HEAD MOVEMENT (p.273 ~ 312)

Two Types of not and the NegP in English

Hee-Don Ahn
(Kon-Kuk University)

한국문학사
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Hee-Don Ahn  
(Kon-Kuk University)

0. Introduction

Recent work in syntactic theory has developed the extension of the X'-schema to the projection of functional heads (Chomsky (1986)) and a more articulated conception of sentence structure (Pollock (1989), Chomsky (1989)). Most commonly known extensions are:

i) Infl to be taken to head of S; IP  
(Stowell 1981)

ii) Comp to be taken to head of S'; CP  
(Chomsky 1986)

iii) D(eterminer) to be taken to head of NP; DP  
(Fukui and Speas 1986)

iv) Deg(ree) words to be taken to head of AdvP; DegP  
(Abney 1987)

Infl is known as a portmanteau of Agreement, Tense, Modal, etc. Pollock (1989) proposes a structure where Tense and Agreement occupy independent structural projections separated by the maximal projection of negation called NegP. Pollock has suggested that this enriched structure is needed to account for the previously poorly understood phenomena concerning word order variations with respect to negation and adverb placement in French and English.

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In this paper, I address several issues related to the number and hierarchical relations of functional projections in clausal structure. Particularly, I focus on the syntactic nature of negation, and I attempt to establish the argument to support the claim that there indeed exists NegP in English based on two kinds of negator not.

This paper is organized in the following fashion. In the first section, I outline some theoretical background for the extension of IP to more articulated structure advanced in Pollock (1989), and examine the validity of his arguments. I will also discuss the status of Affix-lowering operation advocated in Chomsky (1989) and implicitly assumed by Pollock. I will essentially show that their reasoning for postulating the rule of Affix Hopping is not well-motivated, and raise some further problems on their Affix-lowering account based on Agr parameter. The second section primarily concerns the nature of the negator not in English. I will demonstrate that there are two not's in English—a head of NegP, and an adverb. I will further elaborate on Johnson's (1990b) view on the clausal structure of English in conjunction with our claim that not is an affixal head of NegP. I will also take the position that main verbs do raise in English contra Pollock (1989) and Chomsky (1989). I will justify the view that the obligatory nature of Verb Raising is induced by the affixal nature of functional morphemes such as Tense in English. The last section concludes this paper.


In what follows, I will briefly sketch out the proposals made in Pollock (1989) and Chomsky (1989) concerning AgrP, TP, and NegP, and show some problems in their suggestions.
1.1. Verb Raising and Agr Parameter

Following an insight which dates to Emonds (1976, 1978), Pollock (1989) has argued that the different scope of verb movement can capture the following contrasts between French and English.

(1) a. *John kisses often Mary.
    b. Jean embrasse souvent Marie.

Pollock claims that if the VP-initial adverbs often and souvent are generated in a position adjoined to VP at D-structure, the contrasts in (1) overtly show that the main verb moves to the inflectional head in French, while it does not do so in English. To be more concrete, Pollock (1989) suggests the following structure for a simple sentence in English and French: (Intermediate one bar projections are omitted here.)

```
TP
  \---- AgrP
       \---- VP
          \---- Adv
              \---- VP
                  \---- V
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Pollock suggests that Tense and Agreement constitute distinct heads, and Tense is projected higher than Agr(eement). Moreover, he proposes that Agr in French is rich enough to attract the verb onto it. He takes the view that the scope of V-raising is restricted by the richness of Agr. He argues that Agr in French is "transparent" in the sense that the verb adjoining it can transmit its ability to assign theta
-roles to its trace, while Agr in English is "opaque" in that the verb cannot transmit its ability to assign theta-roles to its trace if it adjoins to the "opaque" Agr, hence theta-assigning main verbs in English cannot move into Agr since it would violate Theta-Criterion. It is this property of Agr, either "transparent" or "opaque," that displays the contrast as shown in (1a–b), as Pollock claims. Note, however, that (1a) can be ruled out independent of V-raising since there is an overriding condition in English which forces the NP complement and its theta-assigning verb to be adjacent at PF (Stowell 1981). That is, it is not clear whether V-raising or the Adjacency Requirement is responsible for the ill-formedness resulted in (1a). In fact, in the environment where the Adjacency Requirement is not forced, we can find the cases which may show that V-raising is possible in English. Consider the following examples from Johnson (1989, 49):

(2) a. Chris walked quickly down the street.
    b. Mickey talked slowly to Gary.
    c. Betsy spoke loudly with everyone.
    d. Sam said suddenly that we must all leave.
    e. Chris tried diligently to leave.

Johnson (1989) observes that Affix Hopping cannot plausibly account for the adverb placement in (2) without stipulating the downwards movement of adverbs: Johnson notes that the Projection Principle in its strictest form enforces only complements to be sisters to the verb at D-structure. Thus without Verb Raising (or undesirable adverb lowering), the surface order of intervening adverbs between the verbs and their complements in (2) is highly problematic (see also Pesetsky (1989) and Jaeggli and Hyams (1989)). I will return to these examples in section 2.3.
Pollock further suggests that only auxiliary verbs can raise to opaque Agr in English, as in (3), since these verbs, by assumption, do not assign theta-roles, hence the movement of these terms to Agr would not induce the violation of Theta-Criterion.

(3) a. John has done it.
   b. John is usually working at night.

Again, contra Pollock (1989), (3) can be seen as a simple V-raising case under our conjecture on a par with (2) since the Adjacency Requirement is not imposed.

To summarize so far, there is an alternative way to interpret the contrasts in (1a) and (1b) on one hand, and (1a) and (2), on the other. That is, the contrast in (1a) and (1b) may not hinge on the scope of V-raising but may be due to the presence or absence of the Adjacency Requirement on Case in these languages. Further, the contrast in (1a) and (2) may not be attributed to the different nature of main verbs and auxiliaries per se with respect to raising possibility onto Infl, but because of the force of the Adjacency Requirement. More specifically, following Johnson (1990a), the deviance in (1a) is invoked since the object does not raise to the appropriate position to be assigned a Case from the verb.

Now let us turn to the argument for the existence of AgrP in English and French put forward in Pollock (1989).

1.2. AgrP

Pollock puts forth the evidence for the existence of the maximal projection “AgrP” partly based on the following data (Pollock (1989, 382)).
(4) a. Peter is said to seldom have enough money.
   b. (?) Peter is said to have seldom enough money.
   c. Peter is said to seldom make enough money.
   d. *Peter is said to make seldom enough money.

(5) a. (?) I believe John to be often sarcastic.
   b. *I believe John to sound often sarcastic.

Pollock suggests that have/be in English infinitives can optionally raise to Agr (and may be further to Tense)—which he calls “short verb movement”—while main verbs never do. Iatridou (1990), on the contrary, argues that often sarcastic can form a predicate in (5), hence (5a) does not necessarily show the be-raising to Agr. Iatridou (ibid.) further points out that the unacceptability of (5b) arises from a semantic incompatibility between the verb sound and the reading of the lower predicate often sarcastic imposed by the adverb. Thus according to her, employing appropriate adverbs will not exhibit the contrast as in (6), in contrast to (5) (ibid., 56).

(6) a. John is believed to be deliberately sarcastic.
   b. John is believed to sound deliberately sarcastic.

1) Pollock (1989, 376) illustrates the following examples to show the optional movement from Agr to Tense under the assumption that NegP is positioned between Tense and Agr.
   ( i ) a. Not to be happy is prerequisite for writing novels.
      b. ?To be not happy is a prerequisite for writing novels.
      c. Not to have had a happy childhood is a prerequisite for writing novels.
      d. (?)To have not a happy childhood is a prerequisite for writing novels.
   Lasnik (1989) however notes that the following examples are almost (if not totally) ungrammatical:
   ( ii ) a. *I believe John to be not here.
      b. *I believe John to be not singing.

Apart from the controversy in grammatical judgements, ( i ) may not still evidence for V + Agr to T movement since not in (ib) and (id) can be regarded as a constituent negation (see Iatridou (1990)). I will return to the difference between sentence and constituent negation in section 2.
I assume Iatridou’s observation is basically correct in that the contrast shown in (5) is not necessarily due to the fact that main verbs in English do not undergo Verb Raising, but auxiliaries do. Iatridou’s argument, however, may not be extended to the contrasts in (4), since *seldom enough money* may not constitute a predicate unlike *often sarcastic*, because an adverb *seldom* cannot modify an NP *enough money*. Thus, (4b) can be a real instance of V-raising in English infinitives. This, however, does not necessarily mean that “V-to-Agr” raising ensues in (4b) since the adverb like *seldom* is not a VP-modifying type but more likely a sentence-modifying type (Jakendoff (1977)). Thus the result that we have obtained from the contrast in (5b) and (5d) is: There is a certain position (not necessarily Agr or T) where only auxiliaries but not main verbs can move.

In sum, Pollock’s evidence for the existence of AgrP in English is not sufficient and not well-motivated with those examples that he has provided. However, we get one interesting by-product in this discussion; that is, we have to differentiate the scope of V-raising between auxiliaries and main verbs in English based on the contrast in (5). I will turn to this issue in more detail in section 2.

Now I wish to observe further compelling evidence being consistent with this supposition.²

In this section I would like to consider the proposal as to the status of NegP in English. Based on the following paradigm in (7) and (8) in English and French, Pollock argues that negation must head its own maximal projection NegP.

\[
(7) \ a. \ \ast \text{John understands not.} \\
\quad \text{b. John has not understood.}
\]

²) Here, I omit the discussion concerning the status of AgrP in French, as widely discussed in Pollock (1989). But see Iatridou (1990) for arguing against AgrP in French.
(8) a. Jean (ne) comprend pas.
   b. Jean (n')a pas compris.

This set of data shows that verbs can (in fact "must" in this context) move over *pas* in French, while only auxiliary verbs can cross over *not* in English. Pollock postulates the position of NegP below Tense but above AgrP:

(9) \[
\text{TP} \quad \text{---} \quad \text{NegP} \quad \text{---} \quad \text{AgrP} \quad \text{---} \quad \text{VP}
\]

Under Pollock's account, main verbs in English cannot move to Agr due to theta-theory, hence (7a) cannot be obtained. Auxiliary verbs in English, on the other hand, can move to Agr and can further raise up to T, hence (7b). In French, however, all verbs can move to Agr and ultimately to T. He further suggests that V-raising to T through Agr is in fact obligatory whenever it is possible. Pollock's theory for obligatory V-raising to T runs as follows: First, he takes the position that Tense [+ Finite] is a sentential operator which must bind a variable. And, in order to meet the ban on vacuous quantification, some material should raise to adjoin T—say, a verb, Agr—then, the trace of raised V and/or Agr can serve as a variable for T operator. The requirement that T must bind a variable requires V-raising as an obligatory rule under his account. By this, we achieve the right (and only possible) order "V Neg" in (8) for French and (7b) for English, given the structure in (9). Under this account, another important question
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arises: How can the movement skipping over NegP void the violation of the Head Movement Constraint (HMC, Travis (1984)) or the ECP? Pollock suggests that the HMC must be subsumed under the ECP in this case, and he further assumes:

(i) AgrP is not inherent barrier, and
(ii) The verb raised on T L-marks NegP, hence, the verb crosses no barrier.

Thus, under these assumptions the ECP is respected.

Notice, however, that moving V* directly onto T* over Neg* would violate the HMC.3 Thus, in Pollock’s account, the HMC is too strong, and must be subsumed under the ECP.

Now consider the ill-formed sentence in (7a). In order to achieve this surface order, lexical verbs4 in English either raise to T over Neg through Agr—a two step derivation—or directly move to T skipping over Agr and Neg—a single step derivation. Two step derivation is predicted to be illicit under Pollock’s view since (theta-assigning) lexical verbs cannot exploit opaque Agr as an “escaping hatch.” Now take the single step derivation. It seems that this long distance V*-movement must be licit under his account based on the ECP, since moving a V* to T* would not cross any barrier on a par with the account for (7b)/(8) above. Thus, (7a) is incorrectly predicted to be grammatical under Pollock’s theory.

Further, recall that in secton 1.2 we have seen that the ban on V-to-Agr movement for lexical verbs is not well-motivated in English.

3) Movement of a zero-level category B is restricted to the position of a head A that governs the maximal projection M of B, where A theta-governs or L-marks M if A ≠ Comp. (Chomsky (1986, 71))

4) Note that I am using the term “lexical verbs” and “main verbs” interchangeably, and “auxiliary verbs” or “auxiliaries” as a general term for non-lexical or non-main verbs. Also following general convention, I use T for T*, or Agr for Agr*, etc.; or vice versa.
Then, here too, the contrast in (7) only manifests the fact that main verbs in English cannot move to T or a functional node F higher than Neg. The facts become relatively consistent with regard to the distance of V-movement in English; namely, "the auxiliary verbs can move farther than the main verbs in English." Let us bear this fact in our mind until section 2.2, and consider more problematic cases in Pollock's account in the next section.

1.4 Affix Hopping

Consider the following contrast:

(10) a. John often kisses Mary.
    b. *Jean souvent embrasse Marie.

According to Pollock, adverbs such as often and souvent are generated sister to VP, hence, the ill-formedness in (10b) shows that the verb in French must raise to Infl out of VP. In (10a), however, he suggests that the inflectional ending is amalgamated with the verb not by Verb Raising but by Infl-lowering onto the verb often called Affix Hopping (Chomsky (1957)). One question immediately arises under Pollock's account for (10b): Why isn't Affix Hopping possible in (10b)? Pollock's answer is: V-raising is obligatory whenever it is possible. Since V-raising is possible in French because of the transparent nature of Agr, it must occur obligatorily at "S-structure" in order to satisfy Tense quantification requirement. In English, on the other hand, if main Verb Raising is inhibited due to the opaque nature of Agr, Infl and verb are amalgamated by alternative means—namely, affix-lowering. In this situation, another question arises for English sentences where V-raising is barred. How can Tense quantifica-
tion requirement be fulfilled in this context? consider the following

simple affirmatives:

(11) a. John left.
    b. John leaves.

In this case, Pollock postulates a null do, a nonlexical counterpart of

ploimonastic do, which is generated under Agr, and subsequently moves
to T at S-structure to satisfy Quantification Theory. He further sug-
gests that null do movement is blocked in the following sentence due
to intervening NegP.

(12) John not leaves.

More specifically, assume the following derivation for (12):
(Here φ symbolizes for null do.)

(13) TP
    T
    Agr
    \[φ\]
    T
    not
    AgrP
    tφ
    VP

Following Pollock, φ cannot L-mark NegP since it is not Lexical. Note
that in (11), φ crosses over only AgrP which is stipulated as not an
inherent barrier, hence no ECP violation occurs there. If (lexical) do
is generated under Agr, instead of φ, the output would be (14).

(14) John does not leave.

Now in (14), according to Pollock, do can L-mark NegP since it is
Lexical in contrast to null do. Note that this account crucially hinges
on the fact that the negator not is an element of a NegP—either its
head or its specifier. If not is an adverb, it is not clear why “null do” - movement is not blocked by other negative adverbs as seen in (15).

(15) John hardly/never/seldom speaks.

Thus, the contrast in (11) and (12) can be another important evidence to support the existence of NegP in Pollock’s proposal.

Further note that under Pollock’s treatment of (15), there are two independent processes involved—null do raising and affix lowering. In particular, Affix lowering does not have to be necessarily “syntactic” in his proposal. Pollock (1989, 394) conjectures that affix movement does not seem to be an ordinary rule of syntax taking place at D-structure/S-structure, since moving down the terms is not generally allowed due to the Proper Binding Condition or the ECP. Thus, he speculates that affix movement would rather be a rule applying on the PF side of the grammar. Logically, there are at least three specific choices for accounting for the verb+Inf complex in English, if it is not achieved by “syntactic” process;

( i ) by some unknown PF-process such as downward movements in conjunction with free deletion of traces (or by some sort of PF-readjustment rules),

( ii ) by “morphological” transformations, along the lines in Kayser and Roeper (1978),

( iii ) by strictly lexical process (Lapointe (1980) and Mohanan (1986)).

First of all, the morphological or lexical treatment of the verb + inflectional paradigm in English seems very implausible because their distribution is highly predictable and well constrained by syntactic principles, as will become more clear. Thus, I will not take the options ( ii ) and ( iii ) seriously. A similar objection can be made for the choice of ( i ). For instance, take the following illicit derivation of lowering the
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matrix Inf1 onto embedded verb:

\[
\text{(16) a. } \text{(John} T^1 \text{ Agr}^1 \text{ say that they } T^2 \text{ Agr}^2 \text{ leave+ sl)}
\]

This derivation can be wrongly ruled in under Pollock's proposal; that is, null do can be generated under Ag^1 and Agr^2, and moves to T^1 and T^2, respectively. Hence, Quantification Theory for Tense is satisfied in (16). Further, the (3rd person singular) inflection -s can move down to the verb leave, and 3rd person plural phonetically null inflection can move to the verb say. These long-distance movements would not violate the ECP (and perhaps would not violate Subjacency, either) if the traces left by movements can freely delete. However, if Affix movement is in fact syntactic head-movement, we can correctly rule (16) out by the ECP (or the HMC). For this reason, we may abandon the view that Verb + Inf1 complex in English is derived by an obscure Affix movement at PF, as speculated in Pollock (1989).

Now let us consider an alternative account for the facts discussed above. In Chomsky (1989), Affix Hopping is treated as a subcase of syntactic X'-movement. Chomsky suggests that I-lowering to V in English apparently gives rise to an improper chain, hence a potential ECP violation. However, he argues that the potential ECP violation can be circumvented by the subsequent raising of V + I complex back to I at LF. Thus, the simple affirmative sentence has the following S-structure and LF:

\[
\text{(17) a. John arrives.}
\]

\[
\text{b. } [\text{tr t } [\text{Agr t} \text{ [vp V + Agr + T]]]} \quad \text{S-structure}
\]

\[
\text{c. } [\text{tr V + Agr + T} [\text{Agr t} \text{ [vp t]]]} \quad \text{LF}
\]

Chomsky further suggests that whenever V-raising is possible, I-
lowering is blocked because there is a condition on derivations he refers to as the "Principle of Economy." This principle basically says that shorter derivations are always chosen over longer ones. Given the fact that overt I-lowering with subsequent V+I-raising at S always involves more number of steps of derivations than overt V-I raising, thus, Affix-lowering does not take place in French verbs, and in English for auxiliaries.

Then, let us now turn to contrast in negative clauses repeated below:

(18) a. *John not leaves.
    b. John has not left.

Chomsky suggests that (18a) violates the ECP, while (18b) does not. His argument runs as follows: To derive (18a), at least three main steps are involved. First, T is lowered to Agr, and T+Agr to V. Then the trace in Agr* is deleted. Finally, the complex V+Infl is moved to vacant Agr*, and raises further to T* over Neg*. To derive (18b), first moves to Agr*, and V+Agr moves to T* crossing over Neg.

Chomsky departs from Pollock in that NegP is an inherent barrier (and ignoring L-marking mechanism of Pollock), thus, nothing can cross over it unless the trace left by the moved elements can delete. Note that under his proposal, (18a) and (18b) involve the following derivations (19a) at S-structure and (19b) at LF, respectively:

(19) a. \[
\text{TP} \\
\text{V} \quad \text{NegP} \\
\text{Neg} \quad \text{AgrP} \\
\]

(\(= \text{(18a)} \))

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b. \[
\begin{array}{c}
\text{TP} \\
\text{V+Agr} & \text{NegP} \\
\text{Neg} & \text{AgrP} \\
\end{array}
\]

Chomsky further stipulates that Agreement plays no role at LF, hence it can delete at LF. Thus (19b) can obviate the ECP violation. By contrast, he assumes, the trace of verb in (19a) must play a role at LF, hence it cannot delete. Then, the ECP violation results. Chomsky further proposes that the ill-formed sentence like (18a) can be rescued by the language particular device called “do-support” as a last resort. This yields the following sentence:

(20) John does not leave.

Note, in particular, that Chomsky departs from Pollock for obligatory nature of V-raising or I-lowering. Chomsky suggests that the morphemes Tense and Agr are morphological affixes, hence these items cannot stand alone, and must be supported by S-structure—the idea essentially originates from Lasnik’s (1981, 162) filter,

“A morphologically realized affix must be realized as a syntactic dependent at surface structure.”

Now, let us ask why do-support is the only way to salvage the ill-formed representation of (18a). Suppose \(T^*\) is lowered onto \(V^*\) along with Neg\(^*\) and Agr\(^*\) at S-structure and the whole complex moves back to \(T^*\) at LF to eliminate the improper chain. This derivation seems to observe the ECP on a par with (17), and significantly this operation is less “cost” than inserting *do*, a language particular device according to Chomsky. Then, (18a) can be erroneously ruled in
without *do*-support. This is of course not a desirable consequence for Chomsky's approach. In Section 2, I will explore an alternative way to account for the ungrammaticality in (18a).

Up to now, we have observed several problems concerning the scope of verb movement in relation to the distribution of VP-adverbs and negation in English and French. We have mainly focused on Pollock's (1989) proposal which crucially relies on splitting Infl into T* and Agr*, postulating NegP between them. Among some of Pollock's proposals, I have tried to weaken the following premises:

( i ) main verbs in English do not move (to Agr*)
( ii ) short *have/be* movement to Agr* in English infinitives
( iii ) null-*do* raising at S-structure in conjunction with Affix-lowering at PF for simple affirmatives

Essentially, I have shown that ( i ) main verbs must move over VP-adverbs unless Adjacency requirement is imposed, and ( ii ) *have/be* may move in English infinitives, perhaps not onto Agr*, but higher position where main verbs cannot reach ( iii ) the complex V-I must be achieved by syntactic movement. I have also pointed out the problems in Affix lowering put forward in Chomsky (1989) in that this movement cannot be properly restricted (see also Johnson (1990b)).

In the next section, I will offer alternative accounts for the facts we have observed.

2. Toward a solution

2.1. Two types of *not*

There seem to be numerous ways to express negation across languages superficially. In English, various terms can be employed to express negative meaning—e.g., *hardly, never, seldom* and a typical nega-
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In *not, to mention a few. Interestingly, this class of terms cannot be
mentioned sentence initially.

   b. *Never John solved the problem.
   c. *Seldom John solved the problem.
   d. *Not John solved the problem.

More interestingly to our purposes, these terms can occur between the
subject and inflected verbs, except for *not.

(22) a. John hardly solved the problem.
   b. John never solved the problem.
   c. John seldom solved the problem.
   d. *John not solved the problem.

If these terms are analyzed as a class of adverbs, *not is "truly" an ex­
ceptional adverb.5 Pending the explanation for the ill-formedness in
(22d) for the moment, let us examine another peculiar property of *not
which distinguishes from other adverbs. *Not must be adjacent to (im­
mediately follow) the dummy do as in (23d), while it can be separat­
ed from other modals/auxiliaries as in (23a–c):

(23) a. John was probably not talking to Bill.
   b. John has probably not talked to Bill.
   c. John will probably not talk to Bill.
   d. *John did probably not talk to Bill.

b) Presumably, the terms so and too behave as *not in this respect.

(1) a. *John so solved the problem.
   b. *John too solved the problem.

Here, I will limit my discussion solely on *not. But see Chomsky (1957), John­
son (1989), Kayne (1989), Pollock (1989), and Laka (1990) for treating
them together.
Another peculiar property of *not* contra other adverbs is that it has a widely used phonologically reduced variant *n’t*. Interestingly not all *not*s can be replaced by *n’t*.

(24) a. John didn’t go. (=John did *not* go.)
    b. John wouldn’t go. (=John would *not* go.)
    c. John hasn’t arrived. (=John has *not* arrived.)

(25) a. *John would haven’t arrived. (=John would have *not* arrived.)
    b. *I want ton’t go. (=I want to *not* go.)
    c. *I will probably n’t go (=I will probably *not* go.)

Why can only some instances of *not’s* be substituted by *n’t*? Note that the characteristic paradigm in (24) and (25) cannot be accommodated under a peculiar phonological rule being sensitive to syntactic features, say, Tense. One might possibly postulate the following phonological rule for the distribution of *n’t*.

(26) not → n’t/verb[ +Tense] [optional]

This rule may correctly capture the contrasts in (25) and (26). However, it is not difficult to find counterexamples to this rule. First, consider (27):

(27) a. *I want n’t to go.
    b. I want *not* to go.

*Not* in (27b) is exactly located in the environment to undergo contraction in (26), yet contraction is not possible. Further observe the following contrast from Green (1970):

(28) a. Punch is more responsible than Judy is NOT responsible.
    b. *Punch is more responsible than Judy isn’t responsible.
(GROON (1970) observes that not in a certain frozen expression like "more often than not" cannot undergo contraction. Note that not in (28a) is also in the possible environment to undergo contraction into n't, but the result is not acceptable as in (28b). Thus, I conclude that not/n't alternation does not hinge on phonological conditions—that is, it is not "string" sensitive.

Based on the facts we have observed, I wish to claim that there are two different lexical entries for not which are categorically distinct from each other. Let us call not for the interchangeable counterpart of n't, and NOT for noninterchangeable one, for the purposes of exposition. That is, not and n't are parts of the maximal projection NegP, while NOT belongs to a class of adverbs adjoining to only lexical projections such as VP, AP, AdvP, etc.

Now, let us examine further differences between not in NegP and an adverbial NOT. NOT sharply contrasts with not with respect to surrounding facts. Based on Ernst's (1990) observation, I suggest that only not but not NOT may be stranded after VP—Ellipsis. First consider the following contrasts: (Ernst 1990, 6)

(29) Ken said he could have heard the news, but George
   a. said that he could not (have) ______.
   b. *said that he could have not ______.
   c. said that he could have not heard the news.

(30) Ken said that he might be doing his homework, but
   a. George said he might not (be) ______.
   b. *George said he might be not ______.
   c. George said he might be not doing his homework.

Based on n't—substitution test, (29b) and (30b) involve NOT, while (29a) and (30a) involve not. Observe:
(31) a. Ken couldn’t have heard the news.
    b. *Ken could haven’t heard the news.
    c. George mightn’t be doing his homework.
    d. *George might ben’t doing his homework.

The precise nature of VP-Ellipsis is far from clear, however, by the contrasts in (29) and (30), I wish to simply note that NOT behaves on a par with regular adverbs, while not does not, since adverbs in English cannot be stranded with VP-Ellipsis: (C. Baker 1989, 292)

(32) a. *Pete has often visited Grandmother, but Bill has never ___.
    b. *Only a few of the teachers have checked out books, but the students have all _____.
    c. *John has definitely finished the exercise, and Martha has probably _____, too.

Observe further difference between not and NOT. Consider the following examples as discussed in Iatridou (1990, due to H. Lasnik):

(33) a. John has not been playing football for many years.
    b. John has been NOT playing football for many years.

Iatridou observes that (33a) is ambiguous with respect to the relative scope of not and many. That is, the following two readings can be obtained according to Iatridou:

(34) a. John used to play football and he hasn’t played in the last fifteen years.
    (many has scope over not)
    b. John started playing football only one year ago.
    (not has scope over many)
By contrast, (33b) is not ambiguous but only the narrow scope reading of $\text{NOTP}$ (not in (34a)) is possible. If not takes sentence scope in contrast to $\text{NOTP}$ whose scope is restricted only to XP which it modifies, this contrast can correctly result. Note, particularly, that this implies $\text{NOTP}$ in (33b) is, by no means, analyzed as a part of NegP. Again if this is the case, then replacing $\text{NOTP}$ with $n't$ should be impossible in (33b) unlike (33a), as is consistent with my proposal. This is correctly borne out.

(33b) a. John hasn't been playing football for many years.

b. *John has been $n't$ playing football for many years.

Note, however, that if has and not are separated by an adverb in (33a), the wide scope reading of not over many cannot be obtained. Unlike this:

(34) John has usually $\text{NOTP}$ been playing football for many years.

Thus, here we can find another evidence to confirm our supposition that not, an element in NegP, must be adjacent to the preceding (auxiliary) verb. Now, let us consider “not” in infinitives. “Not” in infinitives may either precede or follow the infinitive marker to:

(37) a. I want not to go.

b. I want to $\text{NOTP}$ go.

$\text{NOTP}$ in (37b) behaves as other adverbs with respect to stranding facts: (Ernst 1990, 14)

(38) a. Bill wanted to quietly eat his Cheerios, and George wanted to (*quietly), _____ too.

b. *Carol told Dan to leave, but Jim told him to not _____.

If not after the infinitive marker to is unambiguously an adverbial ne-
gation, it is not surprising that the following sentences yield only one reading namely the narrow scope of negation.\(^5\)

(39) a. I consider John to \(NOT\) have been playing football for many years.
    b. I consider John to have \(NOT\) been playing football for many years.

\(NOT\) in (39a-b) trivially cannot be replaced by \(n't\), the head of NegP. I will assume:

(40) a. *I consider John to \(n't\) have been playing football for many years.
    b. *I consider John to have \(n't\) been playing football for many years.

Concerning the nature of "not" preceding \(to\) in (37a), I leave open the possibility that it can be either \(not\)-a head or specifier of NegP—or an adverb \(NOT\).\(^7\)

Summarizing up to this point, we have seen an array of facts which lend strong support to the existence of two kinds of \(not\) (\(not\) and \(NOT\)). The simple way of distinguishing one from the other is by substituting the reduced form \(n't\). I have suggested that only \(not\), a member of

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6) For some people, \(NOT\) many interpretation seems to be possible in (39a). I speculate that for those people, the phrase \(for many people\) is generated under VP to which \(NOT\) is adjoined. For (39b), on the other hand, no one gets the wide scope reading of \(NOT\) over many.

7) Ernst (1990, 15) notes that "not" in (37a) should also be an adverb due to the ill-formedness of the following sentence:

( i ) *He tried to be loud, but I tried not \______\.
This example is, however, far from clear for determining the status of "not" since the following examples like ( i ) is also unacceptable without "not".

( ii ) a. ?*He didn't try to be loud, but I tried \______\.
    b. He didn't try to be loud, but I tried to \______\.
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NegP, can be replaced by *n't*. This diagnostic may further imply that the morpho-syntactic nature of *not* and *n't* can be in fact identical.

The following section will pursue the analysis of *not* and *n't* toward this direction.

2.2. Not as an affix

In this section, I will essentially show that *not* and *n't* "head" the maximal projection NegP. Further, following Kayne's (1989) observation in part, I will take the view that these two negators are "bound" morphemes which must be supported by the lexical material at S-structure. Given this assumption, the deviance in (22d) and (23d), repeated here, can be parallel to the ungrammatical sentences in (41):

(22)  
   d. *John not solved the problem.

(23)  
   d. *John did probably *not* talk to Bill.

(41)  
   a. *John *n't solved the problem.
   
   d. *John did probably *n't talk to Bill.

Assuming *not/*n't as an affix, the examples above can be uniformly ruled out due to Lasnik's (1981) filter. That is, affixal *not* in (22d)/(23d) fails to be lexically supported at S-structure, hence the ill-formedness results.8 Recall, however, that (23a-c) repeated here is acceptable (presumably with somewhat contrastive stress on NOT) in

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8) The following sentences may cast doubt on the validity of the Affixal status of *not*:

( i ) a. Did John *not* read the book?
   b. John insisted that Mary *not* leave.

These examples, however, can also comfort well with our proposal if *not*’s in ( i ) are uniformly treated as adverbial NOT. Note that the pleonastic *do* in (ia) can be seen inserted, independent of the appearance of *not* in a question sentence (contra (23d)). However, there seem to exist genuine pieces of counter-evidence for the treatment of *not* as an affix. Observe:
contrast with (23d).

(23) a. John was probably  *NOT* talking to Bill.
    b. John has probably  *NOT* talked to Bill.
    c. John will probably  *NOT* talk to Bill.

*NOT* in (23a–c) is undoubtedly an adverb under our proposal since it can't be replaced by  *n't*. There is an indirect evidence to distinguish non-contrastive *not* (the head of NegP) from the adverbial contrastive *NOT* with respect to modals. Observe the following contrast discussed in Zwicky and Pullum (1983, 509):

(42) a. You  *CAN* not go home.  (=You can't go home.)
    b. You can  *NOT* go home.
    c. You can simply  *NOT* go home.

( ii) a. ?*Have not John left?  (=Haven't John left?)
    b. ?*Is not she going?         (=Isn't she going?)
    c. ?*Could not you go home?   (=Couldn't you go home?)
    d. ?*Does not he know that?   (=Doesn't he know that?)

In fact, examples in ( ii) are not totally unacceptable for some speakers. Particularly, when the subject is heavy enough, *not* can easily be pied-piped along with the auxiliaries. Look.

( iii) a. Will not the electorate of this country ___ consider that they have a right to know these facts?
    b.  *Could not* this group of sixteen energetic youngsters ___ travel down the Colorado in a bark cano?

These examples are cited in Zwicky and Pullum (1983). One might want to relate the cases in ( iii) to some kind of Heavy NP Shift. Interestingly, however, the (emphatic) adverbial *NOT* can not raise (involve) with the auxiliary verb, as noted in Zwicky and Pullum whose observation is due to Richard Kayne.

( iv) a. *Couldn't  *NOT* this group of sixteen energetic youngsters ___ travel down the Colorado in a bark cano?
    b.  *Couldn't* this group of sixteen energetic youngsters ___  *NOT* travel down the Colorado in a bark cano?

The ill-formedness of ( iv-a) presumably shows that the heaviness of the subject may not be solely responsible for Aux+*not* raising in ( iii). I think the contrast hinges on the fact that *not* is affixal, whereas *NOT* is not. Yet the deviation in ( ii) will still remain problematic.
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Achard and Pullum note that (42a) means NOT(CAN(P))—it refuses permission (or denies possibility)—when not is not stressed. By contrast, when a stress is given to NOT, the order of operators is reversed, hence the meaning of (42b) is CAN(NOT(P))—permitting the adverbial not to go home (or admitting that possibility). (42c) yields only CAN(NOT(P)) reading whether not gets a contrastive stress or not. This fact is, in part, predictable under our proposal since NOT in (42d), being a VP-adverb, does not c-command anything outside the VP; hence NOT cannot take scope over the modal can, given that the scope interpretation reflects S-structure relation.

Returning to the ill-formedness in (22d) and (23d), I wish to further consider the following examples where an adverbial NOT replaces not.

(22' d) d. *John NOT solved the problem.
(23' d) d. *John did probably NOT talk to Bill (contrastive do aside)

(22'd) and (23'd) are equally bad as (22d) and (23d). Why is it so? Consider (23d)/(23'd) first. Note that the pleonastic do cannot appear in the absence of NegP, a projection of not (ignoring inversion structures and emphatic structures). Thus, (23'd) is correctly ruled out. Recall that (23d) is deviant since the head of NegP—affixal not is not properly supported. Now, consider the most problematic case; (22'd'). Under our account, (22d) is ruled out due to Lasnik’s filter where not is not supported. However, at first glance, nothing goes wrong in (22'd)—that is, NOT, being a VP-adverb, which seems to be properly adjoined to VP headed by the verb solved. Moreover, either Pulleyblank’s (1989) null-do movement or Chomsky’s (1989) “round-trip” Affix movement (namely, I-lowering at S-structure with subsequent V+I raising at LF) fails to rule (22'd) out. According to their proposals, (22'd) should be nondistinct from the (22a–c), repeated below:
(22) a. John hardly solved the problem.
b. John never solved the problem.
c. John seldom solved the problem.
d. *John **NOT** solved the problem.

If verbal inflection is assumed to be mediated by Verb Raising, and the VP-adverb NOT is sister to VP at D-structure, the ill-formedness in (22’d) can directly follow. More specifically, assume a Verb Raising in (22’d) roughly shown below:

(22’d)  
```
  IP
   |   VP
   V   NOT
      |   VP
      tv  NP
```

Given (22’d), "**NOT solved** NP" order can hardly be obtained. (22a–c) are all grammatical since unlike **NOT** adverbs such as hardly, never, and seldom can be either VP or IP-adverbs. Thus, (22a), for example, has the following structural representation:

(22’a)  
```
  IP
   |   IP
   John1  IP 
        |  hardly
        |  IP
        t1  I’
        |  I
        |  VP
        V  tv
        NP
```
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(?? 'n) shows that the subject *John* raises and adjoins to the highest I-position which I assume a "topic" position. This representation is partly supported by the fact that a quantifier cannot appear in this environment. Witness:

(43) a. ??No one hardly solved the problem.
   b. ??No one never solved the problem.
   c. ??No one seldom solved the problem.

given the fact that a true quantifier cannot be topicalized, the deviance in (43) can be naturally explained since the quantifier *no one* is in the topic position. Further observe the following contrasts:

(44) a. No one has hardly solved the problem.
   b. No one has never solved the problem.
   c. No one has seldom solved the problem.

(45) a. ?*No one hardly has solved the problem.
   b. ?*No one never has solved the problem.
   c. ?*No one seldom has solved the problem.

The contrast in (44a) and (45a), for example, can be accounted for by the following structural representations:

(44a)
As I have noted earlier, unlike \textit{NOT}, \textit{hardly}, \textit{never}, and \textit{seldom} can be either VP or IP adverbs. Thus, in (44) these adverbs should be VP-adverbs, which is generated sister to VP, and the subject \textit{no one} can remain in the Spec of IP as depicted in (44'a). By contrast, they should be IP-adverbs in (45), and the subject \textit{no one} cannot remain in the Spec of IP but should raise to the topic position in order to get right word order as shown in (45'a). Since \textit{no one}, a quantifier, cannot sit in a topic position, the contrast in (44) and (45) results.

The following "\textit{solved NOT NP}" order is also illicit due to Case Adjacency Requirement on a par with ungrammatical examples in (47):

\begin{enumerate}
  \item (46) *John solved NOT the problem.
  \item (47) a. *John solved hardly the problem.
    \item b. *John solved never the problem.
    \item c. *John solved seldom the problem.
\end{enumerate}

Further note the following ill-formed examples in which the adverb \textit{NOT} is located postverbally, and does not invoke Case Adjacency violation:
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(48) a. *John solved the problem NOT.
b. *John left NOT.

(49) a. John ruled out on a par with (49) and (50):
   a. *John solved the problem hardly.
   b. *John solved the problem never.
   c. *John solved the problem seldom.
   
   (50) a. *John left hardly.
   b. *John left never.
   c. *John left seldom.

It is relatively well-known that not all adverbs can come at the end of the verb phrase (or sentence), and adverbs such as hardly, never, and seldom belong to that class. In order to rule out (48), we can simply assume that the adverb NOT has the same restriction as these adverbs concerning the restriction on sentence-final position.

2.3. The structure of the English sentence

At this juncture, let us consider the four main questions that arise in Pollard (1989) one by one. The first question is:

(A) Why is Verb Movement to Infl lexically restricted in Modern English?

Here is my answer to this question. It is true that Auxiliary verbs move more freely and higher than the main verbs, but the main verbs also do move up to a certain functional node F in English. The fact

9) Another class of adverbs such as already and cheerfully, for example, can come freely at the end of the sentence:
   (1) a. Mary has left already.
   b. Tom must have eaten Kimchee cheerfully.
that Auxiliary verbs move farther than the main verbs can be supported by the following paradigms (an emphatic *NOT* aside):

(51) a. John has not left. (=*John hasn’t left.)
b. *John left not. (=*John leftn’t.)

Concerning the treatment of the auxiliary verbs such as *have* and *be*, I basically follow the proposal advanced in Akmajian, Steele and Wasow (1977, henceforth ASW). Following ASW, I will assume that *have/be* head their own verb projections but inherently marked as [+AUX]. Thus, *have/be* bear ambivalent nature in that they behave like main verbs for picking Inflection, while the scope of moving action is more liberal than the main verbs.¹⁰ Let us exploit some arbitrary features for expository purposes. I take the view that lexical (main) verbs are inherently [+V, −AUX], while *have/be* are [+V, +AUX], and modals are presumably [−V, +AUX].

Viewed this way, let us now turn to the contrast in (51). As I have shown in the last two subsections, *not/n’t* are affixal in nature; more precisely put, they are (bound) suffixes. Interestingly, negators in many languages are affixes. Here, I illustrate some of them based on superficial facts:

( i ) Suffix group: *not/n’t* in English, *me* in *turkish*


Mainland Scandinavian languages and Basque seem to rather clearly have non-affixal Neg. I wish to further suggest that unlike Neg in other languages, Neg in English inherently bears a peculiar property in that *not/n’t* are morphologically subcategorized for [+AUX] verbs

¹⁰) See the underlying spirit of our proposal on auxiliaries in Chomsky (1957, 1965), Akmajian and Wassow (1975), Emonds (1976), Pullum and Wilson (1977), and Akmajian, Steele, and Wasow (1977), and Roberts (1983).
Consequently, only [+AUX] verbs, such as have/be or modals can
adjunct to NegP in English. In other languages, for example, Spanish
NegP does not have this requirement, hence any verb [±AUX] can
support it. The "restrictive" nature of NegP in English correctly cap-
tures the contrast in (51) since lexical [–AUX] verb leave cannot
support not/n't, while [+AUX] verb like have can do. Now, let us an-
swer the other half of the question (A); namely, do main verbs move
in English? The answer is YES. Witness the following examples from
Pesetsky (1989, 55): 11

(52) a. Hill knocked, [VP recently t₁ on it]
   b. Sue looked, [VP carefully t₁ at him]

Note, incidentally, that the position where the lexical verb moves in
(52) does not necessarily be T⁺ or Agr⁺, since as seen in (53) below,
the lexical verb also move to Tenseless or non Agreement position:

(53) a. Hill will knock, recently t₁ on it.
   b. Sue cannot look, carefully t₁ at him.

Let us dub this position µ, following Pesetsky (1989). (52) and (53)
convincingly show that main verbs in English can move at least upto
µ.

Then, now let us consider Pollock's second question:

(54) a. John probably likes linguistics.
   b. *Jean probablemente aime la linguistique.

11) I will digress from the possibility of moving the adverb to the right. See
Pesetsky (1989) and Johnson (1989) for convincing arguments against
this possibility.
Pollock argues, following Emonds (1978), that Affix-lowering takes place in (54a) (perhaps at PF), while this option is not possible in French, thus ill-formedness in (54b). Note, however, that the adverb probably can be used as a sentential adverb, hence it can also precede the auxiliary verbs in English:

(55) John probably has made several mistakes.

Thus, this fact shows that (54a) does not ensure Affix lowering in English.\(^\text{12}\)

So far we haven't seen any convincing evidence for Affix-lowering in English. (Instead, we have seen some counter-evidence before.) Therefore, we may completely abandon the Affix-lowering approach to verbal Inflection in English. Instead, I will follow Johnson (1989, 1990b) in that verbal Inflection is necessarily syntactic, and Verb Inflection is always mediated by Verb Raising. I will further adopt the Johnson's (1990b) view that in addition to TenseP, AgrP must be split into the NumberP and PersonP.\(^\text{13}\) Johnson (1990b) observes the placement of Neg with respect to the complex V+I and the presence or absence of Per/Num/Tense morphology on verbs in Scandinavian languages. He concludes that a simple embedded clause in Icelandic should have the following structure (Johnson (ibid., 6)):

(56) a. ... ad hann keypti ekki bokina. (Icelandic)
    that he bought not the book

\(^\text{12}\) At least superficially, the deviance of (54b) seems to be a very marked fact, since most other Romance languages, such as Italian and Spanish, for example, do not pattern with French in this respect. For alternative explanations for the deviance in (54b), see Kayne (1989) and Belletti (1990), among others.

\(^\text{13}\) Here, I will sidestep the feature Gender in Agr. See Shlonsky (1989) for arguing for the necessity of GenderP in conjunction with NumP and PerP.
He notes that the mainland dialects employ shortened versions of this representation; the standard dialects have only TP while the Hallingdal dialect only lacks PerP. Thus, the following contrasts can be correctly captured under this scenario (Johnson (ibid., 2–5)):

\[(87) \text{ a.} \quad \text{and hann keypti ekkik bokina.} \quad \text{(Icelandic)}\]
that he bought not the book

b. …at me ikkke kjøpÆ bokje. (Hallingdal)
that we not buy book-the

c. …at han ikke købte bogen. (Danish)
that he not bought the book

He further extends the clausal structure like (56b) to English and German to account for the various Inflectional paradigm. I will essentially adopt Johnson's structure for English without getting into details. I wish to, however, add at least two more functional projections in addition to Johnson's; AspectP and μP.¹⁴ Now, following Johnson (ibid.), we are poised to draw the structure for the simple negative sentence in English: (irrelevant details are ignored.)

(58)

```
     PerP
       \   /
      (NegP)
        /   \
       NumP
          /     \
         TP     AspP
          /   \      \    μP
         VP     μP
             \      \  
              V
```

Now, let’s consider Pollock’s third question:

(11) Why does the negative particle not block Affix Movement whereas other (negative) adverbs do not?

A minimal pair is:

\[ 59 \] (i) John not arrives.
      (ii) *John NOT arrives.
      (iii) John never arrives.

Under our proposal, the minimal difference between (59a) and (59b) is that the former involves affixal not while the later employs an adverb never, a full standing word. Thus, (59a) violates Lasnik’s morphological filter, whereas nothing goes wrong in (59b), hence the contrast results. The minimal contrast between (59a’) and (59b), on the other hand, hinges on some different grounds. As I have noted earlier, NOT always is a VP-adverb, while the term never can be either a VP or sentential adverb. Then, this contrast can follow.

Now consider the last question of Pollock:

(12) Why is Verb Movement obligatory whenever it can apply?

Our answer will be purely based on morphological grounds. Following Johnson’s (1989) conjecture, I assume that all the functional heads (Pron*, Neg*, Num*, T*, Asp*, μ*) in clausal structure including V* are all affixes, hence they all must be lexically supported at S-structure. For this reason, verb movement must be lexically supported at S-structure. I further surmise that Person* is “opaque” in English to transmit the adjoining head’s theta-assigning ability to its trace. This assumption may be well-motivated on a par with Pollock’s “transparency” parameter of Agr, since as a matter of fact, Person feature
does not appear on Verbal Inflection in English except for the verb *be.*\(^\text{15}\)

Therefore, \(V+T+\text{Num} \text{ to Per}^*\) is blocked in English with theta assigning lexical verbs, while non-theta assigning Aux verbs may raise to support \(\text{Per}^*\), although Aux verbs do not inflect for Person except for *be.* Exactly this "opaque" property of Person node in English yields the following contrast:

\[(60)\]
\begin{enumerate}
    \item a. Has John left?
    \item b. *Leaves John?
\end{enumerate}

Assuming \([+Q]\) morpheme as an affix (Chomsky (1989)), a lexical material must support it. If \([+Q]\) sits in Comp, the supporting verbs must pass through person node. Since thematic verbs do not move onto \(\text{Per}^*\) due to the "opaque" nature of it, subsequent movement onto Comp is blocked in \((60b)\). Hence, \((60b)\) is ungrammatical. Non theta-assigning verb *have*, on the other hand, can freely move up to Comp \([+Q]\) through \(\text{Per}^*\). Following Chomsky’s (1989) Last Resort guidelines, the pleonastic *do* is inserted (presumably under T) and move all the way through Comp \([+Q]\). Finally consider the following simple sentence.

\[(61)\] John leaves.

Since main verb cannot raise up to \(\text{Per}^*\), there must be other methods to support \(\text{Per}^*\) affix. Inserting the pleonastic *do* yields unacceptable sentence in English, as shown below:

\[(62)\]
\begin{enumerate}
    \item a. *John does leave. (contrastive do aside)
    \item b. *John do leaves.
\end{enumerate}

\(^{15}\) I assume, following Kayne (1989), that the 3rd person singular marker *-s* is not a manifestation of Person feature but rather Number feature. See further discussion therein.
Perhaps, then, can be lowered onto Num. Alternatively, we may plausibly assume that English lacks Per. Then, the contrast in (60) remains problematic. I would rather speculate, in that case, that the affix [+] in subcategorized for [+AUX] elements like Neg, then the contrast can result. I leave possibility for presence or absence of Per in English for future research.

6. Conclusion

In this paper, I have discussed several problems concerning the clausal architecture of English focusing on the nature of the functional category NegP. I have observed two recent proposals in Pollock (1989) and Chomsky (1989), and pointed out several problems in their approach. Particularly I cast doubt on the status of Affix-hopping. I have shown that Affix-hopping in their sense does not exist in English in conjunction with Agreement parameter put forward in Pollock (1989). I have also shown that main/lexical Verb Raising is not prohibited in English since there are a compelling body of evidence to motivate Verb Raising in this language. I have further suggested that there are two types of not in English—one is an affixal head of NegP, and the other, a VP-adverb. Then I have proposed that Verb Raising in English is forced in part by the affixal nature of Neg. I have also adopted a particular view of English clausal structure given in Johnson (1990b) where the Agr phrase is further split into Person phrase and Number phrase. I have further defended the claim that NegP separates the highest functional projection PerP from NumP. I have further claimed that Neg in English inherently bears a peculiar property in that not/n't are morphologically subcategorized only for [+AUX] verbs. Consequently, in English only [+AUX] verbs, such as have/be
or modals can be adjoined to Neg", while lexical \([-\text{AUX}]\) verbs cannot support not/n’t.

References


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