Specifiers, complements and X'-theory[1]

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1. X'-theory and the single complement hypothesis (SCH)

Syntactic structure is what most principles and parameters make reference to. Consider Binding theory for instance. The definition of c-command is defined on structure. Different c-command predictions are made depending on whether a two-branching structure or a three-branching structure is assumed.[2] In addition, different predictions are made depending on the labelling of the nodes

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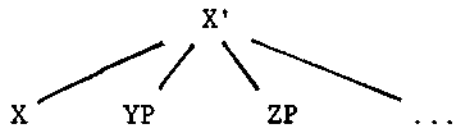
[1]I would like to thank Eric Reuland and Jan Koster for extensive discussion of the ideas presented here. In addition, I would like to thank Hans Broekhuis and Marcel den Dikken for written comments. This research was supported by the Foundation for Linguistic Research, which is funded by the Netherlands organisation for research, NWO (grant 300-171-003).

[2]See Reinhart (1976), Chomsky (1981), and others, for some further remarks on this topic.

(maximal or non-maximal, segment or non-segment). X-bar theory embodies a hypothesis about the nature of syntactic structure. Let us consider X'-theory more closely.

Chomsky's (1986a) X-bar theory allows more than one complement to a single head. This X'-theory does not incorporate any binary branching requirement. Complements are sisters of X. The representation of a Head "X" with two or more complements is allowed to be as follows:

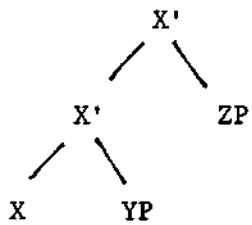
(1)



If there are heads taking two or more sisters then we expect tree structures that are not binary branching, but ternary branching, etc. The claim embodied by structures like (1) will be referred to as the multiple complement hypothesis.

Binary branching can be maintained if there is recursion through the X'-node:

(2)



In this structure X has two complements and binary branching has been maintained. However, this structure exhibits recursive X-bar nodes.[3] The X-bar theory of Chomsky (1986a) does not allow this.

Nevertheless, X-bar theory can be extended to allow such structures. Suppose this is done. Another problem now arises. ZP cannot get a θ-role. θ-roles are assigned to complements under minimal c-command. X does not minimally c-command ZP. Hence ZP cannot get a θ-role. θ-theory should be extended in order to make

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[3]Recursion through X' is sometimes proposed. Bennis (1986), for instance, proposes recursion through V', in order to account for the properties of psychological verbs.

it possible for ZP to get a θ-role from X. In sum, adherents of recursion through V' need not only an extension of X-bar theory but also an extension of θ-theory. I will therefore reject structures like (2) as legitimate X-bar structures.

The idea that there can be more than one complement thus leads to the adoption of a structure as in (1). This structure is compatible with Chomsky's (1986a) X-bar theory. How can the order of the complements be derived? Stowell (1981) has argued that orderings internal to X^{max}* need not be specified in X-bar theory. They follow from other components of the grammar. To give an example, suppose with Stowell that a verb like <u>put</u> takes two complements, a NP and a PP. Next consider the following facts:

(3)a. He put the car in the garage
b. *He put in the garage the car

No X-bar rule is needed to specify the order of the complements. This follows from Case theory. Case is assigned under adjacency between V and NP. This derives the ordering in the (a)-sentence, and excludes the ordering in the (b)-sentence.[4] Stowell generally restricts himself to deriving the order of a string of complements rather than a string of specifiers.

The idea that there can be multiple complements leads to the hypothesis that the double object construction is also assigned a flat structure, as suggested in Chomsky (1981:48), Baker (1988b), Napoli (1989) and others.

Adoption of the binary branching hypothesis, on the other hand, leads to a more restrictive view. It follows from binary branching and from the absence of recursion through V' that there can only be one complement. Binary branching thus entails what will be referred to (following Larson 1987,1988a) as the single complement hypothesis, an alternative to the multiple complement hypothesis. Both hypotheses generate analyses of particular empirical phenomena. The usefulness of each hypothesis is tested by

[4]Of course, this account raises the question of what excludes right-adjunction to VP in English. If right-adjunction is not excluded then (3b) is counterfactually predicted to be grammatical, cf. Koster (1988) for discussion.

determining the explanatory power of the analyses that follow from it. The double object construction provides a good testing-ground for the rival hypotheses. Can a verb have two or more complements (flat structure) or can it have only one complement (binary branching). As we will see in the next section, the empirical evidence disconfirms the multiple complement hypothesis.

2. Against the multiple complement hypothesis

2.1. Binding theory and the double object construction

According to proponents of the multiple complement hypothesis, either object is a complement of V (Baker 1988b, Napoli 1989). This leads immediately to a flat structure analysis, since both objects must be sisters of V, directly dominated by V'. This follows from θ-theory, which requires that complements are θ-marked under minimal c-command by the head. Of course, the multiple complement hypothesis is only interesting if it can be shown that there are actually two complements. There is no point in defending this hypothesis if multiple complements are never actually found. The strongest case for the multiple complement hypothesis is the double object construction. If we can show that there is only one complement here, then the chief empirical stronghold of the multiple complement hypothesis must be abandoned in favour of the more restrictive single complement hypothesis. There are several arguments against a flat structure analysis.

A lot of attention has been given to Binding theory in connection with the double object construction (Daalder & Blom 1976, Barrs & Lasnik 1986, Koster 1988, Larson 1988a, Hoekstra 1989a, Napoli 1989, and others). Let me therefore give a brief introduction to the binding facts of the double object construction.

Consider the case of Dutch first. In 1976 Daalder & Blom showed that there was a binding asymmetry between the indirect object and

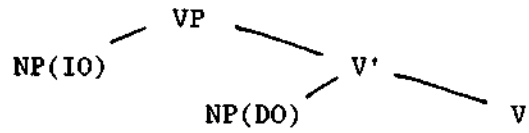
the direct object, as exemplified by the following sentences:[5]

(4)a. I showed the men each other
b. *I showed each other the men
(5)a. Ik toonde de mannen elkaar
I showed the men each other
b. *Ik toonde elkaar de mannen
I showed each other the men

The indirect object can bind the direct object but not vice versa. This asymmetry holds for various types of binding such as the binding of reciprocals, the binding of reflexives, bound variable binding and negative polarity.

These facts suggested to Daalder & Blom that binding should be analysed in terms of minimal c-command. This allowed them to directly explain the facts, given the well-known fact that the Dutch VP is left-branching and head-final (Koster 1975). Consider the structure they proposed:

(6)



The direct object is the complement of V whereas the indirect object is a specifier of V. This structure not only accounts for the binding facts but it also captures the correct word order. The analysis of the Dutch VP and the asymmetry between indirect objects and direct objects thus receives a straightforward explanation.

Let us now turn to English. As recently pointed out by Barrs & Lasnik (1986), English also has a binding asymmetry between the direct object and the indirect object. The same binding asymmetry is found in English and Dutch. However, these facts are a problem in the case of English, which is basically due to the assumption

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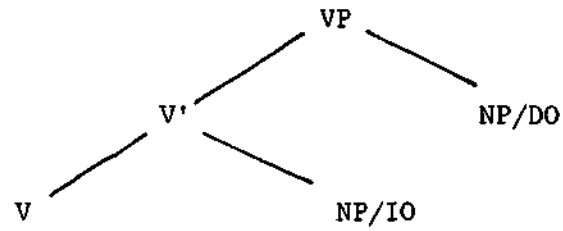
[5]Anaphors, reciprocals and their antecedents will be underlined. Similarly, a negative polarity item and its trigger will also be underlined. Movement relationships are indicated by subscripts.

that the English VP is right-branching. This is shown in the structure below:

(7)



The indirect object is the complement of V whereas the direct object is the specifier of V. This structure is binary branching, and it directly derives the surface word order.

The structure for English given here is exactly the reverse of the situation in Dutch. The indirect object is a sister of V in English. In Dutch, the direct object is a sister of V. Surely, it is undesirable that the double object construction in Dutch is assigned a different structure than the double object construction in English. In fact, Baker (1988a) has proposed a principle which actually forces us to adopt the position that the double object construction has the same D-structure in English and Dutch. This principle is given below:

(8) Uniformity of θ-Assignment Hypothesis (UTAH)
Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure

This principle forbids that the double object construction in Dutch should be different at D-structure from the double object construction in English (or in any other language).[6] As we will see, the facts about the double object construction in the two respective languages do not justify a structural dichotomy. The

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[6] The UTAH does not lead to construction-specific analyses, contrary to what might be thought. First, the proposed structures obey the universal principles of UG; there are no construction-specific rules. Second, the UTAH only demands uniformity at D-structure (abstracting away from word order). Parameter settings are responsible for cross-linguistic variation at S-structure.

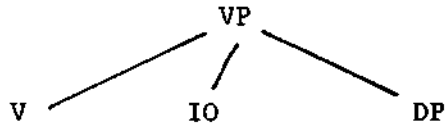
same D-structure holds for Dutch and English alike, in accordance with the UTAH.

The structure of the English double object construction given in (7) leads to the counterfactual prediction that the direct object can bind the indirect object and not vice versa. In this structure, the direct object c-commands the indirect object, but not vice versa.

We thus face the problem that Binding theory cannot be made to work for English. Even if we change Binding theory so that it works, then we still face the problem that the double object construction in Dutch has been assigned a different structure than in English.

The multiple complement hypothesis would offer a way out of this dilemma. Dutch and English can both be assigned a flat structure:

(9)



Following a suggestion of Barrs & Lasnik (1986), binding can be defined in terms of precedence. The multiple complement hypothesis at least has the virtue that it assigns the same structure to English and Dutch. Let us now go into the merits and demerits of this proposal.

2.2. The distinction between direct and indirect objects

Chomsky (1981) and Napoli (1989) propose that VP-structure is flat. Chomsky (1981:48) proposes to use the notations [NP^1,VP] and [NP^2,VP] for indirect object and direct object, respectively.

It can be noticed that it is hard to distinguish the direct object from the indirect object. Chomsky's (1981) notation of [NP1,VP] and [NP2,VP] is at best an artefact, basically a description of the problem. The flat structure analysis faces the problem of how to distinguish the two objects.

As long as this problem is not faced, it is unclear how either object gets the θ-role and the Case it deserves. If nothing more is

said, then we would expect either order to be possible. This is not the case. The order is strictly indirect object before direct object.

Furthermore, we would expect that either object may get structural Case. This is incorrect. In Dutch, only the direct object can receive structural Case. This is clear from the fact that only the indirect object may be passivised in the presence of a direct object NP (Everaert 1982, Den Besten 1989), as shown below:

(10)a. Dat ik Jan de boeken gaf
that I John the books gave-SG
b. *Dat Jan de boeken werd gegeven
that John the books was-SG given
c. Dat de boeken Jan werden gegeven
that the books John were-PL given[7]

The agreement indicates that the direct object becomes the subject, not the indirect object.

Other facts similarly indicate that the two objects must be distinguished from each other. The direct object resists passivisation in many dialects of English (Hornstein & Weinberg 1981):

(11)a. I gave John the books
b. John was given the books
c.?*The books were given John

This naturally correlates with the idea that the indirect object receives structural Case in English but not the direct object.

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[7]Word order is to some extent free. The following two orders are found (Koster 1978a):

(i) Dat de boeken Jan werden gegeven
that the books John were given
(ii) Dat Jan de boeken werden gegeven
that John the books were given

Subject agreement on the tensed verb is in the plural, indicating that in both sentences the direct object has become the subject.

To conclude, there are three arguments against a flat structure analysis. First, it blurs the distinction between direct object and indirect object. This is conceptually unattractive. Second, as a result of blurring the distinction between the objects, it predicts free word order. Third, it similarly predicts that either object may passivise. Let us now turn to a flat structure approach to Binding theory.

2.3. Binding theory within a flat structure analysis

A Binding theory based on c-command cannot derive the facts, as we have seen, under a flat structure analysis. However, Napoli (1989) aims at upholding the flat structure analysis by accounting for the binding asymmetry in terms of precedence, developing a suggestion made by Barrs & Lasnik (1986). Let us determine whether a flat structure approach leads to interesting insights into Binding theory.

In her view, binding relies on the notion being in the domain of and on the notion argument rung. We may think of an argument rung as an argument complex including adjuncts and modifiers. Thus it would be a more inclusive notion than Complete Functional Complex, (Chomsky 1986a). The following condition on binding is proposed (Napoli 1989:100):

(12) If X and Y are members of the same argument rung, then
Y is within the domain of X iff X precedes Y.

This condition immediately accounts for the facts involving reciprocals in the double object construction. These facts are repeated below:

(13)a. I showed the men each other
b. *I showed each other the men

The generalisation is that the antecedent must precede the reciprocal. This generalisation is exactly what Napoli predicts. If we turn to other forms of binding then we encounter more support

for this generalisation (Daalder & Blom 1976, Barrs & Lasnik 1986), and hence for Napoli's condition:

(14)a. I showed John himself
b. *I showed himself John
(15)a. I showed every/each trainer his lion
b. *I showed its trainer every/each lion
(16)a. I gave no one anything
b. *I gave anyone nothing

The antecedent must precede the anaphor in (14), and the bound variable pronoun in (15). Similarly, the trigger no one must precede the negative polarity item anything in (16). The same generalisation holds for anaphor binding, bound variable binding and negative polarity. Unsurprisingly, the same facts are found in Dutch (Daalder & Blom 1976):

(17)a. Ik toonde Jan zichzelf/'mzelf[8]
I showed John zichself/himself
b. *Ik toonde zichzelf/'mzelf Jan
I showed zichself/himself John
(18)a. Ik toonde iedere/elke leeuw zijn trainer
I showed every/each lion its trainer
b. *Ik toonde zijn trainer iedere/elke leeuw
I showed its trainer every/each lion
(19)a. Ik heb niemand ook maar iets gegeven
I have nobody anything given
b. *Ik heb ook maar iemand niets gegeven
I have anybody nothing given[9]

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[8]The anaphor zichzelf must have a c-commanding antecedent (Koster 1985). The anaphor 'mzelf can also take non-c-commanding antecedents. It exhibits logophoric properties in the sense of Reinhart & Reuland (1989) which we will not attempt to deal with. For our purposes, it is sufficient to observe that the relevant generalisation holds even for logophoric anaphors.

[9]The English negative polarity items anybody and anything are translated into Dutch as the complex phrases ook maar iemand and ook maar iets. Ook as an independently occurring word means also. Maar as an independently occurring word means but. These two words

Dutch exhibits the same precedence effects as English. The linear precedence condition is independently supported by facts involving PPs. The complement of with can bind the complement of about only if it precedes (Postal 1971):

(20)a. I talked with John about himself
b.?*I talked about himself with John

Notice that precedence cannot explain why there is an asymmetry between the two prepositions. Consider the following sentence:

(21) *I talked about John with himself

Even though the antecedent precedes, the sentence is ungrammatical. As it stands, the precedence account is therefore incomplete.

Further evidence for linear precedence is found within NP, PP and AP as well:

(22)a. The discussion with Sue about herself
b. *The discussion with herself about Sue
(23)a. After each man for his money
b. *After his money for each man
(24)a. Interested in each child for her particular talents
b. *Interested in her particular talents for each child

The antecedent must precede. Again it must be noted that the nature of the preposition plays a role. The following sentence obeys precedence:

(25) *The discussion about Sue with herself

Yet it is ungrammatical. This remains a puzzle under the precedence

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together mean something like even. It must be kept in mind that Dutch negative polarity item is not identical to its English counterpart. They do not have exactly the same class of triggers. See Ladusaw (1980) on anybody/anything, Zwarts (1981,1986) on ook maar iemand/ook maar iets.

account.

Interestingly, the precendece effect must obtain even if an adverbial intervenes between V and the two PPs (Napoli 1989:11). The unmarked assumption would be that the PPs have been extraposed over the adverbial, and adjoined to VP:

(26) I talked t_i t_j quietly [with John]$_i$ [about himself]$_j$

If this is correct then the precedence effect would remain intact even if adjunction takes place. Sentences without precedence decrease in acceptability:

(27)a. I talked [with John] [about himself]
b.?*I talked t_i t_j quietly [about himself]$_j$ [with John]$_i$
(28)a. Ik heb [met Jan] [over 'mzelf] gepraat
I have with Jan about himself talked
b.?*Ik heb [over 'mzelf]$_j$ [met Jan]$_i$ rustig t_i t_j gepraat[10]
I have about himself with Jan quietly talked

This is surprising since anaphors elsewhere exhibit connectivity, see Barrs (1986). Consider the sentences below:

(29)a. [Which pictures of himself]$_i$ did he like t_i best
b. [Which pictures of each other]$_i$ did they like t_i best

The antecedent can bind the anaphor since the D-structure configuration obeys binding theory. By the same token, the antecedent, in (27b) and (28b), should be able to bind the anaphor because of the D-structure configuration. But it cannot. The reason for this may involve the difference in nature of the landing sites. In (27b-28b), the phrase containing the anaphor is adjoined to VP whereas it is moved to the SPEC of CP in (29). Another difference involves the nature of the antecedent in the binding relation. In (27b-28b), the antecedent is a non-subject whereas it is a subject in (29). I will come back to this issue later on. Let us keep in

[10]Some speakers do not find a strong contrast between the (a)- and the (b)-sentence, judging both acceptable.

mind that VP-internal binding relations behave differently from binding relations involving the subject.

At first sight it seems that Napoli's account is easily falsified by examples involving a fronted anaphor:

(30)a. Himself$_i$, he is always talking about t_i
b. [Each other's pictures]$_i$, they did not like t_i

However, as Napoli (1989:100) remarks, fronted elements present no problem because fronted elements are outside the argument rung. However, this is not really a virtue of the proposal. More particularly, it cannot be explained that sentences like (30) are possible at all. The analysis is underdetermined on this point. Furthermore, it must be noted that sentences like the one immediately above are possible only if the antecedent is a subject. Consider what happens with non-subject antecedents:

(31)a. ?[With John]$_i$, I talked t_i [about himself]
b. *[About himself]$_i$, I talked [with John] t_i
c. I talked [with John] [about himself]

The D-structure configuration of the (a) and in the (b)-sentences is given in (c); it is in accordance with Binding theory. Due to connectivity, movement of the antecedent or the anaphor should not affect grammaticality, but this is not what we find. The examples are worse than comparable examples with subject antecedents. What is needed is a theory of connectivity. It is sufficient to note that these sentences are a puzzle for the precedence account as much as it is for any other account. In particular, the (b)-sentence is not explained since precedence has been limited to argument complexes; the PP has been moved out of its argument complex so that precedence should no longer apply.

In the above sentences, short movement destroys binding with non-subject antecedents and it preserves binding with subject antecedents. Consider now long movement with subject antecedents, as illustrated by the following sentences from Barrs (1986):

(32)a. *The boys thought I sold [some pictures of each other]

b. [Which pictures of each other]$_i$ did the boys think I sold t_i

Surprisingly, we find a case where movement creates a binding relation which would be illicit had movement not taken place. How can the main clause subject be the antecedent for the reciprocal in the (b)-sentence but not in the (a)-sentence? An analysis in terms of argument rungs cannot distinguish these two case since the thematic properties of both sentences are the same. More seriously, an analysis incorporating precedence would counterfactually expect the (a)-sentence rather than the (b)-sentence to be grammatical. This kind of complexity appears to be beyond the explanatory power of a precedence analysis.[11]

To sum up, both Chomsky's suggestion and Napoli's analysis are at odds with the binary branching hypothesis of Kayne (1984). It might be thought that there are conceptual advantages to flat structure analyses. Napoli (1989:7) refers to the flat structure analysis as the simplest analysis. But it is of course only true in the sense that "simplest" is used to mean "least restrictive". In the same sense the simplest theory of grammar is one which contains no restrictions at all: that would be the simplest grammar. Furthermore, it is not clear why a flat structure would be obligatory. It is hard to see what the rationale would be behind a flat structure.

More importantly, many successes of GB-theory can be explained as a result of the introduction of more highly articulated structure. Examples include the treatment of unaccusatives of Burzio (1981) (introduction of more structure in the VP of unaccusatives), the treatment of auxiliaries and verbs of Pollock (1989) (introduction of functional projections), the analysis of WH-movement of Chomsky (1986a) (introducing more specifier and adjoined positions), the small clause analysis of the VP of Hoekstra (1984) (introducing subject-predicate structures in the VP), etc. These analyses are exactly of the kind to be expected. They propose "more" structure not in the sense of allowing for

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[11]See Koster (1988) for further arguments against precedence.

less-constrained structures but in the sense of outlining more highly articulated structure than had been proposed hitherto. Correspondingly, their empirical coverage is much wider than ever before.

2.4. Conclusion

The multiple complement hypothesis makes available a flat structure analysis for the double object construction. This analysis has the virtue of assigning the same structure to English and Dutch, in accordance with the UTAH. It leads to false predictions about word order, passivisation and binding. When supplemented with a Binding theory based on precedence, it is still insufficient to account for the facts.[12] It must be concluded that the grammar should not allow the possibility of having more than one complement to a Head.

A relevant question is whether this restriction must be directly encoded in X'-theory, or whether it must be encoded in another subsystem. Stowell (1981) points out the necessity of saying as little as possible in X'-theory. We do not want to start writing phrase structure rules again. I will therefore adopt the position that the single complement restriction must be derived from an independent component of the grammar.

This immediately raises the question whether complements should be introduced by rules of X'-theory at all. The preceding discussion suggests strongly that we should not introduce complements by rewrite rule at all. This, in turn, casts doubt on whether a two-level X'-theory can still be justified.

Specifiers are also introduced by rewrite rule in a two-level X'-theory. If our point of view is correct, we expect that there will be problems with this. In the following sections I will turn to the role of specifiers. I will argue that it is unnecessary to introduce specifiers by the rewrite rules of X'-theory. Instead, I

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[12]However, it must be admitted that there are strong indications of precedence, seeing that precedence remains operative after adjunction has taken place. The issue of precedence, however, is independent of whether a flat structure is adopted or not.

will argue that the distribution of specifiers should be accomodated within the subsystem of the grammar dealing with Case and agreement. I will refer to this subsystem as Licensing theory.

3. "Assuming some version of X'-theory": Spec

3.1. Reducing the vertical dimension of X-bar theory[13]

The single complement hypothesis follows from Chomsky's (1986a) X-bar schemata, which are based on Stowell (1981). However, there are arguments against these X'-schemata, to be presented below. It has been noted that little or no empirical support has been provided for the inherent claims of X'-theory (Pullum 1985, Kornai & Pullum 1990).

In addition, "the cross-category generalisations captured by the X'-schema are fuzzy with respect to the functional categories" (Speas 1986:92). In this section, we will present additional arguments against the traditional view of X'-theory. It will be shown here that the term specifier lumps together two unrelated concepts. The drift of my argumentation is that X'-theory claims too much. The interaction between the subtheories of the grammar should take over much of the work that is currently done by X'-bar theory. This provides us with a less rigid view of phrase structure.

It is interesting to see that minimalisation of X-bar theory, as advocated by Stowell (1981) and Chomsky (1986a), affects the horizontal dimension, a sequence of constituents introduced as sisters (Stuurman 1985:6). Stowell (1981:92) specifically excludes the vertical dimension from his program. Stuurman (1985) argues that the vertical dimension can also be reduced. The two-level X-

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[13] I will not discuss the issue of vacuous projection which most X-bar theories provoke. Vacuous projection is generally considered a less attractive property of X-bar theory (cf. Muysken & Van Riemsdijk 1985, Reuland 1985, and others).

bar theory can be replaced with a one-level X-bar theory.[14] This has interesting consequences for the view to be taken of specifiers.

Within a two-level X-bar theory, adjuncts and specifiers can be distinguished from each other in terms of X-bar theory. An adjunct is a sister of X^{max} whereas a specifier is a sister of X'. However, such a distinction cannot be made in a one-level X-bar theory. Both specifiers and adjuncts will be sisters of Xmax. As we will see, the distinction between specifiers and adjuncts can be made in other components of the grammar (Licensing Theory, in particular, Spec-Head agreement and Case).

It can be shown that the traditional notion of specifier lumps together two different groups. On the one hand, specifiers are looked upon as modifiers in more traditional approaches (e.g. Jackendoff 1977, Van Gestel 1986). Examples of specifiers as modifying elements (underlined) are given below:

(33)a. John is <u>too</u> smart
b. John is smart <u>enough</u>
(34)a. John walks <u>slowly</u>
b. John walks <u>quietly</u>

Degree words like <u>too</u> are analysed as specifiers (Jackendoff 1977:143). Adverbial elements function as specifiers of adjectives or verbs (Jackendoff 1977, Van Gestel 1986 and others). On the other hand, specifiers are looked upon as designated landing sites for movement of maximal projections. Chomsky (1986a) and much recent work is exclusively concerned with this kind of Spec. Examples of specifiers functioning as designated landing sites for movement are given below:

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[14]Chomsky (1981:13) warns against reduction of one component (such as X-bar theory) if it leads to proliferation elsewhere. This is obviously true. Furthermore, it is an empirical question which alternative is to be preferred. Proliferation elsewhere may yield an analysis that has greater explanatory adequacy. In our opinion, proliferation of X-bar theory (such as witnessed by the choice of a two-level theory over a one-level theory) does not have any greater explanatory adequacy. Furthermore, an account relying on the interaction between components is to be preferred on conceptual grounds over an account that puts stipulations into X'-theory.

(35)a. John$_i$ was seen t_i

b. Who$_i$ did you see t_i

John occupies the Spec of IP and who occupies the Spec of CP. It is a spurious generalisation to suppose that the two notions have anything in common. It is hard to see what property is shared by the SPECs of IP and CP, on the one hand, and by adverbs, on the other hand. This dichotomy in the notion specifier is undesirable and should be eliminated. Once the two notions are teased apart, we are in a position to evaluate whether the notion specifier should be retained, and, if so, in what way.

3.2. Against a unitary notion of Spec

Very few arguments have been given in favour of retaining this double-headed notion of Spec. It must be noticed, on the one hand, that interesting arguments usually assume there is only one Spec per maximal projection (Sportiche 1989). Chomsky's X'-Theory, on the other hand, allows an indefinite number of specifiers per maximal projection. The latter position, left unsupplemented by restrive assumptions, hardly makes any predictions. I will go on to discuss an argument given by Sportiche in favour of looking upon Spec both as an escape hatch and as a position for modifiers.

The argument is basically an argument of complementary distribution. Consider the following facts from French:

(36)a. Corot, dont$_i$ [t_i [le portrait d'une jeune femme t_i]]...
Corot of-whom the portrait of a young woman

b. *Corot, dont$_i$ [son [portrait t_i] ...
Corot of-whom his portrait

(37)a. La jeune femme, dont$_i$ [t_i [le portrait t_i] ...
the young woman of-whom the portrait

b. *La jeune femme, dont$_i$ [son [portrait t_i] ...
the young woman of-whom his portrait

The generalisation appears to be that son blocks extraction of

dont. If son and dont compete for the same specifier position then the paradigm follows. If the specifier position is filled no extraction appears to be possible. Thus it is predicted that where sa/son is possible the trace of dont will also be possible since both rely on the Spec position.

Godard (1990) points out two arguments against this analysis. In the first place, it is not the case that where the trace of dont is possible sa/son is also possible. To illustrate, consider the following:

(38)a. Je suis allé voir le nouvel Opéra dont
I went to see the new Opera of-which
la construction progresse
the construction progresses

b.??Je suis allé voir le nouvel Opéra; sa construction
I went to see the new Opera; its construction
progresse
progresses

(39)a. les livres de Balzac dont j'ai lu la moitié
the books of Balzac of which I read half

b. *les livres de Balzac; j'ai lu leur moitié
the books of Balzac I read their half

If the possibility of dont signals the presence of a Spec position (as in the (a)-sentences), and if son occurs in Spec, then it should be possible to replace dont with son. The (b)-sentences show that such replacement yields a significantly worse result. This dichotomy between son and dont casts doubt on the idea that son and dont occupy the same position.

Parallel distribution breaks down because dont is not a NP but a PP. The same facts obtain in Dutch:

(40)a. de boeken van Balzac waarvan ik de helft gelezen heb
the books of Balzac where-of I the hald read have

b. *de boeken van Balzac; hun helft heb ik gelezen
the books of Balzac; their half have I read

The Dutch translation of dont is a combination of an R-pronoun

followed by the preposition van.[15] Alongside the ungrammatical (b)-sentence, we find the following variant which is grammatical:

(41) de boeken van Balzac; de helft ervan heb ik gelezen
the books of Balzac the half there-of have I read

ervan is again a combination of the preposition/postposition van and the R-pronoun er. As a pronoun, er refers to inanimate entities. The Dutch facts thus testify to an animacy effect. The French examples also involve inanimate entities. The Dutch parallels of dont and son are both R-pronouns: waarvan and ervan. The pronominal parallel of dont/waarvan is therefore not the possessive animate pronoun ("his", etc.). It is ervan, a combination of an R-pronoun (always inanimate in Dutch) and the preposition van ("of").

Interestingly, neither of these two combinations ever occurs overtly in Spec of NP:

(42)a. *[Ervan de helft] heb ik gelezen
b. [De helft ervan] heb ik gelezen
(43)a. *[Waarvan de helft] zei je dat je gelezen had
b. [De helft waarvan] zei je dat je gelezen had

This makes sense since PPs cannot occur in Spec. The Dutch facts are ideally analysed on a par with the French facts. Thus, both waarvan and dont are PPs. Hence, they can not pass through Spec of NP.[16]

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[15]Dutch prepositions precede their complements with the exception of R-pronouns. Prepositions must follow R-pronouns. Stricly speaking, the preposition is a postposition in the presence of an R-pronoun. For ease of reference, I will just continue to use the term preposition. See Van Riemsdijk (1978) on the syntax of R-pronouns.

[16]Jan Koster notes that the PP daarvan may occur in the initial position of NP:

(i) [Daarvan de helft] heb ik gelezen
of that the half have I read

Presumably, (i) involves a dislocated elliptical phrase. Evidence

The argument of Sportiche that the Spec can contain either modifiers like son or a trace of dont fails because it draws a false parallel between dont and son. dont is a PP. Hence it cannot go through Spec since the Spec position is a NP-position. This explains why we do not find PPs in possessor position:

(44)a. I counted on [great conversations with John]
b. *I counted on [[with John]$_i$ great conversations t_i]

These sentences support the idea that dont is a PP. This conclusion weakens the evidence for Sportiche's idea that dont-extraction takes place through Spec.

There is another problem for the idea that extraction goes through Spec. It is unexpected that adjectives have any effect on extraction, as Godard (1990) points out. To illustrate, consider the following:

(45)a. de verovering van dit land vond plaats in 1870
the conquest of this country took place in 1870
b. de Turkse verovering van dit land vond plaats in 1870
the Turkish conquest of this country took place in 1870
(46)a. het land waarvan de verovering plaatsvond in 1870
the country of which the conquest place took in 1870
b.?*het land waarvan de Turkse verovering plaatsvond in 1870
the country of which the Turkish conquest placetook in 1870

The adjective Turkse blocks PP-extraction. Interestingly, the adjective refers to the subject θ-role of the deverbal noun verovering. Other adjectives do not block extraction:

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for this view comes from the fact that the dislocated phrase may not occur in non-dislocated positions, as shown below:

(ii) *Over [daarvan de helft] hebben we gelezen
about of that the half have we read

The relevant phrase may not occur as a prepositional complement. I will not investigate this matter further.

(47)a. de imposante verovering van dit land vond plaats in 1870
the impressive conquest of this country took place in

b. het land waarvan de imposante verovering plaatsvond in 1870
the country of which the impressive conquest placetook in

Needless to say, the adjective Turkish does not occur in the Spec position of NP. It behaves as a regular adjective as far as its position is concerned:

(48)a. de imposante Turkse verovering
the impressive Turkish conquest

b. *de imposante hun verovering
the impressive their conquest

c. hun imposante verovering
their impressive conquest

If the adjective Turkse occurred in Spec, then it would be incompatible with a possessor, because possessors also occur in Spec. The (c)-sentence shows that the adjective Turkse is compatible with a possessor. Hence it cannot be claimed that the adjective occurs in Spec. The (a-b)-sentences show that Turkse may follow the adjective imposante whereas the possessive pronoun hun may not. This contradicts the hypothesis that both Turkse and hun occur in Spec. The position for possessive pronoun is therefore not the same position in which the adjective occurs. These facts disconfirm an account in which movement out of NP must go through the Spec of NP.

3.3. Conclusion

Godard's evidence shows that there is no complementary distribution of son and dont. The argument for conflating the two notions of Spec collapses, if no cases of complementary distribution are found. In addition, it turns out that adjectives affect the possibilities of extraction. This is unexpected if the idea is correct that extraction out of NP must go through Spec. Hence there is no empirical basis for the idea that the two notions of Spec

must be collapsed. This is just as well, since it is conceptually very unattractive to lump these two notions together.

It is clear now that the term specifier conflates two concepts. On the one hand, there are modifying specifiers. On the other hand, there are specifiers used as landing sites for movement. It is incorrect to lump these two groups together. However, it may be thought to be necessary to retain one of these concepts in X-bar theory. Furthermore, the question can be asked: how are these two groups of specifiers analysed in terms of a one-level X-bar theory? I will show in section 4 how modifying specifiers are dealt with within a one-level X'-theory. In section 5, I will show how the distribution of specifiers as landing sites follows from Licensing theory.

4. How to analyse modifying Spec in a one-level X-bar theory?

I will show in this section that modifying specifiers must be treated either as heads or as adjuncts. Empirical arguments will be given in support of this claim.

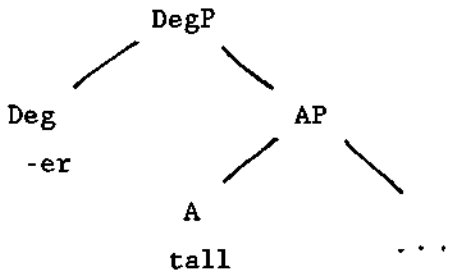
Consider again some typical cases of modifying Spec, repeated from above:

(49)a. John is too smart
b. John walks too slowly

Corver (1990) proposes to analyse too as the head of a functional projection to which he refers as a Degree Phrase (DegP). Deg takes AP as its complement. The category Deg includes the following elements in English (Corver 1990:41): how, so, too, as, more, less, this, that. The idea that several modifying specifiers are actually heads of functional projections is independently supported.

In the first place, Corver (1990:47) notes that comparative formation can be analysed as a case of head-incorporation, The comparative morpheme -er alternates with pre-adjectival more. Both elements are generated in Deg, the head position. The synthetic form can now be derived by head-incorporation:

(50)



Head-incorporation is a well-known and independently necessary mechanism (Baker 1988a). Consider now what proponents of the specifier hypothesis must claim. They must suppose that the head tall incorporates into the specifier -er, an unprecedented rule.

In the second place, there is the phenomenon of complementiser drop. Complementisers can be dropped if they are properly governed (Stowell 1981):

(51)a. John realised that he was a fool
b. John realised he was a fool
(52)a. John realised during the party that he was a fool
b. *John realised during the party he was a fool
(53)a. That Bill was lying was obvious
b. *Bill was lying was obvious

Proper government appears to rely on minimal c-command.

Let us turn now to DegP with CP. The CP is an argument introduced by Deg. CP occurs within the government domain of Deg so that complementiser drop should be possible:

(54)a. John was so tired that he fell asleep
b. John was so tired he fell asleep

This prediction is correct. Proponents of the specifier hypothesis assume that the CP is base-generated as part of a Spec ("so that ...") of AP, and subsequently adjoined to AP. In that position, the CP is not within the government domain of either Deg or A. Complementiser drop is thus counterfactually predicted to be ungrammatical. Under a DegP analysis, on the other hand, the CP occurs in its base position, governed by the head (Deg) by which it is selected.[17]

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[17]See Corver (1990) for more arguments in favour of DegP.

These two arguments suffice to make clear that there is no need for a relational definition of modifying specifiers. A large group of specifiers can be reanalysed as DegP taking AP as a complement. DegP itself can be analysed as a complement or an adjunct:

(55)a. John is too slow
b. John is walking too slowly

In the (a)-sentence the DegP functions as a complement. In the (b)-sentence it functions as an adjunct, adjoined to VP.

Modifying elements can thus be easily accomodated within a one-level X-bar theory. They are reanalysed as either heads or adjuncts. Let us now turn to the more interesting topic: the role of specifiers as designated landing sites for movement.

5. How to analyse specifiers as landing sites

We have lost now the possibility of a rigid view of specifiers such as provided by traditional X'-theory. Specs cannot be introduced by a rewrite rule anymore. This is an asset, because it paves the way for a relativised approach. The presence or absence of specifiers can be made dependent on the properties of the local configuration. The reduction of X'-theory forces us to develop an interactive approach to the problem, in the spirit of Chomsky (1981).

I will present a conceptual redundancy argument against the idea that specifiers (as landing sites) must be defined within X-bar theory. The two-level X-bar theory can define specifiers in two ways. First, a specifier can be structurally defined as the maximal projection that is the sister to a one-bar projection. Second, a specifier can be defined as the maximal projection that agrees with the head of its sister. In other words, a specifier can also be defined with the help of Spec-Head agreement.[18] There is an obvious conceptual redundancy here. We therefore propose to drop the X'-bar

[18]The notion specifier can be defined in terms of SPEC-head agreement only if all specifiers partake in SPEC-head agreement. Chomsky (1986a:24) suggests that SPEC-head agreement holds generally, whether or not AGR is present.

characterization of specifiers. Both under the two-level X-bar theory and under the one-level X-bar theory specifiers must be licensed by agreement. Additional stipulation of the notion specifier into X-bar theory is redundant.

Within the one-level X-bar theory, it would superficially appear to be the case that specifiers and adjuncts cannot be distinguished. This is not the case, because it is still possible to define the notion specifier with the help of Spec-Head agreement. The specifier now emerges as the adjunct that participates in Spec-Head agreement.

This raises the important question why the specifier adjunct is lower in the tree than non-specifier adjunct.[19] Here we can appeal to minimality. The specifier must be lower since an intervening adjunct would block the relation of Spec-Head agreement. Minimality thus explains why specifier adjuncts are closer to the governor than other adjuncts. Two-level X-bar theory, on the other hand, just stipulated that specifiers were lower in the tree than adjuncts.

There is an additional advantage in favour of defining Spec in terms of Spec-Head agreement rather than X-bar theory. X-bar theory is essentially rigid. All categories always have a Spec. Agreement theory allows us to relativise the presence of Spec. The presence or absence of Spec can be relativised depending on the properties of Spec-Head agreement. In this way, interaction is created between Agreement Theory and movement. Such an interactive account is what we aim at, since Chomsky (1981). The general tendency within generative grammar has been towards developing interactive analyses.

X'-stipulations are not harmless. A rigid view of grammar underlies such stipulations. However, the developments of the past decade have shown that principles must not be rigid. They must be relativised, made sensitive to properties of the local configuration. For instance, we do not say anymore that NP is always or never a binding domain for anaphors. Instead, the definition of binding domain has been made sensitive to the

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[19]It is sometimes assumed that an adjunct can be higher than the specifier within a given maximal projection, e.g. Radford (1988).

presence of a local antecedent (Huang 1982, Chomsky 1986b). X'-stipulations proclaim a rigid view of grammar. Such a view is undesirable because it stands in the way of an interactive analysis.

The present view of specifiers is implicit in much recent work, such as Chomsky (1986a). This is clear from the facts that we can take over Chomsky's definition of L-marking (Chomsky 1986a:70) within the one-level X-bar theory without modification. The relevant definitions are given below:

(56) Where α is a lexical category, α L-marks β iff β agrees with the head of gamma that is θ-governed by α.

(57) α θ-governs β iff α is a zero-level category that θ-marks β, and α, β are sisters.

This definition says that (θ-marked) complements and their specifiers are L-marked. How come we can take over this definition in a one-level X-bar theory without problems? This is because the definition refers to specifiers as defined by agreement theory, not as defined by (two-level) X-bar theory. This in itself is an indication that a rigid structural definition of specifiers is superfluous.

The conceptual gain is a simplification of X-bar theory. This elimination of the notion SPEC from X-bar theory paves the way for a deeper understanding of the notion SPEC in terms of agreement as part of Licensing Theory.

There are, of course, technical issues concerning the adoption of a one-level theory within the Barriers framework. These technical issues turn upon the X'-projection. Interestingly, the one-level theory leads to greater symmetry within the theory of movement. I will now present another argument in favour of the one-level theory.

The Barriers-framework incorporates the following claims about movement theory (adapted from Chomsky 1986a:4):[20]

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[20]Strictly speaking, Chomsky leaves open the possibility of a head adjoining to a maximal projection. However, the possibility of a head adjoining to a maximal projection is never made use of.

(58)a. Only X^0 can move or adjoin to X^0

b. Only X^{max} can move or adjoin to X^{max}

c. X' may not move or adjoin nor be moved to or adjoined to

The odd man out is obviously the statement about X'. If the system were symmetrical then we would expect the following to hold:

(59)c. Only X' can move or adjoin to X'

(58c) spoils the symmetry of the system. Of course, if there were strong empirical considerations in favour of (58c) then we would rather call (58a-b) into doubt. But the situation is reversed. There is strong empirical evidence for (58a-b). Evidence for (58c) is lacking. Interestingly, then, the claim (58c) that spoils the symmetry of the system is also the claim for which there is no empirical support. The conclusion is therefore: (58c) must go. This conclusion is, of course, exactly what the one-level X'-Theory entails.

Removal of X'-projection also has a technical advantage for the Barriers system. Chomsky (1986:14) must stipulate that the X'-projection can neither be a blocking category nor a barrier. That stipulation can now be dropped. It is not an accident that the X'-projection must be made harmless for the Barriers system. It indicates that the X'-projection is the odd man out.

It would lead us too far afield to discuss all the ramifications of a one-level X'-theory for the Barriers system. Nevertheless, I would like to discuss briefly two consequences.

The first issue concerns the opacity of subjects. It must be ensured that the subject in its adjoined positions is an island. Chomsky ensures this by forbidding adjunction to IP so that movement out of IP always crosses two barriers. However, adjunction to other non-argument types is allowed. In order to avoid this stipulation, we adopt the Head Government Condition on Adjunction

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Furthermore, Chomsky (1986b:73) suggests that a lexical head may not adjoin to its maximal projection, a requirement following from a generalisation of Emonds (1976) Structure-Preserving Hypothesis.

(Frampton 1990), based on Kayne's (1984) directionality constraints. This condition is given below:

(60) Head Government Condition on Adjunction:
A wh-element can only be adjoined to a maximal projection XP from a position that is canonically governed by the head of XP

It ensures that adjunction to IP is possible for an element that is adjoined to VP, since I canonically governs positions adjoined to VP. The subject is not canonically governed. Hence movement out of the subject may not adjoin to IP. It must go directly to CP. Movement to Spec of CP will cross two barriers (NP, IP).

The second issue involves our view of segments. A one-level theory must assume that segments can be barriers. The HGCA will ensure that the IP-node dominating the subject is a barrier. Notice that this node is a segment for a one-level X'-theory, since it directly dominates another IP. This entails that segments are not automatically non-barriers by virtue of being segments. Thus we are prevented from relying on X'-stipulations in order to determine what is a barrier. Instead, it will depend on relativised principles like the HGCA and L-marking whether a given node (segment or not) is a barrier or not. The IP-segment dominating the subject differs from "normal" segments in that it directly dominates a position that is licensed by Case. Thus we can say that segments dominating licensed positions can be barriers.[21]

All in all, it is fair to conclude that the Barriers system becomes conceptually stronger if a one-level X-bar theory is adopted, though it necessitates a reworking of its technical aspects. The upshot of this section is therefore that the presence of specifiers is relativised. I will refer to this hypothesis as the Relativised Specifier Hypothesis. Conceptually, the Relativised Specifier Hypothesis makes X-bar theory simpler and forces us to be more explicit about Licensing Theory (Case and Agreement). To sum

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[21]The one-level theory will have other technical consequences. It depends in part on Licensing theory how these consequences will work out.

up, a one-level theory removes the conceptual redundancy in the definition of the notion specifier; the theory of movement becomes more symmetric. Furthermore, the definition of L-marking of Chomsky (1986a) can be taken over without modification, because it does not refer to an X-bar theoretic definition of specifiers. It only refers to a definition in terms of Spec-Head agreement. This is not accidental; it is in itself an indication that an X-bar theoretic definition is superfluous. The relative hierarchical ordering of specifiers and adjuncts is derived from minimality. It is therefore very attractive to replace the two-level theory with a one-level theory.

Our view is related to that of Stuurman (1985), Speas (1986), Fukui & Speas (1986). The latter two argue in favour of maintaining the distinction between two bar-levels. However, they claim that lexical projections can only project to X', whereas functional projections project up to X''. Thus, all categories have a complement but only functional projections have a specifier position. I agree with the spirit of this proposal but not with the letter, for the following reasons. This proposal encodes the presence of specifiers in X'-theory. As we saw, this is undesirable and redundant. Independently needed principles such as Spec-Head agreement and minimality can be used to say all we need to say about specifiers. The proposal of Fukui & Speas says that only functional projections have specifiers. To say that, they rely on X'-theory, specifically, on the distinction between one-bar and two-bars. We can just as well say this with Spec-head agreement, rephrasing their proposal, as follows:[22]

(61) Only functional heads license specifiers

Specifier positions must be licensed by functional heads, and Spec-head agreement is a way in which licensing takes place. This

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[22]Their are some differences between Fukui & Speas' proposal and my rephrasing. My proposal allows specifiers in lexical projections, provided they are licensed by functional heads. To exemplify, a NP adjoined to VP can be licensed by AgO, if AgO assigns Case (and F-features) to it. This is impossible for Fukui & Speas. As we will see, empirical evidence favours my proposal over theirs.

statement is conceptually more attractive, because it avoids X'-bar stipulations. Fukui & Speas, in fact, rely on Spec-head agreement. They assume that functional heads assign F-features. Given these features, there is no need to assume that bar-level also encodes the notion specifier. In other words, the distinction between one-bar and two-bar is superfluous in the proposal of Fukui & Speas.

6. Concluding Remarks

It has been shown in the preceding sections that a two-level X-bar theory is undesirable from several points of view. Instead, we propose to adopt a one-level X-bar theory. Part of the argumentation relied on the idea that X-bar theory should interact with other components of the grammar in order to derive various consequences which have hitherto been stipulated into X-bar theory. Licensing theory derives the distribution of specifiers. Minimality gives us the relative ordering of adjuncts and specifiers.

It has also been argued that a head can take at most one complement. We suggested that it is undesirable to stipulate this as a restriction on X'-theory. The question arises how to derive this. Here I am less explicit than in the case of specifiers. A possible suggestion is that it follows from θ-Theory. If all complements are θ-marked, then we merely need to suppose a one-to-one relation between heads and θ-marking. However, I will leave this as a problem for future research.

My aim has been to show that it is conceptually attractive to derive the relative hierarchical positions of complements, adjuncts and specifiers from the interaction of X'-theory with independently needed subsystems, Licensing theory and, possibly, θ-theory. Arguments based on conceptual redundancy have been given in support of this position. This line of research allows the development of a truly modular grammar.

Finally, the present point of view opens up an interesting speculation. Suppose that not only specifiers and adjuncts are adjoined, but also complements. This gives a very clear picture of the division between syntax and morphology in phrase structure. Morphology deals with heads adjoined to heads, whereas syntax deals

with maximal projections adjoined to maximal projections. However, this speculation has ramifications which go far beyond the purpose of this paper.

References

Baker, Mark (1988a) Incorporation: a Theory of Grammatical Function Changing. U. of Chicago Press. Chicago.

Baker, Mark (1988b) Theta Theory and the Syntax of Applicatives in Chichewa. Natural Language and Linguistic Theory 6: 353-389.

Barrs, Andrew (1986) Chains and Anaphoric Dependence: on Reconstruction and its Implications. Doctoral Dissertation. MIT.

Barrs, Andrew & Howard Lasnik (1986) A Note on Anaphora and Double Objects. Linguistic Inquiry 17: 347-354.

Bennis, Hans & Ans van Kemenade, eds. (1989) Linguistics in the Netherlands 1989. Foris. Dordrecht

Bennis, Hans (1986) Gaps and Dummies. Foris. Dordrecht.

Besten, Hans den (1989) Studies in West Germanic Syntax. Doctoral Dissertation. U. of Amsterdam.

Burzio, Luigi (1981) Intransitive Verbs and Italian Auxiliaries. Doctoral Dissertation. MIT.

Chomsky, Noam (1981) Lectures on Government & Binding. Foris. Dordrecht.

Chomsky, Noam (1986a) Knowledge of Language: its Nature, Origin and Use. Praeger. New York.

Chomsky, Noam (1986b) Barriers. MIT Press. Cambridge (Mass.).

Corver, Norbert (1990) The Syntax of Left Branch Extractions. Doctoral Dissertation. U. of Tilburg.

Daalder, Saskia & Aleid Blom (1976) De Strukturele Positie van Reflexieve en Reciproke Pronomina. Spektator 5: 397-414.

Emonds, Joe (1976) A Transformational Approach to English Syntax. Academic Press. New York.

Everaert, Martin (1982) A Syntactic Passive in Dutch. Utrecht Working Papers in Linguistics 11. U. of Utrecht.

Frampton, John (1990) Parasitic Gaps and the Theory of WH-Chains. Linguistic Inquiry 21: 49-77.

Fukui, Naoki & Margaret Speas (1986) Specifiers and Projection. In: Naoki Fukui, Tova Rapoport & Elizabeth Sagey (eds).

Fukui, Naoki, Tova Rapoport & Elizabeth Sagey, eds. (1986) MIT Working Papers 8. MIT.

Gestel, Frank van (1986) X-bar Grammar: Attribution and Predication in Dutch. Doctoral Dissertation. U. of Utrecht.

Godard, Danièle (1990) Extractable N Complements and the Argument Structure of NP. Talk. Going Romance 4. U. of Utrecht.

Guéron, Jacqueline, Hans-Georg Obenauer & Jean-Yves Pollock eds. (1985) Grammatical Representation. Foris. Dordrecht.

Hoekstra, Eric (1989a) Binding, Objects and the Structure of the English VP. In: Hans Bennis & Ans van Kemenade

(eds).
Hoekstra, Teun (1984) Transitivity: Grammatical Relations in Government-Binding Theory. Foris. Dordrecht.
Hornstein, Norbert & Amy Weinberg (1981) Case Theory and Preposition Stranding. Linguistic Inquiry 12: 55-91.
Huang, James (1982) Logical Relations in Chinese and the Theory of Grammar. Doctoral Dissertation. MIT.
Jackendoff, Ray (1977) X-bar Syntax: a Study of Phrase Structure. MIT Press. Cambridge (Mass.).
Kayne, Richard (1984) Connectedness and Binary Branching. Foris. Dordrecht.
Kornai, András & Geoffrey Pullum (1990) The X-bar Theory of Phrase Structure. Language 66: 24-50.
Koster, Jan (1975) Dutch as an SOV language. Linguistic Analysis 1: 111-136.
Koster, Jan (1978) Locality Principles in Syntax. Foris. Dordrecht.
Koster, Jan (1985) Reflexives in Dutch. In: Jacqueline Guéron, Hans-Georg Obenauer & Jean-Yves Pollock (eds).
Koster, Jan (1988) The residual SOV Structure of English. Groningen Papers in Theoretical and Applied Linguistics (TENK) 5. Groningen.
Ladusaw, William (1980) Polarity Sensitivity as Inherent Scope Relations. Indiana University Linguistics Club. Bloomington.
Larson, Richard (1987) On the Double Object Construction. MIT Lexicon Project Working Papers 16.
Larson, Richard (1988) On the Double Object Construction. Linguistic Inquiry 19: 335-391.
Muysken, Pieter & Henk van Riemsdijk (1985) Projecting Features and Featuring Projections. In: Pieter Muysken & Henk van Riemsdijk (eds).
Muysken, Pieter & Henk van Riemsdijk, eds. (1985) Features and Projections. Foris. Dordrecht.
Napoli, Donna-Jo (1989) The Linear Prominence Domain and the Double Object Construction. MS. Swarthmore College.
Pollock, Jean-Yves (1989) Verb Movement, Universal Grammar, and the Structure of IP. Linguistic Inquiry 20: 365-424.
Postal, Paul (1971) Cross Over Phenomena. Holt, Reinhart and Winston. New York.
Pullum, Geoffrey (1985) Assuming some version of X-bar theory. Chicago Linguistic Society 21: 323-353
Radford, Ann (1988) Transformational Grammar. Cambridge U. Press. Cambridge.
Reinhart, Tanya (1976) The Syntactic Domain of Anaphora. Doctoral Dissertation. MIT.
Reinhart, Tanya & Eric Reuland (1989) Anaphoric Territories. MS. U. of Groningen & U. of Tel Aviv.
Reuland, Eric (1985) A Feature System for the Set of Categorial Heads. In: Pieter Muysken & Henk van Riemsdijk (eds).
Riemsdijk, Henk van (1978) A Case Study in Syntactic Markedness: the Binding Nature of Prepositional

Phrases. Foris. Dordrecht.

Speas, Margaret (1986) Adjunctions and Projections in Syntax. Doctoral Dissertation. MIT.

Sportiche, Dominique (1989) Conditions on Silent Categories. MS. UCLA.

Stowell, Tim (1981) Origins of Phrase Structure. Doctoral Dissertation. MIT.

Stuurman, Frits (1985) X-bar and X-plain: a Study of X-bar theories of the phrase structure component. Doctoral Dissertation. U. of Utrecht.

Zwarts, Frans (1981) Negatief Polaire Uitdrukkingen I. GLOT 4: 35-132.

Zwarts, Frans (1986) Categoriale Grammatica en Algebraïsche Semantiek: een Onderzoek naar Negatie en Polariteit in het Nederlands. Doctoral Dissertation. U. of Groningen.