Lasnik

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# Verbal Morphology: *Syntactic Structures* Meets the Minimalist Program

This chapter, like all the chapters in this book, has morphosyntax and abstract morphology as a central concern. This time, though, it is verbal morphology, rather than nominal morphology, that is at issue. And just as chapter 3 returned to a much earlier view ("subject raising to object position") but from a changed perspective, this chapter returns to an even earlier proposal, the classic analysis of English verbal morphology of Chomsky (1955; 1957) but from a Minimalist point of view. It emerges from the discussion that Chomsky's (1991) account, involving Affix Hopping followed by covert re-raising, has significant conceptual and technical difficulties, and that the fully lexicalist treatment of Chomsky (1993) does not cover all of the central facts. A hybrid theory is proposed in Section 5, incorporating a lexicalist analysis of English auxiliaries (and all French verbs) alongside an Affix Hopping analysis of English "main" verbs. The latter analysis has a consequence mentioned in chapters 2 and 3 as potentially problematic for the LF affix treatment of *there*: raising must be to check a formal feature, where the property of being an affix is not a formal feature.

Section 6 shows how a surprising VP ellipsis fact discovered by Warner (1986) can be explained by the hybrid approach of Section 5. It should be noted that the clearest instances of the ellipsis gap discussed there involve finite forms of auxiliary verbs. This is probably significant, since the arguments of Section 5 are based exclusively on finite forms.

Finally, I note that two challenges to the account in Section 6 have recently appeared: Potsdam (1997) and Roberts (1998). Both of these articles advocate an alternative rejected in Section 6. See Lasnik (in press–a) for a reply.

## 1 Introduction

One of the major breakthroughs in the history of generative transformational grammar was the discovery by Chomsky (1955; 1957) of the regularities

underlying English verbal morphology. Much of the apparent chaos of this central portion of English morphosyntax was rendered systematic by the fundamental insight that the tense-agreement inflectional morpheme ("C") is syntactically independent, even though always a bound morpheme superficially. The analysis was brilliantly successful and paved the way for numerous refinements and extensions over the following forty years, the large majority of them sharing the same fundamental insight. The refinements can be viewed as attempts to maintain the leading ideas of the analysis but to reconcile them with the growing concern for explanatory adequacy.

For example, Lasnik (1981) was particularly concerned with the stipulated rule ordering and the arbitrary marking of particular transformations as obligatory or optional in Chomsky's early system and proposed that these problematic language-particular formal mechanisms can be eliminated in favor of the general filter in (1):

(1) The "stranded affix" filter: A morphologically realized affix must be a syntactic dependent of a morphologically realized category, at surface structure. (Lasnik 1981)

Notice that this filter crucially assumes, along with Chomsky (1955; 1957) and many succeeding analyses, that the inflectional material on a verb is a morphological affix, even though it begins its syntactic existence as an autonomous entity. Given this assumption and given (1) and the restrictive theory of transformations it presupposes, a typical analysis of the English verb system of the early 1980s looks something like (2):

(2) a. S is the maximal projection of the inflectional morpheme Infl (= C of Chomsky (1957)).
b. Infl takes VP as its complement.
c. When the head of VP is *have* or *be* it raises to Infl, the next head up.
d. Otherwise Infl lowers to V: Affix Hopping.
(e. Otherwise *do* adjoins to Infl.)

Such a system is descriptively comparable to that of Chomsky (1955; 1957) in the way it handles the familiar paradigms below, and is superior in terms of explanatory adequacy,[1] for the reasons already alluded to.

(3)

| | |
|---|---|
| John left | *John leftn't |
| John has left | John hasn't left |
| John is leaving | John isn't leaving |

(4) John left *Left John
John has left Has John left
John is leaving Is John leaving

## 2 French versus English

Emonds (1978), based on a similar model, insightfully explored certain differences between English and French. Taking *pas* to be the analogue of *not*, he was concerned with the fact that while only auxiliary (finite) verbs precede negation in English, any (finite) verb does so in French:

(5) a. *John likes not Mary
b. Jean (n')aime pas Marie

Emonds proposed that the basic difference between English and French is that in the latter language verb raising is not limited to auxiliaries. Then, given the priorities in (2), Affix Hopping will never be necessary in French.

Pollock (1989) developed Emonds's idea further, offering an explanation of the verb raising difference between English and French. First, he argued that Infl should be split:

(6) "Infl" is not one head; it consists of (at least) Tense and Agr(eement), each heading its own projection. Raising to Tense proceeds via Agr.

Given (6), the difference between English and French is accounted for by (7):

(7) a. English Agr, because it is not morphologically rich, is opaque to θ-role transmission. Thus, if a verb with θ-roles to assign were to raise, it would be unable to assign them, resulting in a violation of the θ-Criterion.
b. French Agr, because it is morphologically rich, is transparent to θ-role transmission, so any sort of verb can raise.

## 3 An Economy Approach

Chomsky (1991), building on Pollock's analysis, offers the following economy explanation of why raising takes place whenever it can:

(8) Raising is preferred to lowering, because lowering will leave an unbound trace that will have to be remedied by re-raising in LF.

Notice that (8) assumes re-raising is, in general, possible when not blocked by a more economical derivation. If this were not so, even (9) would not be possible:

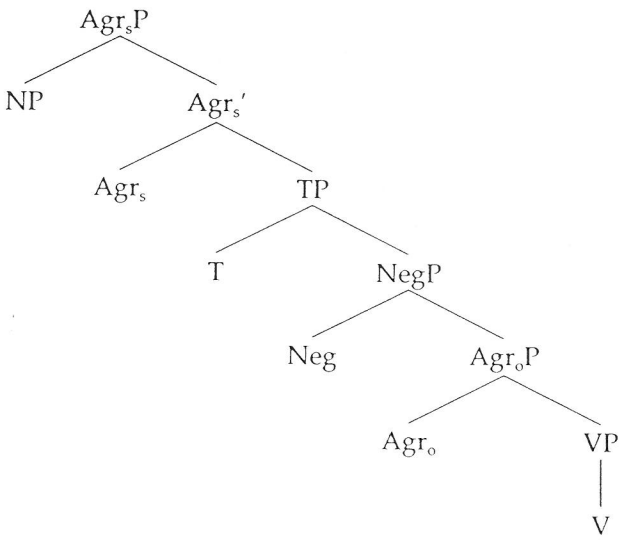
(9) John likes Mary

The next question, then, is why (10), with overt lowering and LF re-raising, is not the English version of (5b):[2]

(10) *John not likes Mary

Chomsky's answer to this question is stated in terms of his more articulated version of Pollock's split Infl hypothesis. Note that Chomsky follows Pollock in taking negation to be a head:[3]

(11)




According to Chomsky, the Head Movement Constraint (reduced to an ECP antecedent government requirement) prevents the LF re-raising needed in the derivation of (10).[4] The intervening head Neg cannot be crossed. On the face of it the overt raising across negation in French, and that in English with *have* and *be*, would seem to run afoul of the same requirement. Chomsky accounts for the difference in the following way, where (12) lists the relevant principles and (13) and (14) sketch the French and English derivations, respectively:

(12) a. If Agr moves, its trace can be deleted, since it plays no role in LF.
b. If V moves, its trace cannot be deleted.
c. Deletion of an element leaves a category lacking features, [*e*].
d. Adjunction to [*e*] is not permitted.

(13) a. When V overtly raises (French) (5b), it first adjoins to $Agr_o$, creating $[_{Agro}$ V $Agr_o]$.
b. Next, $Agr_o$ raises to T, crossing Neg, thus leaving a trace that is marked [-γ], indicating a violation of the ECP. That trace is an Agr.
c. Eventually, in accord with (12a) the [-γ] trace is deleted, so there is no ECP violation (where ECP is, as in Lasnik and Saito (1984; 1992), an LF filter: *[-γ]).

(14) a. When V vainly attempts to covertly (re-)raise in LF (English) (10), $Agr_s$ has already lowered overtly to T, leaving an Agr trace (which deletes, leaving [*e*]), and creating a complex T,
b. which has already lowered overtly to $Agr_o$, leaving a T trace and creating a still more complex Agr,
c. which has already lowered overtly to V, leaving an Agr trace (which deletes, leaving [*e*]), and creating a complex V.
d. This complex V raises to the [*e*] left by the deletion of the $Agr_o$ trace, a movement that is by (12d) necessarily substitution, thus turning [*e*] into V.
e. This element now raises across Neg to (the trace of) T, leaving behind a [-γ] trace that is crucially a V trace, hence non-deletable. The resulting LF is in violation of the ECP.

There is a potential technical problem with this account of French, in that (12a) and (13c) seem to be inconsistent with a central economy condition of Chomsky (1991): Deletion is only permitted to turn an ill-formed LF object into a well-formed LF object, where the relevant well-formed objects are operator–variable pairs and uniform chains (chains all the members of which are X°s, are in A-positions, or are in A'-positions). This is precisely to prevent making a short licit head-, A-, or adjunct-movement, followed by a long illicit movement, with subsequent deletion of the offending trace of the latter movement.[5]

A related problem is that generally a long movement (i.e., one in violation of relativized minimality) results in some degradation (e.g., Subjacency effects, as discussed by Chomsky and Lasnik (1993), even if the offending trace is eventually eliminated. But the long overt V-movement at issue here is fully grammatical. I will not pursue these technical problems further,

since the Minimalist framework of Chomsky (1993), which I turn to now, rejects the account for other reasons and provides another perspective on verbal morphology.

## 4 A Minimalist-Lexicalist Approach

Chomsky (1993) departs in an important respect from his earlier treatments of verbal morphology by adopting a strictly lexicalist view under which verbs are taken from the lexicon already fully inflected. They still must associate syntactically with the appropriate functional heads, but only in order for their inflectional properties to be checked against abstract features of the functional heads (rather than acquired as affixes). This checking approach mirrors Chomsky's checking view of Case, which holds that Case features are already associated with (the heads of) DPs as they are first inserted into syntactic structures. These DPs must wind up in positions where the Case they already have can be suitably licensed.[6] Note that in this view there is no obvious need for Affix Hopping. The fact that verbs overtly appear with their inflectional morphology even in English is no longer a relevant consideration in determining exactly how the derivation proceeded.

Intrinsic to this checking theory is that the features of verbs and functional heads must be checked against each other, but that this checking can in principle take place anywhere in a derivation on the path to LF. Chomsky also proposes, as a matter of execution, that once a feature of Agr has done its checking work it disappears.

From this point of view the difference between French and English is not verb raising versus affix lowering. Rather, it is whether verb raising takes place in overt syntax (French) or in the LF component (English). Further, since Chomsky argues that LF and PF are the only levels of linguistic representation, this difference cannot be attributed, as it might have been in previous theories, to any S-structure property. Chomsky thus proposes (15) as the core difference between French and English. The relevant notions are explicated in (16):

(15) a. In French the V-features of Agr (i.e., those that check features of a V) are strong.
b. In English the V-features of Agr are weak.

(16) a. V-features are not legitimate PF objects.
b. Strong features are visible at PF; weak features are not.
c. Surviving strong features cause the derivation to crash at PF.

In French, since the V-features of Agr are strong, if V raises to Agr overtly, the V-features of Agr check the features of the V in overt syntax and disappear. Both LF and PF are thus well formed. If on the other hand V were to delay raising until LF, the V-features of Agr would survive into PF, causing the derivation to crash at that level, even though LF requirements would be satisfied. This correctly forces overt V-raising in French.

In English delaying V-raising until LF does not result in an ill-formed PF object, so such a derivation is possible. What makes it necessary is

(17) PROCRASTINATE: Delay an operation until LF whenever possible, that is, whenever delaying would not cause the derivation to crash.

(17) thus plays a central role in excluding (5a), repeated as (18):

(18) *John likes not Mary

But, as already discussed, *have* and *be* do raise overtly. Chomsky proposes that this happens because *have* and *be* are semantically vacuous, hence not visible to LF operations. Thus, if they have not raised overtly, they will not be able to raise at all. Their unchecked features will cause the LF to crash.

This proposal raises certain questions. First, it is not clear that *be* is always semantically vacuous, yet the syntactic behavior of *be* in finite clauses is always the same. For example, it is reasonable to assume that in (19), *is* has the meaning of *exists*. Yet, as seen in (20), it raises overtly nonetheless:

(19) There is a solution
(20) a. There is not a solution
b. Is there a solution

Second, even apart from the empirical considerations just mentioned, there is the conceptual question of whether syntactic operations, even those in the LF component, should be sensitive to purely semantic properties. LF is after all a syntactic rather than a semantic component. Finally, there is reason to believe that even instances of *have* and *be* that are vacuous in Chomsky's sense can undergo LF raising. For example, if the functional head in an English subjunctive clause has a V-feature to be checked,[7] *have* and *be* evidently can raise in LF (and, along with main verbs, do so across negation):

(21) a. I desire that John not leave
b. I desire that John not be here

As noted by Wexler (1994), the potential problem in (21) does arise in other languages, such as Swedish, where auxiliary verbs pattern exactly with

main verbs in remaining *in situ* in embedded clauses, even though they are undoubtedly inflected:[8]

(22) a. . . . , om hon inte ofte har sett honom
whether she not often has seen him
b. *om hon har inte ofte sett honom
c. *om hon inte har ofte sett honom

Note incidentally that Chomsky (1993) does not provide an account of (10), repeated as (23):

(23) *John not likes Mary

The analysis of Chomsky (1991), summarized in (14) above, does not carry over to this framework, since it relies crucially on properties of the traces left by affix lowering, an operation that has now been eliminated.[9] This much is clear: it must be ruled out, but its derivation must not crash. If it crashed, it could not block (24), since Procrastinate only chooses among convergent derivations.

(24) *John likes not Mary

The analytic options are severely limited, particularly under the proposal of Chomsky (1995a), apparently contra Chomsky (1991), that a [-γ] trace causes a derivation to crash. Below, I will suggest a new (actually very old) perspective on these facts that avoids this particular problem.

## 5 A Hybrid Approach

We have seen that Chomsky's lexicalist-Minimalist account of verbal morphology demands that Agr and T are just abstract features that check against features of fully inflected verbs that raise to them. The earlier accounts treated such Infl items exclusively as bound morphemes that had to become affixes on otherwise bare verbs. We have seen that each approach has substantial problems. I will argue that the most important of these problems can be overcome under a hybrid approach that allows both mechanisms to coexist. (25) sketches such a possibility, where the fundamental difference between French and English (and between English auxiliary and main verbs) is with respect to choice of mechanism, that is, with respect to lexical representation.

(25) a. French verbs are fully inflected in the lexicon (possibly correlating with the fact that there are no bare forms; even the infinitive has an ending).
b. *Have* and *be* are fully inflected in the lexicon (possibly correlating with the fact that they are highly suppletive, but see below).
c. All other English verbs are bare in the lexicon.

With the lexical properties of verbs outlined in (25) no further stipulations are needed for Infl, at least for the core phenomena. As I will show momentarily, (26), the null hypothesis under the theory I advocate, suffices for French and English finite clauses:

(26) Infl is freely an affix or a set of abstract features.

Given that English *have* and *be* behave just like French verbs and given that English main verbs are not lexically represented with inflectional features ((25c)), the Infl feature strength difference posited by Chomsky ((15), (16) above) becomes superfluous. Instead, we have (27):

(27) Finite featural Infl is strong in both French and English.

The final necessary mechanism is for all intents and purposes the original one: Affix Hopping. Further, as conjectured by Lasnik (1981) and developed further by Halle and Marantz (1993) and Bobaljik (1994), the rule is a morphophonemic one rather than a syntactic one:

(28) Affixal Infl must merge with a V, a PF process (distinct from head movement) demanding adjacency.

Consider now the various combinations made available by this theory. First, suppose that we select a verb with inflectional features (notated here as +F) and a featural (as opposed to affixal) Infl:

(29) . . . Infl . . . V . . .
+F +F

This configuration is, of course, well formed. V raises (overtly) to Infl, and all relevant features are checked. This is the situation with all French verbs, as well as with English *have* and *be*.

Next, consider the case of a bare verb and an affixal (as opposed to featural) Infl:

(30) . . . Infl . . . V . . .
Af bare

This is the situation with English main verbs. In this configuration PF merger takes place as long as adjacency obtains, and the PF affixal requirement of Infl is satisfied.

Given (26), two other configurations could potentially arise, but, since both of them will ultimately crash, there is no need to replace (26) with a stipulation. The first such mismatched configuration is shown in (31):

(31) . . . Infl . . . V . . .
+F bare

Here, the features of Infl will not be checked, so the derivation crashes at LF. And under the assumption that the features are strong, there is a PF crash as well.

Finally, consider (32), the reverse of (31):

(32) . . . Infl . . . V . . .
Af +F

This time the features of V will fail to be checked, causing an LF crash. Additionally, if in principle affixal Infl cannot attach to an already inflected verb, this failure leads to a PF crash.

(33) summarizes the immediately preceding discussion:

(33) a. . . . Infl . . . V . . . OK. V will overtly raise.
+F +F

b. . . . Infl . . . V . . . OK. PF merger.
Af bare

c. . . . Infl . . . V . . . *at LF. +F of Infl will not be checked;
+F bare *at PF as well, since +F is strong.

d. . . . Infl . . . V . . . *at LF. +F of V will not be checked.
Af F+ *at PF also, if merger fails.

Thus, it follows from the lexical properties of French verbs that French Infl will always have to be featural, just as it follows from the lexical properties of *be* and auxiliary *have* that English Infl will always have to be featural

when the verb is *have* or *be*. The parallelism in behavior between French verbs and English auxiliaries has a unified account in this theory, following from a parallelism in morphological properties. With a main verb in English, on the other hand, English Infl will always have to be affixal, and this follows straightforwardly.

Consider now the ill-formed negative sentences in English. (34) involves an apparently inflected verb *in situ* in overt syntax:

(34) *John not walked

Recall that Chomsky had assumed that such a configuration is universally ungrammatical, invariably leading to an ECP violation. However, we have seen that the theory leading to that conclusion for Chomsky, in which LF verb raising is preceded by overt affix lowering, has been rejected in favor of a lexicalist approach. And in the latter it is not clear that the result obtains. Further, there is empirical reason for doubting the conclusion in the first place, as seen, for example, in the Swedish example (22) above.

My account of (34) is that of Chomsky (1957).[10] *Walked* is not in the lexicon of English: all main verbs are "bare." Hence, (34) must arise from the merger of affixal Infl with *walk*. But *not* intervenes between Infl and *walk* so the former cannot merge with the latter.[11] Crucially, then, the Swedish example (22) must not involve merger. Rather, it must involve the covert analogue of the overt raising seen in French or with English *have* and *be*. That is, the verb is pulled from the lexicon fully inflected. Infl, then, is necessarily featural, so the verb must raise to Infl for the matching features to be checked. The different property of Swedish is that the V-features of Infl are weak, while those in French and English are strong. Procrastinate dictates that the Swedish verb will remain *in situ* in overt syntax. (35) is fundamentally similar:

(35) *John walked not

*Walked* is not in the lexicon, so even though featural Infl exists in English and even though its V-features are strong, *walked* could never be created by raising.[12]

We have seen that raising across negation overtly, as in (36) and (37), and covertly, as in (38), is available:

(36) Jean (n')aime pas Marie
(37) John has not left
(38) . . . , om hon inte ofte har sett honom

We now must ask why this is possible. One possibility is the analysis of Chomsky (1991) sketched above in (13). That analysis was actually part of an account of a difference between overt and covert verb raising that I have argued is spurious. Further, the most problematic aspect of Chomsky's analysis was (14), exactly the portion of it designed to block covert raising. Under the assumption that overt and covert verb raising are equally allowed, (14) is eliminable, leaving (13) for **both** overt and covert movement. However, I pointed out that even (13) is not entirely without difficulties. I will therefore briefly consider two further possibilities for why verb raising across negation is possible, somehow evading a relativized minimality ECP violation.

The first further possibility, along the lines of Roberts (1993; 1994), is that Neg and V are heads of different sorts (A′ vs. A) and that relativized minimality is even more relativized than in the original proposal of Rizzi (1990). If a head only blocks movement of a head of the same type, Neg would then not block movement of V. The second possibility is that Neg is not a head, but a modifier. Note that, at least for Chomsky, its central role as a head had been to block (34), via the ECP. But under the present approach the ECP is irrelevant to the issue.[13]

## 6 Further Evidence from VP Ellipsis

I have argued that there is a fundamental morphological difference between French verbs and English main verbs and that this difference is mirrored internal to English by one between English auxiliary and main verbs. Certain surprising facts about VP ellipsis first discussed by Warner (1986) provide interesting evidence bearing on the English internal claim.

It has long been known that VP ellipsis can ignore certain inflectional differences between antecedent verb and elided verb. For example, Quirk et al. (1972), reported by Sag (1976), observe that a finite form of a verb can antecede the deletion[14] of the bare form that follows a modal, as in the following example:

(39) John slept, and Mary will too

(40) a. *John *slept*, and Mary will *slept* too
b. John *slept*, and Mary will *sleep* too

In (39) the past tense form *slept* serves as antecedent for the deletion of the bare form *sleep*.

As expected, given (39) and (40), the present tense form can also antecec the bare form:

(41) John sleeps (every afternoon), and Mary should too
(42) a. *John *sleeps*, and Mary should *sleeps* too
b. John *sleeps*, and Mary should *sleep* too

Similarly, the progressive and perfect forms can antecede the bare form:

(43) ?John was sleeping, and Mary will too
(44) a. *John was *sleeping*, and Mary will *sleeping* too
b. John was *sleeping*, and Mary will *sleep* too

(45) John has slept, and Mary will too
(46) a. *John has *slept*, and Mary will *slept* too
b. John has *slept*, and Mary will *sleep* too

It appears that a sort of sloppy identity is at work here, permitting ten and aspectual differences to be ignored in the same way that ϕ-feature d ferences typically can be. But, as Warner notes, there are certain exceptio to this general pattern. (47) is seemingly parallel to (39), but, surprisingly, is unacceptable:

(47) *John was here, and Mary will too
(48) a. *John *was here* and Mary will *was here* too
b. John *was here* and Mary will *be here* too

Evidently *was* cannot antecede *be*; nor can *is* antecede *be*:

(49) *John is here, and Mary will too

There is no general prohibition on VP ellipsis of a VP headed by *be* follo ing a modal. (50) is virtually perfect and far better than (47) and (49):

(50) John will be here, and Mary will too

Note that the failed antecedent in (47) and (49) has undergone raising c of the VP while the target V has not, unlike the situation in the success examples among (39) through (45) and (50), where neither target nor an cedent V has undergone raising. One might therefore conjecture that a tra cannot serve as (part of) an antecedent for VP deletion. There is reason doubt that conjecture, however. In (51) the antecedent of the elided VP the second conjunct contains the trace of topicalization:

(51) Linguistics$_i$, I like $t_i$, and you should too

Further, the trace of raising to subject position can, to a reasonably acceptable extent, antecede an NP *in situ*:

(52) a. Someone$_i$ is $t_i$ in the garden, isn't there
b. Someone$_i$ will be $t_i$ in the garden, won't there

Finally, even a form of *be* that presumably has not raised has difficulty anteceding a distinct form of *be*, as in (53), from Warner (1986), or (55):

(53) ?*The children have been very good here. I wish they would at home

Compare (54), with *behave* instead of *be*:

(54) ?The children have behaved very well here. I wish they would at home
(55) *John was being obnoxious, and Mary will too

Similar effects obtain with auxiliary *have*. Ellipsis is markedly better in (56) with identical forms of *have* than in (57) with distinct ones:

(56) a. John should have left, but Mary shouldn't ~~have left~~
b. ?John should have left, but Mary shouldn't

(57) a. John has left, but Mary shouldn't have left
b. *John has left, but Mary shouldn't ~~have left~~

Note that, as might be expected, the ellipsis site in (57b) is fine when interpreted as *leave*. That is roughly the situation we have seen before, with one form of a main verb anteceding a distinct form of that verb (in this case perfect *left* anteceding bare *leave*).[15] Note too that the identity of form demanded for ellipsis of auxiliary *have* is somewhat abstract, making reference to morphological features and not just phonetic ones. (58) is no better than (57b):

(58) *The men have left, but the women shouldn't ~~have left~~

The present plural of auxiliary *have* cannot antecede the bare form, even though they are both superficially *have*. Note too that main verb *have* patterns with other main verbs and not with auxiliary *have*:

(59) John has a driver's license, but Mary shouldn't

The descriptive generalization covering the data considered so far is stated in (60):

(60) The bare form of a verb V other than *be* or auxiliary *have* can be deleted under identity with any other form of V. *Be* or auxiliary *have* can only be deleted under identity with the very same form.

As Warner observes, this difference does not follow directly from (degree of) suppletion. The paradigm of *go* is highly suppletive, yet that verb patterns with all the other main verbs considered above:

(61) John went, and now Mary will go

The progressive form of all verbs (even including *be*) is also completely regular, yet such deletion under partial identity is disallowed:

(62) a. *John slept, and Mary was too
b. John slept, and Mary was sleeping too

(63) a. *John will sleep. Mary is now
b. John will sleep. Mary is sleeping now

Thus, the relevant difference seems to be between main verbs and auxiliaries[16] where the latter category includes *be* and certain instances of *have*. Interestingly, as Chomsky (1957) observed, main verb *have* sometimes marginally behaves like an auxiliary:

(64) ?John hasn't a driver's license
(cf. John doesn't have a driver's license)

It is significant that when it does behave like an auxiliary it patterns with auxiliary *have* with respect to ellipsis:

(65) ?*John hasn't a driver's license, but Mary should
(cf. John doesn't have a driver's license, but Mary should)

The inflectional features that cause it to raise make it distinct from the bare form for the purposes of deletion under identity.

Sag (1976) briefly discusses the main verb phenomena, taking them to be representative. He observes that these cases could be accounted for by

ordering verb phrase deletion before Affix Hopping. Note that on the strictly lexicalist view discussed above there is no such point in a derivation. However, on the analysis of Chomsky (1957), adopted in its essentials here, there is indeed such a point. I have departed from Chomsky (1957) in just one major respect: for him all verbs are introduced into syntactic structures bare and achieve their inflectional form via Affix Hopping, while I have argued that auxiliaries are pulled from the lexicon fully inflected.[17] This difference between English main and auxiliary verbs was part of my explanation of the verb-raising asymmetries. Strikingly, the very same difference can explain the ellipsis asymmetries along essentially the lines suggested by Sag:

(66) a. A form of a verb V can only be deleted under identity with the very same form.
b. Forms of *be* and auxiliary *have* are introduced into syntactic structures already fully inflected. Forms of "main" verbs are created out of lexically introduced bare forms and independent affixes.

Given (66), deletion under apparent incomplete identity is actually deletion under full identity but at a point in the derivation before the bare stem has associated with the inflectional affix. This is schematically illustrated in (67), a structure for *John slept, and Mary will too*:

(67) John Infl sleep, and Mary will ~~sleep~~ too

We have seen numerous instances in which the finite form of a main verb antecedes a bare form. Quirk et al. (1972), cited by Sag (1976), give several examples where the progressive and perfect forms likewise antecede the bare form. This possibility indicates on the present account that the Chomsky (1957) Affix Hopping analysis is in order for these forms as well. Schematically, we have the following:

(68) a. John was sleeping, and now Mary will
b. John was ing sleep, and now Mary will ~~sleep~~

(69) a. John has slept, and now Mary will
b. John has en sleep, and now Mary will ~~sleep~~

Quirk et al. (1972) indicate that the reverse situation from (68), with bare form anteceding progressive, is not possible. They give (70), which is parallel in structure and behavior to (71):

(70) ?*John won't enter the competition, but Peter is
(71) ?*John slept, and Mary was too

A consideration of the structure of (71) suggests an immediate solution to this puzzle:

(72) John Infl sleep, and Mary was *ing* ~~sleep~~ too

The progressive affix *ing* is stranded. Hence, (71) and (72) run afoul of the stranded affix filter. These examples thus provide additional evidence for the Chomsky (1957) type analysis of main verbs that I advocate. For reasons that I do not understand, though, the perfect affix diverges in behavior from the progressive, the perfect form of a main verb being deletable in just the same circumstances that the bare form is. Quirk et al. give (73) and (74), which are far better than the progressive examples just considered:

(73) John may be questioning our motives, but Peter hasn't
(74) Peter saw your parents last week, but he hasn't since

These ought to involve a stranded *en*. I will have to leave their acceptability as an open problem.[18]

The conclusions about the negation and ellipsis phenomena reviewed thus far potentially provide a microscope for the examination of additional inflectional forms of verbs. Consider simple imperatives in English:

(75) Leave

What is the morphological analysis of such a sentence? Lasnik (1981) argues that there is an imperative affix (occupying the position normally occupied by Tense) that must associate with the bare stem, based on the ungrammaticality of (76):

(76) *Not leave

The ungrammaticality is due to the stranded affix filter, since lack of adjacency blocks the merger of Imp and *leave*. The analysis fits completely into the framework I have outlined above. Two alternatives are excluded. It cannot be that there is no Imp morpheme at all, since that would leave (76) unexplained. Nor could there be a featural Imp to which already inflected *leave* would raise, since, if the hypothesized feature were weak, (76) would be good, and if it were strong, (77) would:[19]

(77) *Leave not

Thus far, Imp is behaving just like finite Infl. The parallelism extends still further: (76) is salvaged (however that is to be captured in the theory) by *do*-support:

(78) Do not leave

The parallelism breaks down with respect to auxiliary verbs, however. Not even *be* can raise:

(79) *Be not foolish

This indicates on the present account that either (80a) or (b) must be correct as a lexical property of English:

(80) a. The Imperative morpheme is strictly affixal, hence there will never be raising to it (just merger with it).
b. OR Imp is freely affixal or featural, and *be* and auxiliary *have* lack imperative forms in the lexicon.

On either account, in this particular construction *be* is pulled from the lexicon bare, just as main verbs are. This predicts that imperative of *be* should parallel imperative of main verbs in ellipsis behavior. (81) shows that that prediction is confirmed:[20]

(81) a. Leave. I don't want to
I won't
b. Be quiet. I don't want to
I won't

(81) is in direct contrast with (82), the properties of the latter following from the fact that *is* never arises via affixation:

(82) a. Mary left. I don't want to
b. Mary is quiet. *I don't want to

Finally, earlier I considered the possibility that English subjunctives involve covert raising. Ellipsis facts indicate that this is incorrect:

(83) I require that John leave, but Bill doesn't have to
(84) I require that John be here, but Bill doesn't have to

The subjunctive form of a main verb or *be* can antecede the bare form. This indicates that the subjunctive is not a lexically inflected form at all in English. In this regard subjunctives are like imperatives. But the negative subjunctive sentences diverge from the negative imperatives, as in (85), repeated from (21):

(85) a. I desire that John not leave
b. I desire that John not be here

Thus, subjunctives cannot involve affixation either. They must be what they superficially appear: bare forms.[21] Under the standard assumption that nominative Case on a subject must be licensed by an appropriate functional head that combines with, subjunctive clauses must have a subjunctive functional head. The above argument indicates that that head is not an affix and, further, does not have V-features.

## 7 Conclusion

In conclusion, I have presented an analysis that, not surprisingly, differs from that of Chomsky (1957) in significant respects. For Chomsky, all of the descriptive machinery was syntactic, while I have argued, from the perspective of more recent theorizing, that Affix Hopping is a PF process rather than a syntactic one and that the differential behavior of verbs of the two sorts is stated in the lexicon and not in particular transformations. Perhaps more striking than the differences, though, are the similarities. In many respects we arrive at the end of this journey almost where we began: with an analysis of core facts of English verbal morphology highly reminiscent of the classic one in its reliance on a form of Affix Hopping and in its formal distinction between main verbs and auxiliaries. Sometimes old ideas are not merely interesting – they can even be right.

## Appendix

For ease of exposition I have reduced the system of verbal inflection to simply "Infl," but this obscures a number of potential questions. Given standard assumptions about clause structure, as in Chomsky (1991), $Agr_s$ is higher than Tense, which is in turn higher than $Agr_o$. In a simple sentence with no

auxiliary verbs all of these associate with the verb. Now there is ample evidence that the association with $Agr_o$ must be syntactic: in many respects an object or an ECM subject behaves as if it were outside the VP.[22] The task is to reconcile this with my proposal about merger, which presumably involves Tense and possibly $Agr_s$. Here are three possibilities:

A. V has Agr features lexically, and these can be ignored for ellipsis (just as such features of DPs can, as in standard sloppy identity constructions, e.g., *I read my book and they did too*). V raises to Agr in LF to check these features but merges with tense in PF. This demands that $Agr_o$ be invisible in determining the adjacency needed for merger. This follows from Bobaljik's (1994) definition of adjacency.
B. V raises to $Agr_o$ overtly along the lines of Koizumi (1993) and Ura (1993). In PF, $Agr_s$ merges with Tense, which merges with the V–$Agr_o$ complex.
C. Like B, except that raising to $Agr_o$ is in LF.

Both (B) and (C) posit a formal difference between $Agr_s$ and $Agr_o$. If we are to follow Chomsky (1993) in taking "$Agr_s$" and "$Agr_o$" to be merely mnemonics for distinguishing two different functional roles of Agr, these two possibilities must presumably be excluded. See Borer (1994), though, for arguments that $Agr_o$ is better regarded as an aspectual head than as purely an agreement head.

## Notes

Portions of this material were presented in a course at the University of Connecticut, at the Washington Area Generative Society Second Minimalist Fest, in a colloquium at the Keio University Institute of Cultural and Linguistic Studies, and at the First Numazu Linguistic Seminar. I am grateful to all of those audiences for their stimulating suggestions and devastating counterexamples, which led to substantial improvements in the analysis. I am especially indebted to Željko Bošković and Roger Martin for many hours of discussion and for an extraordinarily careful reading of the manuscript under panic conditions.

1 I return to the question of why verb raising takes precedence over Affix Hopping. As for the apparent "last resort" nature of *do*-support, see Watanabe (1993) and Baker (1991) for proposals (and see the latter for important critical discussion of the kind of economy analyses I will examine below). See also Bobaljik (1994) for discussion in terms of a Chomsky (1957) style analysis of English verbal inflection similar to one I will argue for below.

2 Chomsky (1991) takes Affix Hopping to be a standard instantiation of syntactic Move α. Hence, no simple adjacency requirement of the sort in earlier analyses could be relevant.

3 $Agr_s$ is the subject agreement projection, and $Agr_o$ is the object agreement projection.

4 As Roger Martin observes, the mechanism by which re-raising remedies the violation is not entirely clear. Chomsky (1991, p. 426) states that "[s]ubsequent LF raising . . . to the position of *t* is required to create a proper chain." Note though that, if the raising is adjunction, and if the chain is originally improper because the *t* is marked [-γ] in the ECP notation of Lasnik and Saito (1984; 1992), then the violation is not obviously eliminated. One possible approach to this problem is to allow γ-marking to freely apply anywhere in the derivation, rather than insisting that it apply immediately as the trace is created. Once all raising is completed, every trace is arguably in a configuration of antecedent government.

5 The illicit A'-movement in question is long adjunct movement, for example, of the sort discussed by Lasnik and Saito (1984):

(i) *Why$_1$ do you believe the claim that John said [Bill left $t_1$]

The derivation to be excluded involves a short movement to the lowest [Spec, CP] followed by a long move out of the complex NP to the matrix [Spec, CP]. Similarly, the relevant illicit A-movement would be such "super raising" as (ii):

(ii) *John seems that it is likely to be arrested *t*

with a short movement to the lowest [Spec, IP] followed by a long move to the matrix. For head movement Željko Bošković suggests (iii), where *have* has moved through $Agr_o$ on its way to the matrix Infl:

(iii) *You have not believed Peter to *t t* gone there

6 Interestingly, this checking view more precisely captures the insight of the earliest modern version of Case theory, that of Vergnaud (1977), than does the Case assignment approach of Chomsky (1980; 1981).

7 Later, though, we will see reason to doubt this.

8 These examples are taken from Wilder and Ćavar (1994). See also Bošković (1995b) for discussion of a Serbo-Croatian construction that allows fully inflected finite auxiliary verbs to remain *in situ*.

9 See Epstein (1998) for discussion, and a possible analysis.

10 See also Halle and Marantz (1993) and Bobaljik (1994).

11 One remaining question concerns the obvious grammaticality of (i):

(i) John never left

While *not* evidently blocks the adjacency needed for merger, adverbs in general do not. Bobaljik (1994) suggest that adverbs (or, more generally, adjuncts) are not relevant to PF adjacency, while heads and specifiers are. In fact, he assumes

that *not* in English is actually a specifier. See Lasnik (in press–b) for another possibility.

12 I continue to assume that movement is driven solely by features of the appropriate sort. In particular, I assume that the property of being an affix is not a feature relevant to syntactic head-raising. Thus, as Roger Martin notes, under either Chomsky's (1993) Greed constraint or the weaker Enlightened Self Interest of chapter 4 above, movement of bare V will be blocked by general economy considerations. As observed in chapter 4, note 7, this line of reasoning creates a problem for the analysis of *there* in chapters 3 and 4. See chapter 6 for an alternative.

13 If *not* is a head, a radical alternative to Roberts's idea would be to eliminate the Head Movement Constraint entirely. Obviously, it is far beyond the scope of this paper to explore that possibility. I will merely note in passing that one standard argument for the constraint, from Chomsky (1986a), is not clearly relevant. Chomsky observes that in (i) *will* must move to Comp; an alternative in which *be* moves to Comp across *will* is barred:

(i) a. How tall will John be
b. *How tall be John will

As Chomsky notes, the Head Movement Constraint (HMC)/ECP will rule (ia) out. However, in any theory where movement is driven solely by the need for features to be satisfied, the HMC is superfluous here. In V-to-C constructions in English there is no morphological need of either V or C that is satisfied by the raising of V *per se*. Rather, the requirement involves Tense: it is only a finite verb that ever raises to C. Thus, general economy considerations block (ib) because no feature will drive the movement of *be* to Comp. See Roberts (1994) for related discussion.

14 I use the term "deletion" merely for ease of exposition. As far as I can tell, all of the arguments I present are neutral between a PF deletion approach to ellipsis and an LF copying one.

15 I return to such constructions below.

16 Kayne (1989) conjectures that Universal Grammar makes available a categorial distinction between the class of lexical verbs and the class of auxiliary verbs. Such a distinction is at the core of Akmajian, Steele, and Wasow (1979) and Steele (1981). Wexler (1994) shows that a consistent pattern of inflectional errors in child language reflects a fundamental main verb vs. auxiliary verb dichotomy. For children acquiring English his findings are reminiscent of my proposals: for main verbs, but not for auxiliaries, children would freely substitute the infinitival form for the appropriate finite form.

17 This is essentially the formal analogue of the insightful semantic proposal of Warner (1986), though he argued that such a treatment is appropriate for *be* but not for *have* (based on subtle acceptability differences that I am putting aside).

18 Descriptively, it is as if stranded *en* is spelled out as zero, much as stranded Infl is spelled out as a form of *do*. We have seen that stranded *ing* lacks the first possibility. (i) shows that it lacks the second as well:

(i) *John slept and Mary was doing too

19 Željko Bošković points out that this conclusion does not quite follow. Suppose that negation is an A'-head in the sense of Roberts (1993) and that verb movement in imperative constructions also involves movement to an A'-head across negation. Then a simple positive imperative could involve raising, while a negative imperative could not. A special form would be needed for the negatives (*do*-support in English). Rivero (1994) shows just such a pattern for several Balkan languages. Ellipsis provides some evidence against such an approach to the English facts, however, as we will see directly.

20 (i) indicates that even in a positive imperative *be* behaves strictly like a bare verb and does not undergo raising:

(i) a. Should I be quiet? Please do
b. * Please be

If imperative *be* could raise, (ib) could arise from raising and deletion of the residual VP, just as in (ii):

(ii) John is

If such phenomena establish that auxiliary verbs in English have bare forms that are capable in principle of undergoing merger, the central ellipsis phenomena I have presented must be reconsidered. I showed how (49), repeated as (iii), is ruled out if *is* is necessarily taken fully inflected from the lexicon:

(iii) *John is here, and Mary will too

But with *be* in principle able to merge with a particular inflectional affix (Imp) the question is why there cannot be an alternative merger derivation of *is*, alongside the lexicalist one. I suspect that the answer lies in the domain of what is often termed morphological blocking. If *is* exists as a word, the merger derivation will be blocked, on the assumption that inflectional slots are uniquely filled, at least in the unmarked case. See Aronoff (1976), Kiparsky (1982), and Pinker (1984) for discussion.

21 An alternative, suggested by Željko Bošković, is that the relative height of negation and subjunctive head differs from that of negation and Tense. I put that possibility aside for future research.

22 See chapter 2 and chapter 3 above for discussion.