English Negation from a Non-Derivational Perspective
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Proceedings of the Twenty-First Annual Meeting of the Berkeley Linguistics Society: General Session and Parasession on Historical Issues in Sociolinguistics/Social Issues in Historical Linguistics (1995), pp. 186-197

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Introduction

A different perspective on grammatical research, even on well-known phenomena, can sometimes provide us with arguments for a quite unexpected and new analysis. This paper claims that if we accept the view that the English negator *not* can be either a modifier or a complement, we can offer a more straightforward and explicit explanation for English negation than those couched in terms of head-movement and functional projections including NegP (e.g., Pollock 1989).

1 Basic Properties of English *Not*

The English negator *not* behaves in very much the same way as negative adverbs like *never*. Their similar distribution is particularly clear in nonfinite verbal constructions, such as gerundive, infinitival and bare verb phrases, as can be seen, by comparing (1) and (2).

(1) a. Kim regrets [never [having seen the movie]].
b. We asked him [never [to try to call us again]].
c. Duty made them [never [miss the weekly meeting]].

(2) a. Kim regrets [not [having seen the movie]].
b. We asked him [not [to try to call us again]].
c. Duty made them [not [miss the weekly meeting]].

But there also exist several properties which distinguish *not* from a negative adverb like *never*. One obvious fact that distinguishes the negator from the negative adverb is the so-called *do*-support phenomenon in English. The examples in (3) show that in non-auxiliary finite verb phrases, the particle *not* requires the dummy verb *do*. But a true negative adverb like *never* has no such a requirement.

(3) a. *Tom not borrowed Mary's book.
b. Tom did not borrow Mary's book.
c. Tom never borrowed Mary's book.

A more striking property of the negator *not* lies in VP deletion. As noted by Baker (1972), Sag (1976) and others, VP deletion immediately after adverbs like *never* is not permitted, as illustrated in (4).

(4) a. Tom has written a novel, but Peter never has __ .
b. *Tom has written a novel, but Peter has never __ .

However, a peculiar property of *not* is found in finite clauses. Consider the examples in (5).

(5) a. Tom has written a novel, but Peter has not __ .
b. Mary has finished her homework, but Peter has not __ .

It is possible to elide VPs after a *not* following a finite auxiliary, unlike VPs that follow adverbs.

Any analysis of English negation thus needs to account for the essential properties of *not*: On the one hand it behaves like the negative adverb, but on the other hand it exhibits certain differences. My purpose here is to provide a non-derivational analysis of both these properties.

2 *Not* as a Modifier

In capturing the adverbial and non-adverbial properties of the negative particle, the proposed analysis starts from the three basic assumptions summarized below.

- The negative particle *not* and the negative adverb *never* are both preverbal adverbs and hence both modify a VP (cf. Ernst 1992, Baker 1991).
- There is no functional projection NegP in English (contra Pollock 1989, Chomsky 1991, Laka 1990, and others). Hence the English negative particle *not* occupies neither the head of NegP nor the SPEC of NegP (cf. Baker 1991, Ernst 1992).
- Neither head-movement nor *do*-support exists in English (contra Baker 1991 and Ernst 1992). All structures especially (including those involving the negator) are base-generated (cf. Gazdar et al. 1982, Pollard and Sag 1994).

Given these basic assumptions, let us consider how we can deal with English negation. The first claim I made is that *not* is an adverb that modifies a VP. This claim then implies that the negation can randomly occur as a VP modifier unless otherwise constrained. However, one peculiar property of *not* is its restricted occurrence: first of all it cannot precede a finite verb.

(6) a. *John [not [left]].
b. *John [not [has gone]].
c. *John [not [is leaving]].

In capturing this empirical generalization, I adopt the framework of HPSG (Head-driven Phrase Structure Grammar) which allows lexical representations to be formulated with considerable precision. (7) is a simplified lexical entry for the negator *not*.[1]

(7) not: $\begin{bmatrix} \text{HEAD } adv[\text{MOD VP}[nonfin]:\boxed{2}] \\ \text{CONTENT} \begin{bmatrix} \text{RELATION} & not \\ \text{ARG} & \boxed{2} \end{bmatrix} \end{bmatrix}$

The lexical entry (7), following Pollard and Sag's (1994) analysis, specifies that *not* selects for the nonfinite VP that it modifies. This selectional relation between the modifier (adverb) and the modified element (nonfinite VP) is manifested by the value of the head feature MOD(IFIER). Also the CONTENT value represents that the negation semantically takes the meaning of the modified VP ([2]) as its argument.

The lexical entry (7) readily captures various distributional possibilities of *not*, first of all.[2]

(8) a. *John [not $_{VP[fin]}$[has gone]].
b. *John certainly [not $_{VP[fin]}$[talked to me]]].
c. *John [not $_{VP[fin]}$[always agreed with me]].

As shown in (8), *not* cannot modify a finite VP. But, as is clear from the examples in (9), it can modify any nonfinite VP.

(9) a. I saw John acting rude and [not $_{VP[ger]}$[saying hello]].
b. I asked him to [not $_{VP[bse]}$[leave the bar]].
c. Kim has [not $_{VP[part]}$[been drinking the wine]].

Further we need no additional statement to account for its position in coordination sentences like (10).

(10) a. John will [[not [walk]] and [talk]].
b. John will [not [[walk] and [talk]]].
c. John will [[walk] and [not [talk]]].
d. You can [[walk for miles] and [not [see anyone]]].

In each case the negation modifies a base form VP, satisfying our lexical specification. The analysis also correctly predicts that the postfinite *not* can either scope over only the first conjunct or over both conjuncts, as shown in (10)a and (10)b. But if we accept the general assumption that only categorially identical constituents can be coordinated, an analysis adopting the NegP hypothesis seems to run into a problem: examples in (10) would force the NegP hypothesis to change this well-accepted assumption. Under the NegP hypothesis, where the overt negation occupies the head of NegP, the sentences in (10) would be NegP and VP or VP and NegP coordinations. And even one allows these non-identical constituents to be conjoined, an explanation must still be provided for the impossibility of coordinations like CP and IP.[3]

3 *Not* as a Complement

My analysis has provided a clean and simple way of accounting for much of the distributional possibilities of *not*. But there still remain facts to be accounted for, especially with respect to VP deletion.

3.1 VP Deletion

As shown in section 1, one peculiar property of *not* comes from VP deletion. Unlike other adverbs, the negation immediately after a finite auxiliary can be stranded after VP deletion. Before laying out our analysis, let us first consider general cases where VP deletion has been applied. Consider the contrast between (11) and (12).

(11) a. Kim can dance, and Sandy can __ , too.
b. Kim has danced, and Sandy has __ , too.

(12) a. *Mary considered joining the navy, but I never considered __ .
b. *Mary wanted to go and Sandy wanted __ , too.

These illustrate the standard generalization that VP deletion is possible only after an auxiliary verb. In capturing this, I first assume the VP deletion lexical rule given in (13), incorporating the main idea from the VP deletion metarule of Gazdar et al. (1982).

(13) VP Deletion Lexical Rule:

$$\begin{bmatrix} \text{HEAD} & \textit{verb}[+\text{AUX}] \\ \text{COMPS} & \langle \text{VP} \rangle \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{COMPS} & \langle\ \rangle \end{bmatrix}$$

The lexical rule in (13) guarantees that VP deletion applies only to an auxiliary verb selecting a VP complement. Taking an auxiliary verb as its input, this lexical rule thus gives us as output another lexical entry whose VP complement is not realized. The verbs such as *can* and *has* in (11) are all auxiliary verbs ([+AUX]) and subcategorize for a VP complement. Thus, the VP complement of all these verbs can undergo the lexical rule. But the lexical rule cannot be applied to verbs such as *consider* and *want* in (12), simply because they are non-auxiliary verbs ([−AUX]).[4]

Now, let us return to the issue of VP deletion after an adverb. One important constraint on VP deletion is that it cannot apply immediately after an adverb, repeated here in (14).

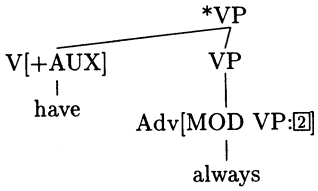
(14) a. *Kim has never studied French, but Lee has always __ .
b. *Tom has written a novel, but Peter has never __ .

One simple fact we can observe from (14) is that adverbs cannot modify an empty VP. In the framework of HPSG, VP modifying adverbs carry at least the lexical information given in (15).

(15)
$$\begin{bmatrix} \text{HEAD } \textit{adv}[\text{MOD VP:}\boxed{2}] \\ \text{CONTENT} \begin{bmatrix} \text{RELATION} & \textit{adv-rel} \\ \text{ARG} & \boxed{2} \end{bmatrix} \end{bmatrix}$$

The lexical entry in (15) simply states that the adverb with this lexical information modifies a VP. The head feature MOD guarantees that the adverb selects the head VP it modifies. Given Sag and Fodor's (1994) traceless theory, an ungrammatical example like (14)a would then have the structure given in (16).[5]

(16)



HPSG has a small set of schemata, analogous to X′ schemata, which specify partial information about universally available types of phrases. The adjunct schema is one of the universally available options for well-formed phrases. This adjunct schema roughly says that an adjunct and the head it selects for through its modifier feature (MOD) forms a well-formed phrase. Now look at the structure in (16). In our lexical theory where a VP modifier (e.g., *always* and *never* in (14)a,b) selects for its head VP through the head feature MOD(IFIER), the absence of this VP then means that there is no VP the adverb can modify. And this results in an ill-formed structure: no universal schema in HPSG renders such a structure acceptable, thus explaining the ungrammaticaly of (14)a,b.

One more striking property of *not* with respect to VP deletion that we have not discussed yet is that the negator *not* after a finite auxiliary can be stranded, as illustrated in (17).

(17) a. Kim said he could have heard the news, but Lee said that he could not __ .

b. *Kim said he could have heard the news, but Lee said that he could have not __ .

If the negation *not* in (17)a and (17)b were taken to be a modifier, we would predict both of these examples to be unacceptable since in both cases there is no VP for the negation to modify.

To account for the puzzling contrast between (17)a and (17)b, I adopt Warner's (1994) suggestion that there is another way to introduce the adverb *not* into syntax. Borrowing the general technique of categorial grammar which allows a functor to be type-shifted to an argument or vice versa,[6] I assume that a verb can be 'converted' into another verb selecting for the negation *not* as an additional complement (or equivalently, converting the modifier *not* to a syntactic complement) via a lexical rule as given in (18).[7]

(18) English Adverb Conversion Lexical Rule:

$$\begin{bmatrix} \text{HEAD} & \textit{verb}[+\text{AUX},\textit{fin}] \\ \text{COMPS} & \langle \boxed{1}\text{VP} \rangle \\ \text{CONTENT} & \boxed{2} \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{COMPS} & \langle \text{Adv}_I{:}\boxed{3},\ \boxed{1}\text{VP} \rangle \\ \text{CONTENT} & \boxed{3}[\text{ARG } \boxed{2}] \end{bmatrix}$$

The lexical rule in (18) takes as input any finite auxiliary which selects for a base VP complement and yields as output another verbal entry which adds the negation as another complement, i.e., adds it onto the finite verb's COMPS list.[8] The lexical rule also has a semantic effect: the converted complement adverb's content ([3]) becomes the main content of the lexical rule output, with the meaning of the input ([2]) being its argument.

Now notice that the output of this lexical rule in (18) can be the input of the VP-deletion lexical rule. We have seen that any auxiliary selecting for a VP complement can undergo this lexical rule. Thus, nothing prevents the output of the Adverb Conversion Lexical Rule from undergoing the VP-Deletion Lexical Rule, as illustrated in (19).

(19) Applying the VP Deletion Lexical Rule:

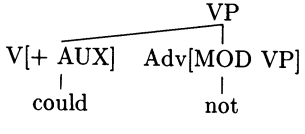
$$\begin{bmatrix} \text{HEAD} & \textit{verb}[+\text{AUX},\ \textit{fin}] \\ \text{COMPS} & \langle \text{Adv}_I,\ \text{VP}[\textit{bse}] \rangle \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD} & \textit{verb}[+\text{AUX},\ \textit{fin}] \\ \text{COMPS} & \langle \text{Adv}_I \rangle \end{bmatrix}$$

Now let us turn our attention to VP deletion after the negator *not* (relevant data repeated in (20)).

(20) a. Susan may have been studying, but Mary may not __ .
b. *Susan may have been studying, but Mary may have not __ .
c. *Susan may have been studying but Mary may have been not __ .

Given the input domain of the Adverb Conversion Lexical Rule, the negation *not* in (20)a can be converted to the complement of the finite auxiliary, allowing the structure in (21).

(21)



Notice that the phrase [*could not*] in (21) forms a well-formed head-complement structure where *not* is the complement of the head *could*. Nothing blocks this structure.[9] Under this analysis, the ungrammaticality of (20)b and (20)c also falls out naturally. The negations in (20)b and (20)c are just modifiers. They cannot be complements. We have seen that an adverb requires the VP it modifies to be present in order to form a well-formed structure. But the VPs that the adverbs modify are absent here. Our non-derivational analysis thus gives us a simple and explicit explanation for these VP deletion facts.[10]

3.2 Scope

In section 1, we have observed that the negation *not* displays adverbial properties concerning scope relations. But there are exceptions to the generalization that the linear order of two adverbs determine their relative scope: a negation that immediately follows the finite auxiliary may take scope over the latter (cf. Gazdar et al. 1982).

Consider the example in (22) first.

(22) Kim may not drink the wine on the table.

Example (22) can have two different relative scope readings between the modal and the negation, as illustrated in (23).

(23) a. Kim is not permitted to drink the wine on the table.
b. Kim is permitted to not drink the wine on the table.

Recall that *not* can be either a VP modifier or a complement of the finite auxiliary via the proposed lexical rule. This then allows us to generate two possible structures for the sentence (22), as represented in (24).

(24) a. Kim $_{VP}$[may $_{VP}$[not $_{VP[base]}$[drink the wine on the table]]].
b. Kim $_{VP}$[$_{V}$[may] $_{Adv}$[not] $_{VP[base]}$[drink the wine on the table]].

In the structure (24)a, *not* is a base VP modifier governed by the modal. Under the structural determination of scope, then, the reading where *may* scopes over the negation is naturally expected. In (24)b, the negation is the complement of the finite auxiliary via our proposed lexical rule. Since the incorporated negation is syntactically a complement but is semantically still the 'functor' ([not'(Modal'(VP'))]) according to the proposed lexical rule, *not* takes scope over the auxiliary *may* in this case.

But there are well-known lexical exceptions concerning the scope of negation. As noted by Horn (1972), not all finite auxiliaries exhibit scope ambiguity with a following negation. Especially the epistemic verbs such as *may* and *must*, and semi-auxiliary verbs like *need* do not induce this kind of scope ambiguity with the negation immediately following.

(25) a. Kim must not drink the wine on the table.
b. Kim need not drink the wine on the table.

The *not* in (25) can only have narrow scope with respect to the modal verb *must*. But the *not* in (25)b has only wide scope.

We might try to simply bar the epistemic *may* and *must* from undergoing the Adverb Conversion Lexical Rule. But this treatment would create a problem in accounting for VP deletion facts:

(26) a. Lee must go back to his country, but Kim must not __ .
b. Lee needs to go back to his country, but Kim need not __ .

Since VP deletion after the negation *not* is possible if and only if it is the complement of the finite auxiliary in our system, we cannot claim that the *not* in (25) is a modifier. The solution to this problem lies in rather positing a lexical restriction: we can lexically specify that when the epistemic verbs such as *may* and *must* take the negation as a complement, they take wider scope over the negation. But an auxiliary like *need* is lexically specified so that it takes narrower scope than the following negation. Given the general assumption that lexical rules can have exceptions, these scope facts provide further support for our analysis.

3.3 More on the Justification of *Not* as a Complement

Though there seems to be no direct and obvious evidence for the complement status of *not*, several pieces of indirect evidence clearly support this proposal. There are cross-linguistic phenomena where adverbs behave like complements in certain contexts such as adverb incorporation in Chukchee, Modern Greek, and Nahuatl, syntactic case marking on adverbs in Finnish and Korean, and adverbial agreement in Italian. Though space limitations prevent us from elaborating these facts here (see Kim and Sag (1995) and the references therein), we could argue that phenomena like these, exhibiting certain parallels between complements and adverbs, motivate analyses in terms of a conversion rule similar to the one I adopt here.

Even in English, we can find some cases where adverbs act like complements. One obvious similarity can be found in subcategorization facts. Though adverbs are not usually selected by the verb, there are certain verbs which subcategorize for an adverb, as noted by Jackendoff (1972), McConnell-Ginet (1982), and others.

(27) a. Tom behaved *(rudely) to Marcia.
b. The job paid us *(handsomely).
c. John worded the letter *(carefully).
d. The management has treated John *(contemptuously).

The presence of the adverbs in (27) is obligatory. The omission of the adverbs here renders the sentences in (27) unacceptable.

Such parallels between complements and adverbials in terms of subcategorization again make it reasonable to allow certain adverbs to function as complements. We have in particular seen that the English particle *not* has dual properties: adverbial properties and non-adverbial properties. In capturing the non-adverbial properties of the negation, we have allowed the negation immediately after a finite auxiliary to become a complement of the auxiliary via the lexical rule. This lexical rule then predicts certain differences between the postfinite auxiliary negation *not* and the negation in other positions. There are more cases showing differences between the two.

VP fronting, a phenomenon similar but not identical to VP deletion, shows another peculiar property of the negator *not* (cf. Ernst 1992).

(28) ?Mary said she would not be eating broccoli, and
a. [be eating broccoli] she will not __ .
b. [not be eating broccoli] she will __ .

(29) Mary said she would be not eating broccoli, and
a. *[eating broccoli] she will be not __ .
b. [not eating broccoli] she will be __ .

As can be seen from the contrast (28) and (29), only the negation immediately following the finite auxiliary can be stranded as in VP deletion.

Examples of tag questions given in (30) also exhibit another difference between the negation immediately following the finite auxiliary and the one not following it.

(30) a. He has not spoken to her for days, { has he? / *hasn't he? }
b. He has often not spoken to her for days, { *has he? / hasn't he? }

The choice of tag types is dependent upon the structure of the main clause. The contrast given in (30) shows that only the negative immediately after the finite auxiliary can affect the choice of the tag types.

One may argue that these differences just reflect the distinction between sentential negation and constituent negation, as has been traditionally assumed. Why can't we just follow this dichotomy? Why can't we accept the view that negation immediately after the finite auxiliary is sentential negation and the one in other positions is constituent negation? Leaving aside the question of how this dichotomy can deal with the nonadverbial as well as adverbial properties of *not*, the question arises as to what determines that the *not* following the finite auxiliary is a sentential adverb.

There are convincing cases showing that the *not* in the post-auxiliary position is different from sentential adverbs in several respects. For example, the emphatic usage of sentential adverbs provides us one clear difference. Sentential adverbs like *always* and *never* can be repeated for emphasis, as illustrated in (31).

(31) a. Mary always always goes home.
b. Mary never never goes home.

It seems to be possible to repeat the negator *not* also, as shown in (32).

(32) a. Mary could not not go home.
b. Kim may not not go home.

But the repetition of *not* is different from that of sentential adverbs. Each negator crucially contributes to composing the meaning of the whole sentence. Thus, (32)a and b mean, respectively, that it is not possible for Mary not to go home and Kim is not permitted not to go home. This indicates that unlike sentential adverbs, the negator *not* can not used as emphatic.[11]

Various properties of the negation *not* immediately after the finite auxiliary distinguish it either from adverbial modifiers or from sentential adverbs. And direct and indirect empirical facts we have seen provide convincing arguments for allowing the negation to serve as a complement in a restricted context, i.e., when following a finite auxiliary verb.

4 Conclusion

We cannot deny that grammar is to some extent an indeterminate system. Categories and structures, for example, often do not have neat boundaries. We are tempted to overlook such uncertainties, or to pretend that they do not exist. In particular, the English particle *not* displays dual properties: adverbial properties and non-adverbial properties. I have proposed that one plausible way to capture these dual properties is to allow the negator *not* to be converted to a complement in a particular lexically restricted environment, namely following finite auxiliary verbs. This 'conversion' lexical rule mechanism has been well justified by phenomena such as VP deletion, VP fronting, and Scope.

It is true that a derivational grammar whose chief explanatory resources are functional projections including NegP and syntactic movement might be able to account for the phenomena I have dealt with here. But, in this paper, I have exploited a non-derivational and surface-oriented framework of Head-driven Phrase Structure Grammar, whose foundations lie in a concrete conception of constituent structures, a limited set of universal principles, and enriched lexical representations. The proposed analysis has shown how the interaction of a concrete X′-theory and the strict lexicalism that HPSG employs can draw effects similar to those of head movement and functional categories, and further permit a simple and explicit explanation for negation (and several related phenomena) that provides many descriptive and explanatory advantages.

Notes:

*I am grateful to Ivan Sag, Peter Sells, and Tom Wasow for their valuable comments on an earlier version of this paper. I especially thank Ivan Sag for his enormous contributions to the paper during various stages of its growth. I have also benefited through suggestions and help from Elizabeth Bratt, Tony Davis, and Rob Malouf. All errors and misinterpretations are, of course, mine.

[1]The negator *not* can modify other categories such as AdjP, PPs, and AdvPs, as in (i).

i. a. This is a not unattractive doll in some ways.
   b. I like beer, but not in the morning.
   c. I visit them not very often.

For such cases, we can loosen up the restriction of what *not* can modify.

[2]I assume that English VPs are partitioned according to two VFORM values, *finite* and *nonfin(ite)*. The sort *nonfin* has *base, inf(initive), ger(undive)*, and *part(iciple)* as its subsorts.

[3]One possible solution seems to posit an additional functional projection such as PolP (Polarity Phrase) or Σ Phrase (cf. Laka 1990) and generate a null element as its head for each declarative sentence.

[4] Examples like (i) are not VP deletion but null anaphora complement cases.

i. a. The children began singing songs, and the adults began __ too.
   b. Tom continued being noisy, although Terry stopped __ .

Hankamer and Sag (1976) classify anaphoric processes into two groups: *deep* and *surface* anaphora. The difference is that the former permits nonlinguistic antecedents, while the latter allows only linguistically expressed antecedents. Given this distinction, VP deletion is an instance of surface anaphora, whereas null complement such as in (i) is an instance of deep anaphora.

[5]Sag and Fodor (1994) reexamine empirical motivations for phonetically empty categories which have been important theoretical foundations in modern GB analyses. They show that all independent arguments for the existence of traces such as auxiliary contraction, *wanna* contraction, and position of floated quantifiers are neither satisfactory nor well-grounded. They also present positive arguments for terminating filler-gap dependencies by lexical heads, not by traces. See Sag and Fodor (1994) for details.

[6]For concrete examples of type-shifting (or raising) rules in categorial grammar, see Partee and Rooth (1983), Dowty (1988), among others. This idea of converting adverbs into complements has been independently proposed for various phenomena by Miller (1991), Iida et al. (1994). Especially see Warner (1993), Abeillé and Godard (1994), and Kim and Sag (1995) for using the same technique for English and French negation.

[7]Notice here that this lexical rule mechanism, though adopting its basic idea from the type-shifting method in categorial grammar, is basically different from it. While a categorial grammar allows type-shifting as a general principle, our system permits it only in limited cases: the system lexically controls its application. Thus in a strict sense, the lexical rule does not type-shift a modifier to a complement, but allows the 'conversion' of a modifier into a complement in the given environment.

[8]I assume that Adv_I restricts adverbial complements to only a small subset of adverbs like *not* and *so* in English.

[9]One may ask whether it is acceptable not to satisfy the MOD feature of the adverb *not* in such a case. But note here that the structure (32) is not an adjunct structure, but a head-complement structure because the negation is now converted to a complement. The HPSG theory says nothing about what happens when a complement has a MOD value. Thus its presence in a complement does not affect the well-formedness of the given phrase.

[10]See Kim and Sag (1995) for further discussion.

[11]But notice that the repetition of *not* is not always possible:

i. a. *John wants to not not go.
   b. *John could not not not go.

Whether one attributes no immediate recursive of the modifier *not* as in (ia) to a syntactic, semantic or pragmatic source, the question remains of why then the negator can be repeated in cases like (32). The analysis proposed here can provide a simple answer to this. The two *not*'s in (32) are different: the first one is the complement *not* and the second one is the modifier.

References

Abeillé, Anne and Danièle Godard. 1994. The Complementation of Tense Auxiliaries. In Raul Aranovich et al. (eds.), *the Proceedings of the West Coast Conference on Formal Linguistics 13*, 157–172. Stanford: CSLI.

Baker, C.L. 1972. Stress Level and Auxiliary Behavior in English. *Linguistic Inquiry* 12:309–315.

Baker, C. L. 1991. The Syntax of English *Not*: The Limits of Core Grammar. *Linguistic Inquiry* 22, 387–429.

Chomsky, Noam. 1991. Some Notes on Economy of Derivation and Representation. In R. Friedin (ed.), *Principles and Parameters in Comparative Grammar,* 417–454. Cambridge, MA: MIT Press.

Dowty, David. 1988. Type Raising, Functional Composition, and Non-Constituent Conjunction. In Richard Oehrle, Emmon Bach and Deirdre Wheeler (eds.), *Categorial Grammars and Natural Language Structures*, 153–198. Dordrecht: D. Reidel Publishing.

Ernst, Thomas. 1992. The Phrase Structure of English Negation. *The Linguistic Review*, 9. 109–144.

Gazdar, Gerald, Geoffrey K. Pullum, and Ivan Sag. 1982. Auxiliaries and Related Phenomena in a Restrictive Theory of Grammar. *Language* 58, 591–638.

Hankamer, Jorge and Ivan Sag. 1976. Deep and Surface Anaphora. *Linguistic Inquiry* 7, 391–428.

Iatridou, Sabine. 1990. About AgrP. *Linguistic Inquiry* 21, 551–577.

Iida, Masayo, Christopher Manning, Patrick O'Neill, and Ivan Sag. 1994. The Lexical Integrity of Japanese Causatives. Paper Presented at the 1994 Annual Meeting of the LSA, Boston.

Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar.* Cambridge, MA: MIT Press.

Kim, Jong-Bok and Ivan Sag. 1995. Parametric Differences between English and French Negation: a Non-derivational Approach. To appear in *the Proceedings of the Fourteenth West Coast Conference on Formal Linguistics.* Stanford: CSLI.

Laka, Itziar. 1990. *Negation in Syntax: On the Nature of Functional Categories and Projections*, Doctoral Dissertation, MIT.

McConnell-Ginet, Sally. 1982. Adverbs and Logical Form. *Language* 58, 144–184.

Miller, Philip H. 1991. *Clitics and Constituents in Phrase Structure Grammar.* Doctoral Dissertation, Utrecht University.

Partee, Barbara and Mats Rooth. 1983. Generalized Conjunction and Type Ambiguity. In R. Bäuerle, C. Schwarze, and A. von Stechow (eds.), *Meaning, Use, and Interpretation of Language*, 361–386. Berlin: Walter de Gruyter.

Pollard, Carl and Ivan Sag. 1994. *Head-Driven Phrase Structure Grammar.* Chicago: University of Chicago Press, and Stanford: CSLI.

Pollock, Jean-Yves. 1989. Verb Movement, Universal Grammar, and the Structure of IP. *Linguistic Inquiry* 20, 365–424.

Sag, Ivan. 1976. *Deletion and Logical Form.* Doctoral Dissertation. MIT.

Sag, Ivan and Janet Fodor. 1994. Extraction Without Traces. In Raul Aranovich et al. (eds.), *the Proceedings of the West Coast Conference on Formal Linguistics 13*, 365–384. Stanford: CSLI.

Warner, Anthony R. 1993. *English Auxiliaries: Structure and History.* Cambridge: Cambridge University Press.