we will have structures like the following:

(144)



(145)



The advantage of such flat structures is that they provide an immediate solution to the problems that face any account stated in terms of uniformly adjoined or hierarchical structure. LP rules governing relative order of adverbs can be stated simply, e.g. as in (146):

(146) $\text{ADV}_{neg} \prec \text{ADV}[...]$

The LP rule in (146) is intended to rule out unwanted examples like (147):

(147) *Dominique (n')écrivait hier pas de lettres.
Dominique wrote yesterday not letters

But (146) does nothing to block the rather free distribution of many types of adverbs within the VP, as illustrated in (148) and (149).[51]

(148) a. Paul a gentiment donné ce livre à Marie.
'Paul has gently given this book to Mary'

b. Paul a donné gentiment ce livre à Marie.

c. Paul a donné ce livre gentiment à Marie.

d. Paul a donné ce livre à Marie gentiment.

(149) a. Paul a apparemment donné ce livre à Marie.
'Paul has apparently given this book to Mary'

b. Paul a donné apparemment ce livre à Marie.

c. Paul a donné ce livre apparemment à Marie.

d. Paul a donné ce livre à Marie apparemment.

Again the key to the analysis is the sisterhood of the relevant adverbs, lexical heads and complements.

There is considerably more to be said about the grammar of French adverbials. Nonetheless, we hope that this brief exposition is sufficient to make clear how the lexicalist analysis is able to account for a wide range of data about French adverb position—data that appear to defy description under the assumptions of the head-movement approach.

[51] We assume here, following A&G 1994a, 1997, and 1998 that the auxiliary verbs *avoir* and *être* serve as lexical heads of flat VPs, i.e. they take a lexical participle and the participle's complements as its own complements.

7. FURTHER ISSUES

Thus far, we have sketched and justified our treatment of constituent and finite negation in French and English. Moreover, we have embedded this account within a more general analysis of adverb position in both languages. In this section, we consider two further theoretically critical matters that interact with the grammar of negation: the auxiliary *do* and inversion constructions.

7.1. *'Dummy' Do*

The English auxiliary *do* is commonly thought to require transformational analysis of some kind (or else OT-style 'optimization') in order to express the traditional wisdom (see, for example, Grimshaw 1997) that "*do* is possible only when it is necessary." Some such generalization has long been thought to be true of English—that *do* appears only in contexts where movement of tense onto a following verb is prevented in negation, inversion, contraction, or ellipsis constructions (the NICE constructions—cf. Quirk et al. 1985 and Warner 1993). Following Sag (to appear), we provide a lexicalist analysis of *do* that employs no techniques beyond the simultaneous satisfaction of grammatical constraints.

In previous lexicalist treatments of the English auxiliary system (from Hudson 1976 to Kim and Sag 1995), it has been assumed that all and only auxiliary verbs are specified as [AUX +], and that the grammar of the NICE properties makes reference to this specification. Sag's (to appear) proposal is different. He shifts the burden of the [AUX +] specifications to the NICE constructions. Although nonauxiliary verbs are all specified as [AUX −] (as in previous accounts), the lexical entries for the auxiliary verbs in this analysis are unspecified for the feature AUX, and hence may take part in auxiliary and nonauxiliary constructions alike. This subtle reinterpretation and redistribution of the feature AUX holds the key to understanding the properties of the exceptional auxiliary *do*, as we shall see.

Thus the word *will* has a basic lexical entry like (150):

(150) *will*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{POL} & - \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{VP} \\ \text{FORM } \textit{base} \end{bmatrix} \right\rangle \\ \text{SUBJ} & \langle\ \text{NP}[\textit{nom}]\ \rangle \end{bmatrix}$$

This verb can head a simple finite VP, and when it does it will be required (according to a constraint we will present in a moment) to be specified as [AUX −].

In section 5.1, we sketched Sag's analysis of polarized finite auxiliaries. For concreteness, let us think of these forms as derived by lexical rules that apply to finite auxiliary verbs. Each of these three lexical rules (let us refer to them as Adverb Addition, Contraction, and Focus Introduction) requires that their input be compatible with the specification [AUX +] and guarantees that the rule output is [POL +]. To recapitulate, the grammar produces three polarized forms derived from (150)—those sketched in (151):

(151) a. *will*$_2$

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AUX} & + \\ \text{POL} & + \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{COMPS} & \left\langle \text{ADV}_{pol}\,, \begin{bmatrix} \text{VP} \\ \text{FORM } \textit{base} \end{bmatrix} \right\rangle \\ \text{SUBJ} & \langle\, \text{NP}[\textit{nom}] \,\rangle \end{bmatrix}$$

b. *won't*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AUX} & + \\ \text{POL} & + \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{VP} \\ \text{FORM } \textit{base} \end{bmatrix} \right\rangle \\ \text{SUBJ} & \langle\, \text{NP}[\textit{nom}] \,\rangle \end{bmatrix}$$

c. WILL

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{AUX} & + \\ \text{POL} & + \\ \text{FORM} & \textit{fin} \end{bmatrix} \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{VP} \\ \text{FORM } \textit{base} \end{bmatrix} \right\rangle \\ \text{SUBJ} & \langle\, \text{NP}[\textit{nom}] \,\rangle \end{bmatrix}$$

The entries in (151)a–c correspond to the modals used in (152)a–c, respectively:

(152) a. Sandy will not go.

b. Sandy won't go.

c. Sandy WILL go.

The way Sag proposes to correlate polarization and 'auxiliarity' is to modify slightly the constraint on the *fin-vp* construction presented in section 2.2 above. The following revision provides a simple correlation of the two properties:

(153) *fin-vp* (final version):

$$[\,] \rightarrow \mathbf{H}\left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} & \\ \text{POL} & \boxed{1} \\ \text{AUX} & \boxed{1} \end{array}\right] \\ \text{COMPS} & \boxed{A} \end{array}\right], \boxed{A}$$

What (153) says is that an instance of the *fin-vp* construction must be [AUX +] and [POL +] or else [AUX −] and [POL −]. Since auxiliary verbs are generally unspecified for the feature AUX (see above), they may appear in both polarized and unpolarized instances of this construction.

The auxiliary verb *do* is exceptional in that it is lexically specified as [AUX +]. This means that nonpolar finite forms of *do* cannot appear in the *fin-vp* construction. Polarized forms of *do* can head *fin-vp* phrases, however, as their POL and AUX values are compatible. This treatment thus provides a straightforward account of well-known contrasts like the following:

(154) a. *Tracy dĭd leave.

b. Tracy DID leave.

c. Tracy didn't leave.

d. Tracy did not leave.

e. Tracy did too/so leave.

As noted earlier, if we further require that ADV_{pol}-selecting forms be unfocussed, then we also obtain an account of the deviance of examples like (155):

(155) *Kim DID not leave.

As far as *do* is concerned, there is nothing more than this that a descriptively adequate grammar must guarantee. There are systematic semantic relations between pairs like (156)a,b, of course:

(156) a. Kim likes vindaloo.

b. Does Kim like vindaloo?

But *like* is [AUX −] and cannot enter into the inversion construction discussed below and *does* is semantically vacuous (modulo tense) and CAN appear in inversion constructions. These facts, taken together, are sufficient to guarantee that to utter (156)b is to question the proposition asserted by uttering (156)a. No more direct relation between these two sentences needs to be established by grammar. Our account must only ensure that all and only the NICE constructions allow [AUX +] verbs.[52]

7.2. *Subject-Aux Inversion Constructions*

In the Introduction, we noted that similarities between the constraints on negation and question inversion in both English and French have been used to argue for head-movement analyses:

(157) a. *Likes Lou Sandy?

b. Aime-t-il Stacey?

If interrogative sentences are generated by the movement of a verb into Infl, the contrast in (157) appears to fall out naturally within a system where there are no restrictions on which French verbs move to Infl. And given that in English verbs like *have* and *be* may move to Infl, the head-movement

analysis seems to provide a unified account of negation and inversion.

However, matters are not quite this simple. There are certain exceptions that present problems for the analysis of inverted interrogatives via movement transformation. Observe the following contrast (due to Joe Emonds, as cited by Chomsky (1981: 209)):

[52] This solves the problem that faced earlier G/HPSG analyses that treated AUX specifications as a lexical property. Since auxiliary verbs must be allowed in the *fin-vp* construction and all auxiliary verbs were [AUX +], it followed that that construction had to be consistent with [AUX +]. Hence that construction was consistent with unfocussed *do* as well, incorrectly allowing examples like (154)a. This consequence is avoided in our analysis because auxiliary verbs other than *do* are unspecified for AUX, but the *fin-vp* construction requires that the verbal head be [AUX −]. This correctly allows all auxiliary verbs except *do* to head a simple VP.

(158) a. I shall go downtown.

b. Shall I go downtown?

Here there is a semantic difference between the auxiliary verb *shall* in (158)a and the one in (158)b: the former conveys futurity whereas the latter has a deontic sense.

Similarly, the following pair exhibits a scope difference (examples due to John Payne, as cited by Gazdar et al. (1985: 64)):

(159) a. Kim mightn't go.

b. Mightn't Kim go?

In (159)a, the modal has scope over the negation ('It is possible that Kim might not go.'), whereas in (159)b, only the reverse scope is possible ('Is it not the case that possibly Kim will go?').

Further, there are inflected forms that occur only in inversion constructions, e.g. the first person singular negative contracted form of the copula illustrated in (160) (examples from Langendoen 1970; see also Hudson 1977 and Gazdar et al. 1982.):

(160) a. *I aren't going.

b. Aren't I going?

As far as we are aware, no treatment of these observations has ever been offered in transformational terms. It is somewhat unclear how to restrict a particular inflected form like *aren't* so that it will occur only in the structure that results after movement has applied, or how to restrict scope assignment rules in the relevant way. However, in the lexicalist analysis sketched above, contrasts like those just noted find a more comfortable home.

As Fillmore (1999) argues at length, the construction type *subject-auxiliary-inversion* (*sai-ph*) has numerous subtypes in English.[53] These are usually left untreated in discussions of the English auxiliary system (in fact, they are usually relegated to the 'marked periphery'), but they are well within the descriptive scope of the framework assumed here. This construction type is constrained as shown in (161):

[53] These subtypes include exclamatives (*Am I tired!*), auxiliary conditions (*Were they to agree to that,...*), matrix polar interrogatives (*Is Kim tired?*), and others (*May your hair fall out at midnight!*). See Newmeyer 1998, pp. 46–49 and Fillmore 1999.

(161) *sai-ph*:

$$\left[\text{SUBJ } \langle\ \rangle\right] \rightarrow \mathbf{H}\left[\begin{array}{ll} \textit{word} & \\ \text{INV} & + \\ \text{AUX} & + \\ \text{SUBJ} & \langle\ \boxed{0}\ \rangle \\ \text{COMPS} & \langle\ \boxed{1},\ldots,\boxed{n}\ \rangle \end{array}\right],\ \boxed{0},\ \boxed{1},\ldots,\boxed{n}$$

In this kind of phrase, which must be headed by an inverted ([INV +]), finite, auxiliary verb, elements are 'cancelled' from both head daughter's SUBJ list and its COMPS list. Again, further constraints on such phrases are consequences of the GHFP and other general constraints—they do not have to be stipulated. What does need to be stipulated, following Fillmore and Ginzburg and Sag, is that there are a number of subtypes of *sai-ph*, all of which inherit the constraints shown in (161).

It then follows that all auxiliary verbs compatible with the requirements in (161), including unfocussed *do*, may appear in matrix polar interrogatives, in 'negative adverb preposing' constructions, in matrix *wh*-interrogatives, exclamative constructions, and so forth:

(162) a. Did Sandy get the job?

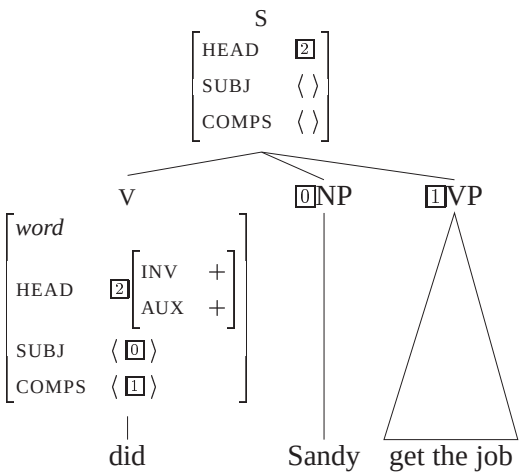
b. Never did they play better!

c. When did Pat say that?

d. Boy, do they stink!

The basic structure for an inverted polar interrogative is sketched in (163):

(163)



The feature INV allows an analysis of the lexical idiosyncrasy noted earlier. The [INV −] finite auxiliary *better*, for example, is incompatible with the requirements of (161) and appears in none of the subtypes of *sai-ph*. The first-person contracted form *aren't*, a form of *shall* conveying futurity, and a form of *mustn't* assigned a 'not-possible' reading can be lexically specified as [INV +]. Hence they can appear in inversion constructions, but not in the declarative construction *decl-hs-cl* illustrated in section 2.2 above. In addition, if we assume that the lexicons of vernacular American varieties further constrain the *not-selecting* auxiliaries to be [INV −], then we can account for Bresnan's (2000) observation that examples like (164) do not occur in these varieties:

(164) a. %Will they not stop singing?

b. %Have they not been to Prague?

It is not clear how lexical peculiarities of this kind can be treated in an analysis based on head movement.

Similar questions arise about the putative generalization underlying head movement in the grammar of French. If head movement in French negation and interrogative constructions were a unified phenomenon, then we might expect that all finite verbs in French should be able to move to C, just as they move to Tense in negative constructions.

But there is idiosyncrasy regarding inversion that seems hard to reconcile with verb-movement analyses. First, if finite verbs in French were to move across the subject to form a question, then we should expect the inversion process to be indifferent to the lexical nature of the subject. But this is not the case—inversion is impossible when the subject is non-pronominal, as shown in (165).

(165) a. Jean a perdu son livre.
John has lost his book

b. *A Jean perdu son livre?

Rather, such a question is asked in one of the following ways:[54]

(166) a. Jean a-t-il perdu son livre?

[54] In sentences like (166)a, there are two subjects, the non-pronominal subject NP and the coindexed weak form pronominal subject. This has caused considerable difficulty for movement-based analyses, where the pronominal subject is taken to be an independent syntactic element. See Rizzi and Roberts 1989, Drijkoningen 1990, and de Wind 1994 for further discussion.

b. A-t-il perdu son livre?

c. Est-ce que Jean a perdu son livre?

Why should a syntactic process like head movement, a specific instantiation of *Move* α, be sensitive to the pronominality of the subject?

And, second, even if we find a way to explain why movement requires a pronominal subject, the existence of lexical idiosyncrasy again drives a wedge between negation and question inversion. As noted by Miller (1991), for most verbs there is no acceptable form for the inverted first person singular pronominal affix *je*:

(167) a. Sors-tu?
'Are you going out?'

b. *Sors-je?
(Putatively) 'Am I going out?'

Again this exceptionality arises only with respect to true inversion constructions, not negation, as the following example demonstrates:

(168) Je (ne) sors pas.
'I am not going out.'

Thus, even in a head-movement analysis, these forms cannot be treated as exceptions to head movement. The grammar must have some mechanism for dealing with elements that are exceptions only to true inversion, a family of constructions that does not include sentential negation.

A third, related issue arises with respect to present participle constructions:

(169) a. N'étant pas intéressé par la syntaxe, Pierre fait de la phonologie.
'Being not interested in syntax, Peter works in phonology.'

b. *Ne pas étant intéressé par la syntaxe, Pierre fait de la phonologie.

Present participles in French, unlike infinitives, must precede the negation *pas*. To account for this fact, Pollock (1989) suggests that present participles in French are finite and that they are hence forced to undergo movement in order to satisfy his quantification theory.

This last proposal raises questions about the semantic nature of present participles in relation to the standard interpretations provided by tense

operators. Why, for example, should present participles, but not past participles, have a semantic analysis that makes use of variable binding? Leaving these concerns aside, however, the verb movement analysis remains deficient. Since in the verb movement analysis all verbs that precede the negation also precede the subject in questions, it should follow that present participles also precede the subject in questions. But of course this is not the case in French—present participles do not give rise to interrogative sentences. In our lexicalist analysis of these French phenomena, we treat *tensed* and *pres(ent)-part(iciple)* as two subtypes of *finite*. As argued in section 5.1, all *finite* forms may select *pas* as a complement, whereas the inverted ([INV +]) clauses are headed only by verbs specified as [FORM *tensed*]. These ([INV +]) forms are either lexically restricted to require a pronoun subject or else (following Miller 1991), these forms take no subject, but realize a pronominal element as an inflectional affix. Under either approach, the impossible occurrences (e.g.**Sors-je?*) can be treated as lexical gaps.

8. CONCLUSION

In this paper, we have developed a picture of the comparative grammar of English and French that is radically different from the one offered by head-movement analyses. On our account, the two languages share numerous constructions. In particular, the French and English *decl-hd-su-cl* and *mod-hd* constructions are virtually identical. Indeed, the two systems of nonfinite negation ([*not*/*ne-pas* VP[*nonfin*]]) are almost indistinguishable. Certain differences in adverbial position (e.g. the difference between *(ne-) jamais* and *never*, occurring as true modifiers) are purely lexical in nature. There are also lexical differences that make inversion constructions subtly different in the two languages, despite a common constructional core.

The centerpiece of our study, however, has been the head-complement structures. We have argued, following Abeillé and Godard, that finite negation in French should be analyzed in terms of a general pattern that permits finite verbs to select a negative adverb as a complement. In English, by contrast, it is only finite forms of auxiliary verbs that may select for a polar adverb (*not*, *too* or *so*). Moreover, we have seen that these English forms are part of a larger system of polarized auxiliaries, including contracted and focussed finite forms. It is only when we look at this system as a whole that we are able to explicate both the lexical exceptions and the generalizations that govern auxiliary-related phenomena, including such long-standing puzzles as the distribution of auxiliary *do*.

We have shown that a (strongly) lexicalist, surface-based approach to grammar can explain the critical phenomena in each language (including massive lexical idiosyncrasy) and also provide a principled basis for explaining the syntactic differences between the two languages. We have achieved this result in terms of theoretical foundations quite different from those assumed in most current work. It is of course possible that someone will someday develop a grammar that uses verb movement and functional projections to account for the numerous phenomena we have analyzed here. We are not arguing that this is impossible; but it appears that any attempt to modify the movement analysis to accommodate these data will involve introducing devices that deal with lexical sensitivity to derived structure. Executing this program successfully will lead, we believe, to a highly surface-sensitive account similar to our own, where head movement has no role to play.

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