

The Doubly filled C filter, the Principle of Projection Activation and Historical Change

Hilda Koopman

Department of Linguistics. UCLA

koopman@biology.ucla.edu 1997.

1. Introduction

Historical linguistics bears on linguistic theory, in as far as it provides a testing grounds for particular theoretical proposals¹. The theory should yield insight into the patterns of historical change that are observed as well as those that are not observed.. The theory should also provide sufficient flexibility so as to allow for change, and should be able to account for the cooccurrence of different patterns within the same speaker, by preference within the mental system (i.e. without invoking extraneous factors). Any modification to the theory has direct analytical consequences, and puts historical change within a different perspective.

In this paper, I will develop a particular proposal about the distribution of overt lexical items within the syntax, which has rather drastic analytical consequences. I motivate my proposals in section 2. Since my proposal severely restricts the available hypothesis that can be entertained by the language learner, and therefore has immediate implications for the analysis of historical change as well. I discuss some of these implications in section 3, focusing on the relatively well documented development from Old-English to Modern English. I will argue that my proposal seems to be on the right track in that it allows for more flexibility within the grammar itself, and thus fits the empirical data concerning change better.

¹A preliminary version of this paper was presented at the DIGS IV conference in Montréal (November 1995), at USC (November 1995) and UCLA (January 1996). I would like to thank the audiences for lively discussions. Section 2 of this paper appeared as the “Spec Head Configuration” in F. Lee and E. Garrett (eds.) (1996) *Syntax at Sunset*, UCLA Working papers.

2. Where is Syntax going?

It became clear in the beginning of the nineties, that syntax was at the beginning of a new cycle of theoretical progress. It had become possible, and necessary, given the analytical options available to the linguist and hence the language learner, to ask general questions about the structure of the theory and theoretical parsimony. In the immediately pre-Minimalist area, there were a number of ideas about theoretical parsimony. Some of these ideas got overshadowed by the particular answers Chomsky developed in the Minimalist Program (Chomsky, 1993), and further developed in Bare phrase structure and Chapter 4 (Chomsky, 1995). Dominique Sportiche (1992, 1995a, 1995), for example, proposed that all syntactic relations reduced to two licensing relations: the Spec head licensing relation and the head head licensing relation, which were mediated by movement (overt or covert). In *Licensing Heads* (Koopman, 1994), I pursued the idea that all complement relations reduce to the head movement configuration, and that the binary branching nature of phrase structure itself falls out from the properties of the way in which head movement proceeds. Kayne (1994), from his side, pursued the extremely interesting idea that the relation between hierarchical and linear order is rigidly fixed with linear order corresponding to asymmetric c-command relations (the LCA), and tackled the problem of how to derive the properties of X-bar theory itself.

It became possible to ask these theoretical questions because of a better understanding of the empirical phenomena in many human languages. This better understanding in turn was made possible by developments in the mid-eighties: the VP internal subject hypothesis (Koopman and Sportiche 1985, 1991, Speas and Fukui 1986 and many others), the VP internal object hypothesis (objects move to a position outside the VP, Koopman and Sportiche 1985, 1991 and many others), the development of VP shells (Larson 1988), the split I hypothesis (Pollock 1989), in conjunction with V movement, the development of the DP (Abney 1987, Szabolci 1987), in conjunction with head movement within the DP (Ritter 1991, Valois 1991), etc., the importance of the Spec head relation (Kayne 1989, Koopman 1987, Kinyalolo 1990, Mahajan 1990, Rizzi, 1991, Sportiche, 1992 among others). The Minimalist program is based on the assumption that this understanding is basically correct and complete. Our understanding of empirical phenomena has continued to grow, however, and as a result has changed since the early nineties. This is due on the one hand to many careful analyses, that were carried out independently of Kayne 1994 (Koopman 1993, Nkernji 1993, 1995, Sportiche 1995; on the other hand it results from new insights deriving from

analyses inspired by Kayne 1994. From these works, it is clear that languages appear to make extensive use of pied piping of all kinds of constituents. This indicates that the picture that we had in the beginning of the nineties, which involves articulated structures and quite a lot of movement, was simply incomplete and even more general than previously thought. There is actually more overt movement than previously thought, with pied-piping being the norm rather than the exception: it looks as if most constituents need to move (at least once). The question is of course why this should be so.

In section 2 of this paper, I will be concerned with the type of configurations that one seems to find in languages, taking into account the existence of heavy pied-piping. I will focus on the distribution of overt elements over spec and head positions, propose a revision of Kayne's LCA which allows us to derive the doubly filled Comp filter, and develop a proposal which forces massive movement. The proposal that I will develop is much in the spirit of work by Sportiche 1995, Koopman 1994 and Kayne 1994 and Kayne's recent work (UCLA class lectures, January 1996). These proposals have direct consequences for our understanding of historical change, a preliminary discussion of which is included in section 3.

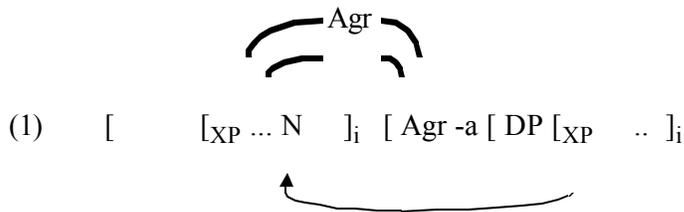
2.1 The problem of Pied-piping

Languages appear to make extensive use of pied-piping of all kinds of constituents, other than DP and PP. This can be shown for languages that would typologically be classified as head initial languages. The arguments for pied-piping are therefore independent of the type of movement that must be assumed if Kayne 1994 is correct in assuming that all languages are underlyingly head initial. (Kayne shows that the standard view that languages have symmetrical structures (i.e. OV is symmetric with VO) does not yield the expected patterns in crosslinguistic variation. This view should hence be abandoned).

2.1.1 Pied-piping of constituents within the DP

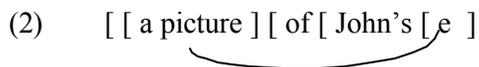
The existence of pied-piping can perhaps be best illustrated within DPs. This kind of pied-piping is robustly found in languages with overt agreement patterns (cf. Bantu languages), and in fact also in English and French (Kayne 1994) and Dutch (Bennis and Den Dikken 1995, and Hoekstra 1995 for some extremely strong empirical arguments) to name but a few.

I will illustrate this property for Bantu languages. In Bantu languages, the “genitive” DP agrees in class and number features with the head N. A so-called “associative” marker *a* carries the agreement and precedes the genitive DP². This pattern of agreement can be reduced to the familiar Spec head agreement relation if it is assumed that a phrasal constituent containing the head N pied-pipes to the left of the associative marker, triggering the usual Spec head agreement. (cf. Nkemnji, 1995, Moritz, 1993) :



Preposing of a phrasal constituent containing the head N, triggers agreement on the associative head as a regular Spec head relation, and derives the correct word order patterns.

The derivation in (1) is by no means an isolated case where we need to assume phrasal movement of some XP constituent to the left. Many other cases are found (Koopman 1993, 1994), (Androusoypoulou 1994)). And of course, Kayne 1994 proposes similar derivations for *a picture of John's*, and a host of other structures in English and Romance languages:



Pied-piping analyses are successfully applied to certain Dutch DPs (Bennis and den Dikken 1995) and finds strong empirical support (Hoekstra 1995).

Pied-piping is not restricted to DP internal structure, but holds quite generally for all projections. I briefly discuss two more examples.

²The parallelism with Romance *de* is actually even greater, in the sense that the associative marker also precede postnominal adjectives. This recalls Kayne's (1994) analysis of [quelqu'un [de [célèbre []

2.1.2 *Pied-piping of IP.*

Sportiche (1995) argues that French intonational questions like the following:

(3) tu va venir demain?

involve a derivation where IP pied-pipes to the Spec of the Q morpheme, which seems to occur clause finally as sentence final rising intonation:

(4) [[IP tu va venir demain [Q [[e]]]]]

Although this analysis might seem less obviously correct, - after all the Q head is only intonationally present, and thus not an overt terminal element -, Sportiche gives some extremely interesting empirical support for this analysis, which concerns the licensing of negative polarity items. While head initial yes/no questions in French license negative polarity items (as do negative environments), but intonational yes no questions do not (as do statements):

- (5) a. A-t-il-vu qui que ce soit?
Has- he-seen anyone
- b. *il a vu qui que ce soit?
He has seen anyone

This quite surprising fact receives an immediate explanation if the structure is as in (4): clausal pied-piping removes the negative polarity item from the c-command domain of the Q head. Intonational questions therefore cannot contain a negative polarity item.

2.1.3 *Pied-piping of the complement of Neg.*

Nkernji (1995) argues for phrasal pied-piping of the complement of NegP to Spec, NegP in Nweh, a Grassfield Bantu language spoken in Cameroon. Nweh looks like a regular head initial language. Clausal negation is expressed in two places: by a marker preceding the verb **te** and by a clause final element (**bo**).

2.1.4 *Two configurations*

In conclusion, then, languages make use of overt pied-piping of constituents. Some of these constituents are surprisingly big and clause-like. Besides pied-piping (movement of some XP to some Spec position), a different configuration is well-attested: languages make use of head movement (movement of some head to another head position). If I were to pursue the discussion for each category (some of which I will be doing below), and present a complete “inventory” of what one finds and does not find in human languages, I believe that the following two configurations would emerge⁴:

(10) For any projection X, the following configuration holds:

[[[YX]_i [... [X]_i]] Head movement to some head position Y, or
[[XP]_i [Y [ZP [XP]_i]] Movement of some XP (contained in ZP or
equal to ZP) to Spec, YP

I will operate on the assumption that (10) is a true generalization. Another way of describing this pattern (abstracting away from empty categories for the moment) is that languages either lexicalize the head of some projection, or the Spec of some projection: the question arises why this is so.

The overall picture then is the following: besides the familiar pattern in which languages raise a head to some high position, languages also make use of phrasal pied-piping by which some constituent ends up in a very high Spec position, possibly pied-piping entire clauses or IP-like constituents. This raises the question how wide-spread pied-piping really is. I suspect that rather than being marginal or isolated, pied-piping of predicates and clausal constituents occurs extremely frequently in human languages. This raises a number of interesting questions.

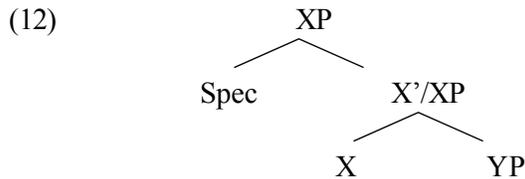
³Because-clauses form the only exception, see Nkemnji (1995) for an interesting discussion.

⁴In Koopman (1994), I suggest that it is precisely these two configurations that are found, because they bring the head N in the domain of a c-commanding head, which would allow the head N to subsequently incorporate and satisfy the lexical properties of some predicate.

- (11) - If pied-piping is so heavily used, why did it take us (linguists) so long to discover it?
 - Why precisely do we get the two patterns in (10)?
 - What motivates pied-piping?

As for the last question, Chomsky's feature driven theory of movement does not seem to yield much insight into the problem of the motivation of pied-piping. This is to be expected, given that the standard assumption about what kinds of movements one finds and doesn't find simply does not include the type of pied-piping of heavy constituents that natural languages instantiate. A different kind of answer is therefore called for. I will try to provide some insights into these questions by examining the Spec head relation, in particular by examining the distribution of overt and covert terminal elements over the Spec and head positions. Before doing so, I briefly spell out my background assumptions:

- Syntactic structures are binary branching (Kayne 1984),



- There are no multiple Spec positions
- Adjuncts are accommodated within this structure (as in Sportiche, 1994)
- there is no variation in hierarchical structure between languages.

This implies that there can be no parameters distinguishing languages as having a high negation or a low negation, or as having a high Focus or a Low focus. I take the basic ordering to be given, and will not address the interesting research question how it arises. Linear order in languages arise from movement operating on the underlying skeleton. Here the assumptions that play a role in my paper are:

- head movement (left adjunction only)
- XP movement (leftward only).
- Inflectional morphemes project their own heads (no base generation of inflectional morphology as in Chomsky (1994))

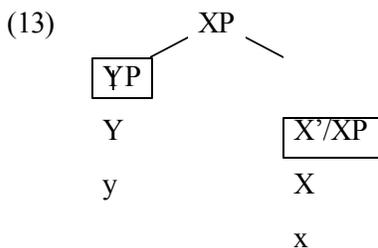
- **LCA** (The Linear Correspondance Axiom, Kayne (1994), or some version thereof). The LCA is based on idea that the relation between hierarchical structure and linear order is rigidly fixed, with asymmetric c-command mapping into linear precedence.

2.2 The Spec head relation

Given the existence of extensive pied-piping, head movement, and large underlying structures, analyses are often underdetermined. As linguists we encounter the problem that too many options seem to be available. (Developments in the nineties can all be seen as reducing these options). We can state the problem from the point of view of the language learner: how does the language learner know where some phonologically overt element is pronounced? He/she knows that there is a hierarchical order of projections, that this structure is quite substantial, with each feature corresponding basically to a projection, and that extensive movement has taken place. The language learner gets much help from Kayne's (1994) Linear Correspondence Axiom **LCA** and knows that linear order corresponds to asymmetric c-command relations. I will start with a suggestion that a slightly modified LCA further restricts possible analyses, and thus reduces the space of possible hypotheses entertained by the language learner. This proposal will lead me to a further examination of the type of configurations that are expected to arise.

2.2.1 The LCA and deriving the doubly filled Comp filter.

In his (1994) book, Kayne encounters the problem of how Spec positions are possible at all under the LCA. This problem can be illustrated in the following structure:



In this structure, X'/XP (the actual label of this node is not important for the present discussion) asymmetrically c-commands Y, and therefore x should precede y. However, YP also

asymmetrically c-commands X, which means that y should precede x. This configuration can therefore not arise. In order to allow for this structure, Kayne proposes to restrict c-command to categories. This removes X'/XP from the set because it is a segment. This leaves YP asymmetrically c-commanding X, and y therefore precedes x.

For reasons having to do with the theory of head movement (Koopman, 1994), I wanted to keep segments as c-commanders. I therefore explored a different solution to this problem. Suppose that we let X'/XP partipate in c-command. Consider the configuration in (13) again. This configuration says that there can be no terminal elements in the Spec position of a projection, and in the head position. But it has often been proposed that this is correct, and there is even a filter which prohibits precisely this configuration: the doubly filled Comp filter, generalized in Sportiche (1992, 1993) to the doubly filled Voice filter, and generalized to the Spec, DP and D domain in Koopman (1991, 1993)). However, the doubly filled Comp filter itself is as yet unaccounted for. The structure in (13) provides a simple way to derive the doubly filled Comp filter from the LCA, provided we find a way to allow for the configuration. One way to achieve this is to restrict the application of the LCA to overt terminal elements only (see also Chomsky, 1995 chapter 4) . I will call this version of the LCA the modified LCA:

(14) Segments participate in c-command⁵

Modified LCA: the linear order of overt terminal elements corresponds to asymmetric c-command.

2.2.2 *Spec head configurations.*

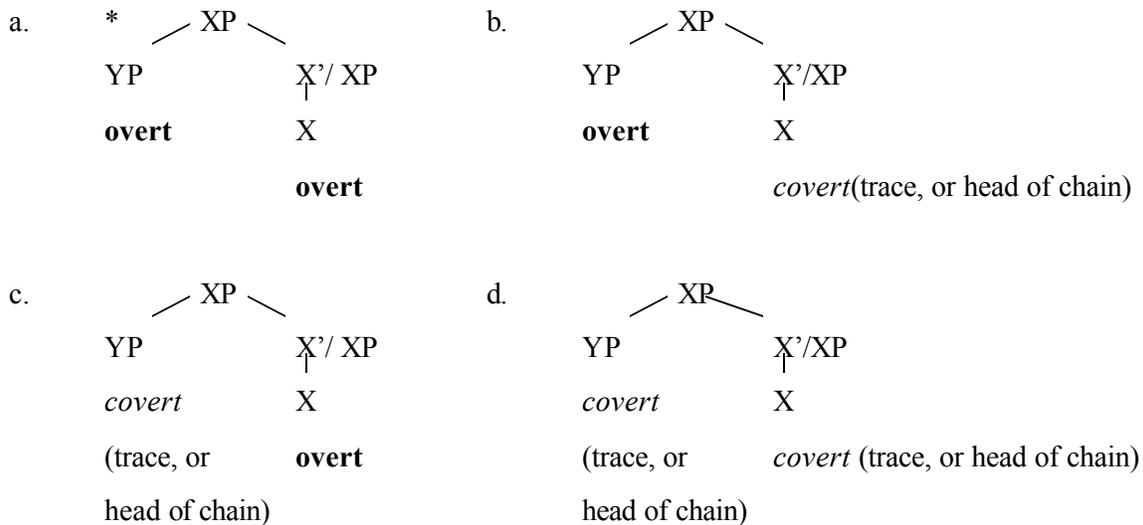
The modified LCA allows for the configuration in (13) iff one of the terminal elements is covert.

⁵As Kayne (personal communication) points out, allowing X'/XP to be within the set of c-commanders raises a problem with respect to the ordering of the complement and the specifier, because these would be too symmetrical as well. I will not address this point here, but maybe complements are forced to move as well. From recent work it has become clear that many terminal elements are in fact occupying Spec positions: the configuration [... [**Spec** H [complement] with positions containing overt material boldfaced seems to be omnipresent. Taken to apply derivationally, the LCA would force complements to move to Spec positions, and force further movement of the Spec or the head position. For the highest position in superficially head initial languages, it presumably forces both the head and the Spec of the complement to be silent:

[**Spec** [H [Spec **H** [H [**compl** H

Let us examine what the modified LCA has to say about the different Spec head configurations, distributing overt (boldfaced) and covert (italics) elements over Spec and head positions. Within covert categories, we further distinguish between traces (covert categories which are not the head of a chain) and covert heads of chains. This will play a role in section 2.2.6 .

(15)



It follows from the modified LCA that no projections can have terminal elements in Spec and in the head (15a). The doubly filled Comp filter is one particular example of this configuration. According to (15a), however, it should be entirely general and apply to all projections. This is the Double Voice filter of Sportiche (1992) for clitic constructions and Romance negative constructions, and the generalized doubly filled Comp filter, used in Koopman, 1991 and 1993 for the structure of pronouns. Many linguists (including myself, Koopman, 1983, 1993) have taken the doubly filled Comp filter to be some type of economy principle which can be violated in certain cases. If the proposal above is correct, however, this simply cannot be true: the configuration can never occur, because there could be no linear ordering. This raises the question what to do about violations of the doubly filled Comp filter. I will argue for alternative analyses of these violations in section 2.2.3.

Configurations that are allowed by the LCA are presented in (15b) and (15c). These in fact represent the expected cases: projections can have terminal elements in Spec. This yields so-

called **Spec marking** languages (15b). Projections can have a terminal element in the head position. This yields so-called **Head marking** languages (15c). Languages can (and presumably must) exhibit any mixture of these two patterns, as long as neither Spec nor head projections end up containing overt material. It is important to point out that the question of whether (15a) is inviolable is in fact logically distinct from the expectation that languages conform to pattern (15b) or (15c). This expectation is still true if the generalized doubly filled Comp filter were an economy principle. (15d) represents the fourth and last possibility. Projections can have a covert Spec and covert head (15d), with further distinctions between types of covertness (is the covert element the head of a chain or is it not). The modified LCA has nothing to say about this configuration, since it does n't apply to covert elements. In 2.2.6, I pursue the idea that this configuration is actually excluded if both the Spec position and the Head position are the head of a chain.

This paper then contains three interrelated, but logical distinct proposals.

1. The LCA applies only to terminal elements, and c-command is not restricted to categories. This proposal derives the doubly filled Comp filter. I briefly examine violations of the doubly filled Comp filter, and argue for a general solution for these cases.
2. Languages are expected to be have overt heads with silent Specs or silent Specs with overt heads. This expectation is still valid independent of the question of whether the doubly filled Comp filter derives from the LCA, or whether it is some economy principle. I turn to cases that fit the configurations well, and show how patterns which have been felt to be problematic so far, in fact represent the norm. I also discuss some cases where the actual surface word orders derive from leftward movement to Spec and the presence of a head. I argue that two phenomena fall under this heading: head drop and pro drop.
3. Languages disallow projections to be headed by silent covert heads and Specs (15d). In particular, I will propose a principle that requires a projection to be associated with lexical material at some point in the derivation⁶. The idea here is quite simple: projections must be activated to be semantically interpretable. Projection Activation happens by associating overt lexical material to either Spec or head at some point in the derivation. This principle provides the motivation for pied-piping, and derives the two configurations in (10).

⁶This principle is reminiscent of Cheng's (1991) clause typing proposal.

2.2.2.1 *Why did it take us so long to discover the extent of pied-piping?*

I am now ready to provide an answer to the first question that we raised in (11a):

(11a) If pied-piping is so heavily used, why did it take us (linguists) so long to discover it?

Pied-piping is XP movement to a Spec position; It is quite easy to see if some small DP or PP has moved to some Spec position as in *whose mother did you visit*, (although it might not be immediately obvious that the head position of that projection is empty (cf. 2.2.3.3 below)). The DP can occur in other positions within the clause. This type of pied-piping has of course been part of syntactic theory since the very beginning. Pied-piping of bigger constituents is simply much harder to detect, even if the bigger constituent occurs in different positions (as is for example the case with French yes/no questions). An overtly pied-piped element in Spec position forces the head of that projection to be silent, because it creates the configuration in (15b). The effects of pied-piping are therefore often hard to detect.

2.2.3 *Problematic cases: Doubly filled Comp phenomena.*

The doubly filled Comp filter was formulated in Chomsky and Lasnik (1977) to account for the impossibility of both an overt wh-phrase and an overt C, and was instrumental in accounting for the form of relative clauses:

- (16) * I wonder [who that/if] left
* the man [who that John saw]

It is well known that the doubly filled Comp filter doesn't seem to hold universally. There are some languages which allow for more than one overt element in the C domain. (Dutch, Quebec French, etc). Even within English the doubly filled Comp filter does not seem to hold of all types of Cs. For example, no doubly filled C filter violation arises in root wh-questions with non-subject wh-phrases and inverted I (*who did you see*). The crosslinguistic variability has been taken by many to show that the doubly filled Comp filter can be violated. In that respect, it is more like an economy principle ("avoid lexical material") that languages could choose to disobey. If the doubly

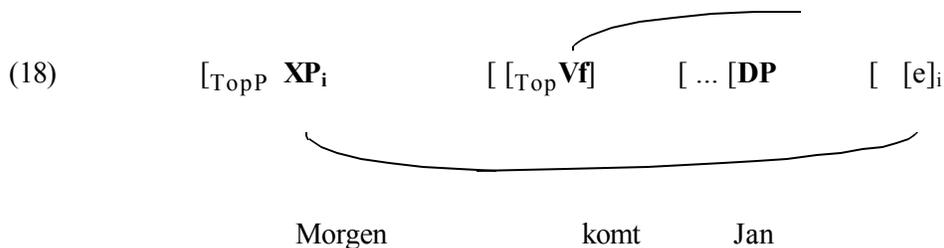
filled Comp filter derives from the LCA, as proposed above, this simply cannot be true. The question then arises if we can find alternative analyses for doubly filled Comp filter violations, and how plausible these analyses are. The remainder of this section examines some violations of the doubly filled Comp filter, and sketches analyses for these that are not only compatible with the LCA, but in fact necessary independent of the LCA. I will discuss V-second phenomena in Dutch, doubly and triply filled Comps in Dutch, turn to apparent violations in English, and finally discuss verb movement in tensed clauses in French.

2.2.3.1 *Verb second*

Consider the verb second phenomena, illustrated in the examples below:

- (17) (i) Jan komt morgen (Dutch)
 John comes tomorrow
- (ii) Morgen komt Jan
 Tomorrow comes John
 ‘Tomorrow, John comes’

Two ingredients go into the standard analyses of verb second phenomena. First, some XP constituent pied-pipes to an initial Spec position in root clauses (say, Spec, TopicP). And secondly, the finite verb moves to the highest head position (say, Top⁰). As we can see in the following structure, this yields a doubly filled Comp effect:



My proposal makes this analysis unavailable, since the phrasal projection XP and the finite verb cannot be within the same projection. This problem might seem serious enough to simply abandon the proposal that the modified LCA derives the generalized doubly filled Comp effect. Yet, I do

not think that this is necessary or even desirable. There is an alternative analysis which is consistent with the LCA: The initial XP is to the left of the preposed V, say in Spec, TopP. Since the Spec is overt, the head of this projection must be empty. The finite verb therefore occupies the head position of a lower projection, which by the LCA must have a silent Spec:

- (19)
- | | | | | |
|-----------|-----|---|------|----------|
| XP | [Y | [| Spec | [Vf |
| Jan | e | | e | komt ... |
| Morgen | | | | komt |

This proposal therefore forces the presence of more (rather than less) structure in the C domain: it forces a split C approach. This might seem ad-hoc. However, quite independently from my proposal, there is mounting evidence that we need to assume a split C approach anyway ((Bhatt and Yoon (1992), Sportiche, 1993, Rizzi, 1995, Nkernji, 1995, Hallman, 1995). Moreover, my proposal leaves the necessary space to account for the fact that the V-second phenomenon in Germanic languages is not a unified phenomenon, and that there is quite a bit of variation in the initial domain. So, the argument is that it is not only desirable, but also unavoidable to assume more structure. If there is more structure, then one would expect the situation in (19) to arise. In addition, we expect the modified LCA to further restrict possible analyses that can be entertained by the language learner: one therefore expect to find some systematic patterns in the seemingly chaotic patterns of violations of the doubly filled Comp filter that languages seem to exhibit. I turn to this problem now.

2.2.3.2 *Doubly filled Comp in embedded clauses*

In embedded wh-questions in Dutch, overt wh-phrases and complementizers may (but do not need to) cooccur:

- (20)
- | | | | |
|----|----------------|-------------------|--------------------------|
| a. | Ik vraag me af | <i>wie of dat</i> | er morgen komt |
| | I wonder | who if that | there tomorrow comes |
| b. | Ik vraag me af | <i>wie</i> | <i>of</i> er morgen komt |
| | I wonder | who | if there tomorrow comes |

- c. Ik vraag me af *wie* er morgen komt
 I wonder who there tomorrow comes
- d. Ik vraag me af *wie dat* er morgen komt
 I wonder who that there tomorrow comes

These again cannot be analyzed as occupying the Spec position and the head position of the same C projection. Rather, an analysis is forced which has a separate WH projection, hosting the wh-phrase, a Q projection, hosting the head *of* (*of* typically occurs in +Q) and a declarative C projection hosting the head *dat* :

- (21) [XP [WH [[Q [[C [.. (=20a))
wie (cov) (cov) **of** (cov) **dat**...

Since I am assuming that languages do not vary structurally, I will assume that the order of projections is universally as in (21) .

We must further account for the fact that in all Dutch dialects, these complementizers can be absent. If the language learner encounters an empty C, s/he might assume the C is empty because it occurs in the head position of a projection that host an overt Spec (i.e. the configuration (15a) obtains)⁷, or because C itself has undergone head movement to a higher projection. The absence of overt C heads can be accounted for by assuming that the other C heads are traces. This yields the following representations for (20c) and (20b) respectively:

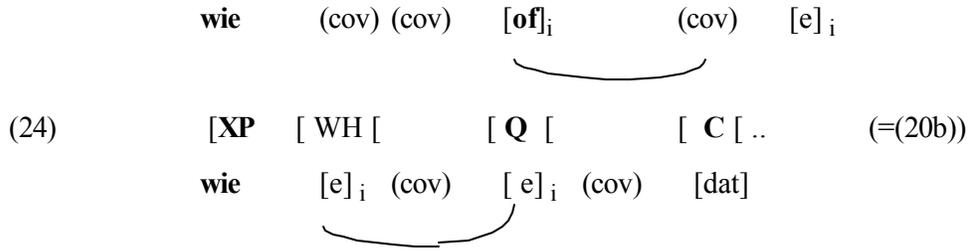
- (22) [XP [WH [[Q [[C [.. IP (=20c))
wie [[e]_i (cov) [e]_i [e]_i
-

- (23) [XP [WH [[Q [[C [.. (=20b))

⁷This would yield the representation below:

- [XP [WH [IP_i [Q [[e]_i [C [.. (=20c))
wie [[e] [e] [e]

If this were the correct analysis, we would expect that Dutch C (**dat**), like English C (**that**) could be absent intensional complement clauses, contrary to the facts.

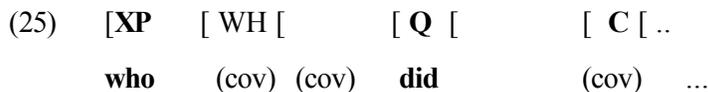


If Dutch makes a distinction between a Wh projection and a Q projection, and if Dutch reflects the underlying hierarchical order of these projections, all languages, including English, should have these projections in this order.

If there is more structure in the C domain, the question arises why English does not behave in the same way as Dutch. I turn to these questions in the next section.

2.2.3.3 *Doubly filled Comp in English*

Let us next turn to English. As pointed out above, the doubly filled Comp seems to hold in standard English embedded Cs, but not in root wh-questions, where a non-subject has undergone wh-movement. The problem of matrix wh-questions immediately disappears given the structure that we have determined for Dutch. In matrix wh-questions, the wh-word occurs in Spec, WhP and the inverted I in Q :



There is no doubly filled Comp filter violation, because the wh-phrase is in Spec of the Wh projection, and the auxiliary is in Q (or in C). What about embedded wh-questions in English? In embedded questions with overt wh-phrases, *that if* and *whether* are silent. I assume that English is like Dutch (21) with the Wh head silent, heading a chain in Q and C.



the language learner will be simply forced to do so, even if there would be no other supporting empirical evidence whatsoever). It is quite clear where to look for supporting empirical evidence. For example, the structure of split Cs should provide us with the means to account for the various and quite complex variations that one find between languages with respect to the C domain. It is quite clear for example, that V-second is not a unified phenomenon, and that verb second languages vary from each other with respect to the initial field. Empirical support for this claim then derives from the insights that this structure provides in crosslinguistic differences with respect to the initial field.

2.2.3.4 The distribution of subjects and tensed Vs in French

Apparent doubly filled Comp violations also occur in clauses in French, if we consider the distribution of French subject DPs and the finite verb. According to the standard analysis the subject DP occurs in the Spec position of the projection containing the finite verb, say, Spec, AgrS:

(31) [_{AgrSP} [Marie] [_{AgrS} adore] [... [..... camper ‘Marie loves camping’

As in the V second case, we must conclude that this is not the correct analysis: the subject DP is not in the Spec position containing the finite verb, but rather occurs in some higher Spec position:

(32) [_{YP} [Marie] [_Y ...[[_{AgrSP} [_{AgrS} adore] [... [..... camper ‘Marie loves camping’

This conclusion is reached in Sportiche (1992), (1995) and Kayne (1994) for completely different reasons: clitic pronouns and negation intervene between the subject and the finite verb. These clitics are argued to occupy either the head or the Spec position of their own projections, which forces the subject DP to even higher (Sportiche argues they are in NomP (nominative P) which is distinct from the position in which Agr is triggered (AgrSP)). If this is correct, the finite verb is never in the head position of the projection that contains the subject DP.

In sum, it is clear what the general solution for this class of problems is: one must assume more structure, and support this structure with both language internal and crosslinguistic evidence.

2.2.4 Good cases: Head marking and Spec marking

2.2.4.1 Where the head is overt and the Spec is silent.

The modified LCA allows heads of projections to be overt, but their Spec positions to be silent. Many configurations that are generally thought of as somewhat exceptional, are actually completely transparent under this view. I discuss several such cases in this section, starting the discussion with cases where the head is overt, and the Spec is silent. I will consider English and Dutch yes/no questions, Dutch imperatives, and VSO languages.

English yes/no questions exhibit either I to C movement in root clauses or *if/whether* in embedded clauses. It is in general assumed that a silent operator occurs in Spec of the +Q projection. This yields the following representation. (See the preceding section for the particular conclusions about the position which *whether* occupies):

(33) V first (yes no questions), with V to C movement (main clauses or if/whether)

- a. [QP OP [Q Vf] [... (did John leave)
- b. [QP [if [(if John left)
 [WhP **whether** i [QP [e]i] (whether John left)

These configurations conform to the modified LCA: since the head of the projection is overt, the Spec position is silent.

Dutch yes/no questions operate in much the same way. In root yes/no questions, the finite V moves to the +Q head. Since the V occurs in the +Q head, Spec, QP is silent. In embedded yes/no questions, the +Q head is realized as a lexical complementizer (*of*) that may optionally be followed by a declarative C *dat*:

(34) [OP [Q [[C [..

(cov) **of** (cov) **dat...**

A new problem arises with respect to root yes/no questions, which is in fact a very old problem: given that Dutch is a V-second language, why are these structures V first and not V second? In section 2.2.3.1, we have seen that V second arises by obligatorily moving some XP to the a projection higher than the one containing the finite verb. Note that this is also possible in (root) yes/no questions, as expected, given the analysis:

- (35) Met Marie heb je ook gepraat?
 With John have you also talked

It is however not necessary. The question of why these structures may be V-first can be rephrased in terms of the availability of the higher projection or not. If the projection is unavailable, V-first arises. If it is available, V-second arises. What then determines the availability of the higher projection? Here there are two possibilities. Either the higher projection may simply be absent from the structure, or perhaps more interestingly, the projection must always be there, but the entire QP has pied-piped to the Spec of the projection. If the QP is in the highest Spec position, the head of this position must be silent by the modified LCA:

- (36) $[_{\text{TOPP}} [_{\text{QP}} \text{Vf...} [\quad]] [_{\text{TOP}^e} [[_{\text{QP}^e}$

Imperatives also conform to the pattern that we expect. In Dutch, for example, imperatives involve V movement to a C-type position above the subject. The resulting string is V-initial. This pattern is compatible with an analysis that postulates an empty operator in the Spec position of the imperative head:

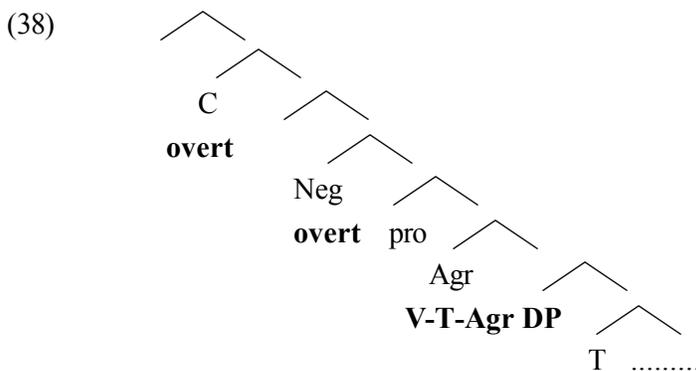
- (37) Imperatives (V-second:) (Dutch)
- a. Geef (jij) dat maar terug !
 Give you that only back

b. [OP [IMP **Vf** [**jj**....

There is of course much more to be said about imperatives, but the main point is clear. Imperatives are verb first because the head occurs in the imperative head position, and the Spec of this projection must therefore be silent.

2.2.4.2 VSO languages.

Consider next VSO languages, like Irish, and Welsh. In tensed clauses in these languages, the finite verb is preceded by a number of heads that express in linear order clause type complementizers, negation, the finite V, followed by tense and Agr morphemes, followed by the lexical subject. The order of the preverbal heads correspond to the basic hierarchical order. Since head movement can only be left adjunction, it follows that these elements occur in the head position of distinct projections. This yields the following structure, which assumes the standard analysis for the subject DP: it is outside the lower VP, in Spec, TP (or maybe in some lower functional projection, Koopman and Sportiche, 1991, McCloskey, 1994):



Projections containing overt head positions, cannot have their Spec positions filled with overt lexical material. This yields strictly head initial structures. The lexical subject can be in Spec, TP because T is covert: T has incorporated into Agr. This structure directly accounts for a salient property of Celtic languages, stated below:

(39) pro triggers full agreement

2.2.4.3 *Where the Spec is overt and the head is silent*

We have seen many examples of this configuration. As soon as a language learner has a reason to analyze a XP containing overt material as occupying a Spec position, s/he also automatically knows that the head position of that projection must be covert. This configuration is compatible with an analysis of topicalization in English which involves an empty topic head.

2.2.5 *On Interactions between heads and Spec marking.*

Let us next turn to interactions between head and Spec marking. Consider a language with the following characteristics:

- (41) (i) there is a lexical item in the head position (say, *negation, focus, Agr*):
(ii) there is independent leftward XP movement to the Spec of this projection under certain conditions

These two properties can conspire to yield a forbidden configuration, with both Spec and head containing overt material. Several things can happen. Either the head moves higher (yielding VO structures), or the Spec moves higher (yielding scrambling). Or either the head or the Spec is forced to be silent in such configurations (*head drop* or *Spec drop*). I restrict the discussion to head and spec drop, and discuss the disappearance of negative heads as a particular example of head-drop, and pro-drop as a particular case of Spec-drop.

2.2.5.1 *Where heads disappear.*

2.2.5.1.1 *negation*

In certain Romance languages the negative head disappears but only when a negative XP precedes the finite verb and the clitics. This is illustrated for the Italian in the following example:

- (42) a. nessuno è venuto * nessuno non ha visto Mario
 Nobody is come Nobody non has seen Mario
 ‘Nobody has come’

- b. Non ho visto nessuno
Not have seen nobody
- c. Niente ho detto
Nothing, I have said

Based on the fact that only one negative XP may occur pre-verbally, which points to a unique landing site of this constituent, the standard analysis has the preverbal negative XP occupying Spec, NegP. If this is correct, we can now understand the disappearance of the negative head as forced by the revised LCA. (This analysis is identical to Sportiche's (1992) proposal to treat the disappearance of the negative head as a doubly filled Comp effect (his doubly filled Voice filter). Italian seems to allow the two configurations predicted by the LCA, with either the head or the Spec overt, but not both:

- (43) a. [_{NegP} [**non** [
 b. [_{NegP} **NegXP** [e] [
 c. *_{NegP} **NegXP** [**non** [

The LCA proposal makes very specific predictions; it only blocks (43c), if NegXP occurs in Spec, NegP. This means that no lexical material should be able to intervene between the negative XP and the position in which *non* should surface (i.e. the position preceding the accusative clitics). If the NegXP were able to reach a higher Spec position, the negative head should be able to reappear. There are indications, both internal to Italian and across Romance that indicate that this is basically correct, although the matter deserves more careful investigation.

In Italian, the examples cited in the literature where a non-negative negative XP precedes the finite verb are always of the form in (42c), in which pro-drop has applied. It is highly suggestive that overt pronouns do not seem to be able to intervene between the negative XP and the finite verb:

- (44) a. Niente ho detto
Nothing, I have said

- (50) a. dat weet ik niet
that know I not

Again, this analysis is unavailable, because of the revised LCA: the overt d-pronoun cannot be in the Spec position of the projection that contains the finite verb. Rather, the situation must be assumed to be as in (51):

- (51) a. [pro [Vf
b. [dat_i e [e_i [Vf

There is in fact quite interesting evidence that there are two distinct projections: some Dutch constructions, like imperatives, allow for topic drop, but not for overt topicalization of the d-pronoun.¹²

2.2.5.2.2 *Pro-drop*

Dutch and German show extremely clear cases of configurationally determined pro-drop. It has been argued in the literature that Chinese object pro is licensed in a particular structural configuration as well (Cheng, 1989). This raises the possibility that pro-drop in general falls under this generalization (cf. Koopman, 1993 for some discussion).

Pro-drop is forced by the LCA if there is an overt element in the head position of that projection.

¹²This is illustrated in the following examples:

- (i) [pro [geef[maar terug [e
give but back
- (ii) *dat geef maar terug
that give but back

Interestingly, the situation in German is exactly the opposite:

- (iii) das gib mal zuruck
that give but back
- *gib mal zuruck
give but back

(52) [pro [X

Can (52) be strengthened to (53)?

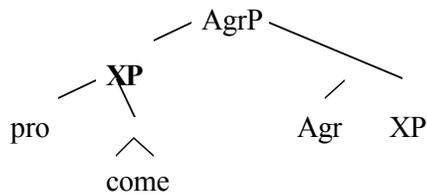
(53) pro-drop iff there is an overt element in the head position

There certainly should be cases of pro-drop that fall under this general configuration. It is less clear that all cases of pro-drop can be brought back to the configuration in (52), although this is certainly an idea that I would like to explore more seriously in future work. Here are some problems. The LCA only has something to say about head or Spec-drop in cases where both would be lexical: if the spec is silenced pro-drop occurs. The LCA has nothing to say about whether *pro* is allowed in Spec position with an *covert* head. I return to this general type of configuration below. Furthermore, any account of pro-drop needs to be able to capture the relation between “rich agreement” and pro-drop: in many cases, there must be rich agreement, i.e. there must be an overt head to “identify” pro. In many languages, some tenses will license pro-drop, other will not. If the head is not “strong” enough, Spec must win, i.e. pronoun must be overt. One way to make this consistent with (52) is to say that rich agreement licenses pro-drop, because the agreement head is occupying the head position of the projection in which pro is licensed. With “poor” agreement, the head simply does not end up in the right structural configuration, but stays lower. This again presupposes a more articulate structure, with basically split agreement heads (person, number and gender). Independent support for this comes from the fact that languages do not treat all pronouns as being equal. There are often differences in the distribution of first second and third person pronouns, and singular and plural pronouns. Besides this type of solution, there could still be another different way to derive pro-drop: pro-drop could arise when overt pronouns and a bigger XP compete for the same Spec position:



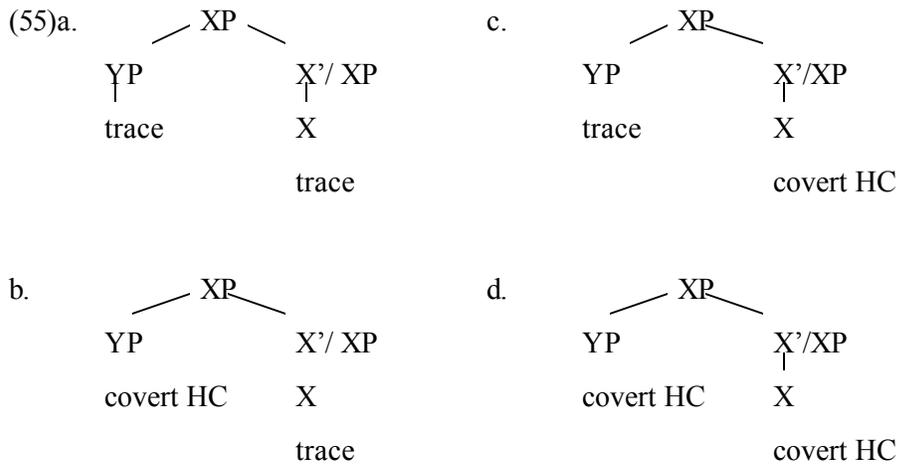
XP Y

If a bigger XP occupies the Spec position of the relevant agreement projection, the head of this projection will need to be silent (by the LCA). The pronoun needs to be silent as well, hence the appearance of pro-drop, since the position that allows it to be overt is not available. Such an account possibly extends to pro-drop in imperatives.



2.2.6 Covert categories: traces and heads of chains

One configuration remains to be examined: the configuration where both Spec and head is covert. Here we must distinguish between several possibilities: the covert category is a *trace* (e.g. not the head of a chain), or *covert HC* (a covert element heading a chain). This yields four possibilities:



It is clear that the configuration in (55a) arises quite often. In fact, it seems that it must be allowed: in many cases the thematic domain of V only consists of traces, and everything has moved out higher. I will simply assume that (55b) and (55c) should be allowed, and won't discuss these configurations any further. Instead, I would like to concentrate on the configuration in (55d): can both the Spec and the head of a projection be covert heads of chains? Certainly standard practice allows this. For example, English declarative clauses are often considered to have a silent declarative C and a silent Spec as well. This silent projection thus would contain both a silent head of chain in its Spec, and a silent head of chain in the head position. I would like to explore the idea that this configuration is actually not allowed.

(56) No projection can have a silent head of chain in Spec position and in the head position.

Why would this configuration not be allowed? What is wrong with this configuration? In every day practice, silent heads of chains are standardly assumed and contribute to the semantic interpretation. But this raises a general question: why do there appear to be no languages in which all heads and Spec are silent, and in which everything simply remains in the thematic domain of the VP? Why does syntax make use of such elaborate movements? Why does heavy pied-piping exist? Why do we find the two configurations (spec are overt or heads are overt). Suppose that what is wrong with (56) is that these projections cannot be interpreted. In other words, suppose that for Full Interpretation to be satisfied the following must hold¹³. I will call this principle the Principle of Projection Activation:

(57) *Principle of Projection Activation.*

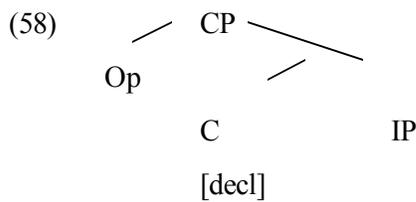
A projection is interpretable iff it is activated by lexical material.

Each projection must be “activated”, i.e. lexical material must be associated with either the Spec or the head of a projection in the course of the derivation. It is quite easy to see that this proposal will force massive overt movement. This quite simple proposal has exciting and far-reaching consequences, and allows us to sketch some answers to the questions that I raised above. I will briefly discuss these below, but turn first to some analytical consequences of the proposal.

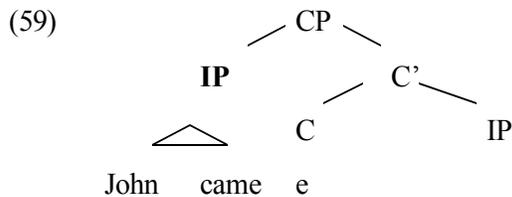
¹³This proposal is similar in spirit to Cheng (1991) clause-typing proposal. Cheng proposes that a wh-question must be “typed” as such at S-structure.

2.2.6.1 English main clauses

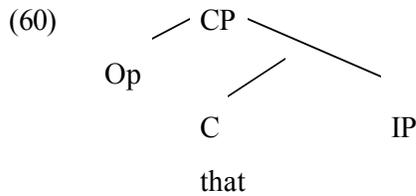
An old and yet unsettled problem concerns the analysis of English main clauses. English main clauses look to be no bigger than IP. Yet they belong to a particular clause type, declarative clause (CP). In other languages, main clauses are clearly CPs. There have been two approaches to this problem in the literature. Some linguists argue that since English main clauses do not have the appearance of CPs, and look like IPs, they are what they look like, i.e. they are IPs. Under this view, languages may vary crosslinguistically with respect to the category of root declarative clauses. This analytical option is unavailable to me, because I assume clause types are universally represented in the same way: a declarative clause in language X is represented as a declarative clause in language Y. My view is more compatible with other linguists who argue that since declarative clauses are CPs in some languages, they are CPs in all languages. Therefore, these linguists conclude, English main clauses are CPs, with a silent C node, and presumably a silent declarative operator, and an IP complement.



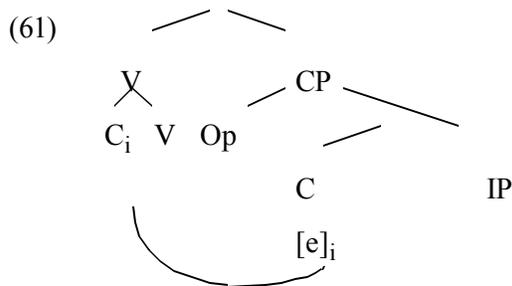
This analysis is incompatible with (57), since the declarative head is not associated with any lexical material at any stage of the derivation, and therefore uninterpretable. If (57) is correct, the language learner is forced to analyze English main clauses as involving clausal pied-piping:



Since a clausal constant is in Spec, CP, C will be empty by the LCA. Embedded declarative complements trivially satisfy (57) when an overt C node is present.



When C is absent, as is possible in English, (57) is satisfied either because C is a trace of C which has incorporated into V (this means that CP was associated with lexical material at one stage of the derivation)¹⁴:



Or alternatively, C can be absent, because IP has pied-piped to Spec, CP, as in (59). This latter proposal runs into the problem with accounting why C can only be absent in “head government” configurations (which reduce to incorporation configurations).

Given (57), then, English has overt pied-piping of clausal constituents, just as Nweh has. (57) makes English into a much more mixed word order language than generally assumed, and has quite far reaching consequences for the analysis of many phenomena. In particular, it has consequences for clauses containing focus, negation, and Beghelli and Stowell’s (1994) DistP and ShareP etc (I am assuming that these projections are present iff they are needed for interpretation), which will all need to be activated by movement of some lexical material. Here I

¹⁴Note that we can now almost understand why an incorporated C is never lexical. The head of the chain does not activate any projection, and only serves to activate the projection containing the trace of C. Head movement of a silent head, is thus another way to activate projections.

will concentrate on one particular consequences and proposes a reanalysis of the that-t effects in English.

2.2.6.2 *Reanalyzing the that-t effects.*

The analysis of the that-t effect constitutes an old problem. Subject extraction in English root wh-questions does not trigger do-support, and extraction of the subject immediately adjacent to C forces *that* to be absent:

- (62) a. who came yesterday?
 *who did come yesterday?
- b. who did you think came yesterday?
 *who did you think that came yesterday?

The traditional analysis has the subject wh-phrase move to Spec, WhP, at least for (62b). With respect to the analysis in (62a), we find a familiar split. Some linguists argue that these wh-questions are simply IPs, others that they are CPs with the wh-phrase moved to Spec, CP. The impossibility of SAI or the obligatory absence of *that* is attributed to some property that the empty category in the extraction site must satisfy. Crosslinguistically, there are numerous problems arising with respect to subject extraction. One problem for instance is that some languages do not seem to allow for extraction out of the subject position at all. This is for example the case in Italian, where extraction must proceed from the postverbal subject position (Rizzi 1982). Suppose that the Italian situation is not exceptional, but in fact represents the norm (i.e. the tyhat t filter is universal and in need of an independent explanation):

- (63) a wh-phrase can never be extracted from the Spec position immediately c-commanded by C.

We can now understand the English facts differently. Since the wh-phrase cannot be extracted from the subject position, the traditional analysis in which wh moves to Spec, WhP is unavailable:

(64) * [who Wh [e Q[C ([]

This raises the question how the Wh projection is activated. There is no other option than to pied-pipe the entire clausal constituent to Spec, WhP (as I have argued before, the Wh projection combines with the Q projection).¹⁵

(65) [[IPwho ...came [[WH^e] [e [Q^e] [IP^e]]

Thus English resorts to the analysis that Kayne (1995) argues for quite generally in certain wh-in-situ languages. The wh-projection is activated by the lexical material in its Spec position. If this movement proceeds through Spec, QP, the Q projection is activated as well. The impossibility of do-support follows from the structure: the IP is simply too high, and I to C to Q movement would yield an improperly bound trace in the highest IP.

The same analysis applies to subject wh-phrases in embedded complements. The wh-phrase cannot be extracted from the subject position, because that position universally cannot be extracted from. The IP therefore pied-pipes to Spec, CP, out of the c-command domain of C, from which the wh-phrase further extracts to Spec, WhP. Since IP is overt, C must be silent. *That* must therefore be obligatorily absent: it is a doubly filled Comp filter effect:

(66) [who [WH [do[you [e] think [[IP [e] [came]] [C e]] [[IP^e]_i]

The analysis in (66) can be easily extended to derive possible questions as in (67)¹⁶:

¹⁵SAI inversion would not help, since the inverted I ends up in the Q (see 2.2.3.3), not in Wh.

(i) [Wh [[Q[did] [who

It is not clear that the language learner will ever come up with such creative solutions as in (i) if these do not match the primary data.

(67) $[[CP [IP \text{ who came } [C \text{ e}] [IP]]] [[WH [[QP \text{ do} [\text{you} [e] \text{ think } [CP \text{ e}]]]]]]]]$

It is interesting that the analysis of wh-questions in English is not uniform: within English, one finds the same variation as observed crosslinguistically: either a small XP moves to some Spec, or a much heavier clausal like XP pied-pipes.

I take these patterns as very strong evidence in favor of (57). (57) obviously has consequences for the analysis of many other construction types. Imperatives will involve either head movement to the imperative head (as in Dutch), or pied-piping to the Spec of the imperative head. Negation will involve either an overt head, or overt pied-piping of a negative constituent to Spec NegP. Languages with no overt Ds will have to be pied-piping languages, where a XP is in Spec, DP, etc. (57) forces the language learner to assume massive pied-piping in cases where the head is silent, and as such is an extremely powerful, yet restrictive, principle.

2.3 Some preliminary answers

Let me now return to some of the more general questions. This section contains three interrelated, but logical distinct proposals.

1. The (modified) LCA applies only to terminal elements, and c-command is not restricted to categories. This proposal derives the doubly filled Comp filter. I have briefly examined apparent violations of the doubly filled Comp filter, and presented alternative analyses for these. I have tried to show that these analyses are independently needed, and are in fact necessary if we even want to start to talk about crosslinguistic variation in this domain.

2. Languages are expected to have overt heads with silent Specs or silent Specs with overt heads. This expectation is still valid regardless of whether the doubly filled Comp filter derives from the LCA, or whether it is some economy principle. I discussed some cases that fit the configurations well, and show how these configurations provide a simple analysis for patterns which have been felt to be problematic so far, but that in fact represent the norm. I also discuss some cases where

¹⁶ As suggested by Anna Szabolci (1994, p 203).

the actual surface word orders derive from the interaction of leftward movement to Spec and the presence of a head. I argued that two phenomena fall under this heading: head drop and pro drop.

3. Languages disallow projections to be headed by silent covert heads and Specs. In particular, I proposed a principle that requires a projection to be associated with lexical material at some point in the derivation. This principle basically answers the question of why syntax makes use of so many movements, and why we seem to be heading towards the idea that everything must move, at least once. The idea here is quite simple: projections must be activated to be semantically interpretable. Projection Activation happens by associating overt lexical material to either Spec or head at some point in the derivation. Syntax thus uses few lexical items, but puts these to maximum use. Lexical items are used to form elaborate syntactic structures from which meaning can be computed. The formation of these elaborate syntactic structures can only be achieved in one way: by movement of some constituent containing a lexical item. By the LCA, movement is further restricted to movement of some XP to a Spec position of an empty head, or movement of some head position with a silent Spec position. This yields the two basic configurations that we appear to find within languages: some XP occupies the Spec position, and the head is silent, or a projection contains a head, and the Spec is silent.

I have thus provided basic answers to the different questions raised in this paper. I will repeat these here:

(68) a. Why precisely do we seem to find precisely the two configurations in (10), repeated here below, crosslinguistically:

[[[YX] [... [x]]] Head movement to some head position Y, or
 [[XP [Y [[XP]]] Movement of some XP to Spec, YP

- b. what motivates (heavy) pied-piping?
- c. If heavy pied-piping is so heavily used, why did it take us (linguists) so long to discover it?
- d. Why do there appear to be no languages in which all heads and Spec are silent, and in which everything simply remains in the thematic domain of the VP?

The answer to these questions is simple: projections must be activated to be interpretable; this can be achieved either by moving a constituent to the Spec position of a projection, or by moving a head to the head position of a projection: we thus find the two configurations above. Projection activation also partially explains (68b). (Heavy) pied-piping is a means to activate a projection if the head is silent. A question remains however. Why do languages pied-pipe different types of constituents? Take English *wh*-questions for example. According to my analysis, English *wh*-questions involve either pied-piping of a small *wh*-XP to Spec, WhP (*who did you see*), or pied-piping of an entire IP (*who came [e]*) to Spec, WhP.). The latter is forced, only because the extraction of a smaller XP fails. A fuller answer to this question must wait till we have more insight into pied-piping. The modified LCA provides the answer to (68c). Pied-piping is often hard to detect, because the head must be silent in that case. So, for overt evidence for heavy pied-piping we must rely on certain configurations of data that do not seem to arise that frequently. (movement of a big constituent to some Spec position to the left, and stranding of an overt head immediately below this projection to the right: (as usual, positions containing overt material are boldfaced.)¹⁷

(69) [[**XP**] [Y [**Z** [_{XP} e]

¹⁷Stranding of an overt WP in Spec, ZP is less revealing, and movement of XP to Spec, YP is less revealing for the existence of heavy pied-piping:

(i) [[**XP**] [Y [**WP** Z [_{XP} e]

WP itself has been most likely extracted from XP, thus making XP “lighter”, and obscuring heavy pied-piping.

Finally, my proposal also allows a beginning of an understanding of (70d): languages are not allowed to leave all lexical material in-situ simply because this will yield a Full Interpretation violation. What needs to be explained though is why languages cannot simply raise their VPs through the different Spec positions, thus activating them on their way, and giving the appearance of a language that has everything in-situ. Here I would bring in an additional consideration. Not every constituent can activate a particular head: there must be a semantic or morphological relation between material contained within the pied-piped phrase and the head, which further restricts possible movement to Spec.

3. Historical change

3.1 From Head marking to Spec marking

In this section, I apply the revised doubly filled C filter and the Principle of Projection Activation to some of the historical developments which led from Old English to Modern English. The discussion below relies on these developments, as described and analyzed in the works of Van Kemenade (1987), W. Koopman (1990), Roberts (1993) and the references cited in there, as well as the information provided to me by Willem Koopman.

As is well known, a number of properties characteristic of Old English disappeared over time. Traditionally, the change from Old English to Modern English is described as resulting from a change from a language with “rich” morphology to a language with “poor” morphology. The loss of morphology in turn resulted in a language which had to rely on a more “fixed” word order (Modern English) than Old English, a language with freer word order. Let us first consider how this traditional insight would translate in terms of the proposals made in this paper. What are the consequences of losing morphology for the distribution of overt material? I have been assuming that morphological heads are base generated in the syntax: they are lexical items that happen to be bound morphemes. (Thus, I am not following Chomsky’s proposal that inflectional morphology can be base generated on the lexical item, and undergo subsequent checking.) The loss of morphology therefore implies the loss of one or more overt heads. Since syntactic structure itself is universal, loss of overt heads does not imply the loss of the projection. If heads are lost, we must find an answer to the question how the projection is activated. According to our proposal, it must be associated with lexical material at some stage of the derivation. Thus, either the head or the Spec

is interpreted as a trace, or else pied-piping to Spec must take place. Ignoring the former possibility for the moment, we can rephrase the old insight as (71a), or as (71b) :

- (71) a. Old English changed from a head marking language into a Spec marking language
- b. Modern English has more Spec marking than Old English

What exactly do we mean by these claims? How do we choose between one or the other? Let us put these claims into a more general perspective. (71a) presupposes that languages can be “pure” types: either head marking or Spec marking, whereas (71b) expresses a relative measure. Can typologically pure languages exist? Can a language be either purely head marking or purely Spec marking?

- (72) a. Can a language be a uniquely head marking language?
- b. Can a language be uniquely Spec marking language?

Consider (72a). Are there languages in which all lexical items occupy head positions, and in which all Spec positions are empty? There does not seem to be any problem with the initial field of a clause or of a DP. If all heads are overt, their Spec positions may not contain overt lexical material, giving the (false) impression that sentences consist of complex words. However, problems arise when we consider the fact that arguments must be expressed in some way, i.e. there must be a way to express XP constituents (as far as I know, there are no languages without XP constituents.) Recall that I assume, with others, that syntactic adjunction does not exist, and that adjuncts are incorporated into X bar structure. Overt XPs therefore occur in Spec positions, from which follows the obligatory silent nature of their head positions. Pure head marking languages therefore cannot exist, because any language will have some XPs in Spec position. .

Next consider (72b). Is it possible for a language to be a uniquely Spec marking language, that is a language in which all lexical items are embedded into constituents occurring in Spec positions (and consequently all head positions are empty)? Here again, the problem doesn't seem to arise with respect to the initial field of a clause, with all Spec positions occupied by XP constituents. However, there will be a problem eventually: it is unescapable that lexical items themselves end up occupying head positions. Therefore pure Spec marking languages cannot exist either. I therefore deduce that (71b) correctly describes the historical change. We can narrow the

problem of historical change down to the question of which individual projections changed from head to Spec marking.

There are further questions that arise concerning individual projections, which I will only mention but not explore fully. For example, are there any projections that in principle only allow filled Specs, or projections that only allow filled heads? A possible candidate for a projection that might only allow an overt Spec is the initial projection of a root clause (the XP position in V-second languages). Either a small XP is occupying this position, or a heavy XP (a clause), causing the head to be empty. I am unaware of any languages that mark root clauses with an initial particle, which would be the expected pattern if either the Spec of this projection, or the head could be overt. I don't know of any candidates for a projection that only allows its head to be overt.

So far then, comparing Old English and Modern English lead to the following statement:

(73) Modern English has more Spec marking than Old English (71b)

The question that must be answered then is how we got from the Old English state to the Modern English one. In order to answer this question, we must first determine which projections were involved. Once this is established, we should address the question if each of these projections changed independently, or if changes were interrelated. I return to these questions in the next section.

Why would (73) cause more rigid word order? Free word order languages have fixed head positions. Since the heads are overt, the Spec positions are not available to host the associated XPs. These must therefore occur in projections which themselves have empty heads, because they host overt XPs. Either these projections yield specific semantic interpretations, as Szabolci (1996) shows for the initial field in Hungarian, or the order looks free, as in the postverbal field in Hungarian. These free word orders might arise through pied-piping constituents that are more or less big, stranding or pied-piping different XPs, without affecting interpretation: hence the illusion of free word order. If a language has poor morphology, the language has covert heads representing these projections: therefore their Spec positions must be filled with lexical material, giving the illusion of strict word order.

3.2 From Old English to Modern English

I will now turn to a preliminary discussion of the particular projections that have been involved in the change from Old English to Modern English. This discussion is necessarily preliminary, and tentative, since the analytical consequences of my proposal have not been worked out for many well-established paradigms of Modern English (like for example the distribution of finite Vs). The discussion will start out quite generally, with a simplified description of Old English (OE). OE showed rather free word order, and a much richer morphology than modern English. It had high “clitic” pronouns, a negative head, Case morphology¹⁸ and agreement paradigms, OV structures, and more extensive V second constructions than modern English, V movement within the TP projection etc. all of which changed. As we will see these changes involve the loss of elements in head positions, which implies by necessity that more and heavier pied-piping was to be assumed. (This is the point I would like to concentrate on).

Some historical developments are summarized in the table below, which also includes the timelines involved with each of the changes in so far that these have been established. (this table does not include the rise of *do* or the rise of *to*, nor the changes involving modals, or DP internal changes; it does include some of the constructions discussed earlier in this paper¹⁹)

¹⁸Case distinctions in Old English were actually not that rich. Structural Case inflection (nominative and accusative) was almost always the same, and dative and genitive was still intact (although not always distinct endings). Old English Case distinctions showed up primarily in the strong adjectives, and the many forms of articles/demonstrative pronouns. In ME, not much remained of the inflection of strong adjectives and D/demonstratives. So, again, it looks like overt heads within the DP disappeared. As a consequence, more pied-piping took place.

¹⁹I will not include any discussion of doubly filled C. For discussion see Van Kemenade (1987, 224 ff)

Table 1.

	OE pre-1066	ME 1066-1520	EModE 1520-1650		ModE
So-called “V2” in topicalized sentences	There is also a minority of SOV root clauses		lost in 15th century (van Kemenade, 1987: 219ff)		
Main V to Q ²⁰		OK	1550-1575 variable	17th century artificial/literary	*
V2 Imperatives (Subject)		V2 and SV imperatives ²¹	*		
Clause initial particles triggering V to Q	⊕a extremely frequent	⊕a quickly disappears ; triggered V to Q remains possible with others adverbials. New subordinating particles appear (when) (no V to Q		*	
Disappearance of OV order	completed by 1200	VO is norm: minority of OV	*		
“Rich” verbal inflection		-eroding through ME -lost in 14th century (Van Kemenade)	By 1600: plural ending is gone By 1650: loss of 2nd person agreement		
			loss of subjunctives+ rise of modals		
Main V over Neg not			1400: First app. of do +not	Lost:1550-1575 (Kroch) variable	OK (remained quite common) *
<i>not</i> main V	sporadically		from 1500: increases + becomes pretty frequent in Shakespeare’s time		
preverbal negative clitic			lost in 15th century (Roberts p.334)		
(subject) pro-drop	pro-drop (infrequent)	no pro-drop			
Overt Case inflection		lost by 1200			
Subject Clitic			??		
Object Clitic ²²		lost in 14th century (Van Kemenade)			

²⁰Data based on Roberts (1993, p 248 ff).

²¹According to Mustanoja (1960) the order Vimp Subject was still attested in ME; the modern Subject V order can already be found in eME and in late ME poetry. (Willem Koopman, personal communication).

²²A relatively small percentage (12%) of object pronomina occurs in this position (S CLO V/Wh/ne Vf CLO C CLO S). Other object pronouns occur lower. (Willem Koopman, pers. communication).

A rather striking fact is the relatively chaotic picture that emerges from this table. The interpretation of the data is complicated by the fact that historical data are "noisy", reflecting many different dialects, and styles. While many changes occurred during the Middle English period, some occurred gradually, with the "new" grammars coexisting alongside "old" ones, some quite abruptly, and some changes were completed at different moments, although we might theoretically expect them to be completely parallel. Take for example, the loss of main V to Q or the loss of main V over *not*. The loss of V to Q has been dated as 1550-1575 (Kroch, 1989), but V to Q continues to be found in texts for the rest of that century. The loss of main V over *not* has been dated at the same time (Kroch, 1989), but persists for a very long period. If both these changes are due to a single cause, i.e. the loss of verbal inflection (in particular the non-distinctness of plural forms as opposed to singular forms (Roberts, 1993)) made it impossible for main Vs to raise higher than NEG), the difference in V placement in both constructions becomes much harder to explain²³. In part, the difference must be due to the fact that different heads are involved, in particular to general changes that affected the syntax of negation (as Kroch, 1987 and Roberts, 1993 propose). I find the current account (Roberts, 1993) not very satisfactory, and believe that the revised LCA and the projection activation proposal could provide new insight in the syntax of negation (and makes it possible to have different properties associated to the negative projection and the Q projection in terms of what elements are overt), and thus potentially has greater explanatory force. Though I have none to offer at the present, I would like to point out that this would be more desirable than an explanation which attributes the differences between the "facts" and the theory as due to the impoverished nature of the data, i.e. as due to extra-grammatical factors connected with literary style (Roberts, 1993). Quite generally, I strongly believe strongly that "coexisting" grammars should be explained from within the theory, and that any need to have recourse to external factors, no matter how ingenuous, should in principle be viewed as problematic. In other words, the theory should be flexible enough to account for a certain amount of variability, which seems to be the hallmark of any language. My proposals are promising in this respect: they give new insight into the question of how languages vary crosslinguistically, and treat language internal variation in the same way as crosslinguistic variation.

²³The fact that Modern Scandinavian languages do not raise V over Neg, yet show V second shows that the lack of V second with Main Vs in English is not directly explained by the impossibility to move over Neg.

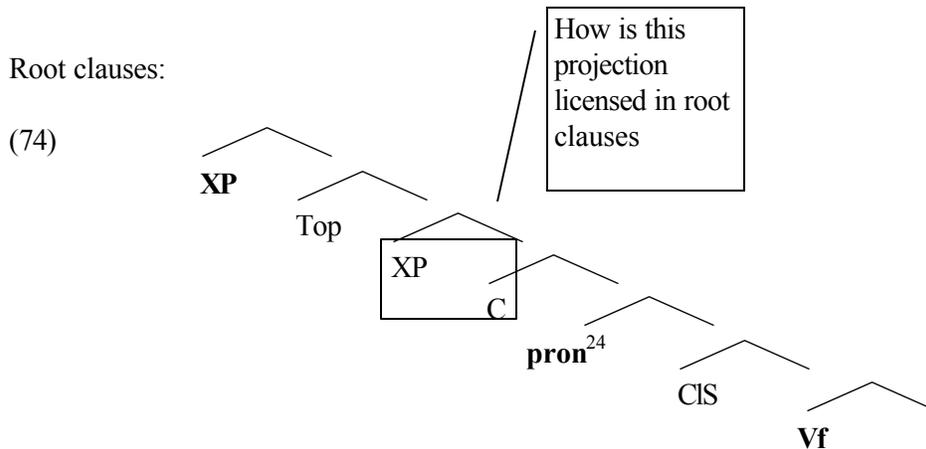
The rather chaotic picture in Table 1 might actually to be expected under my proposal. For each projection the question is how overt material was to be associated to it: by being inside a pied-piped constituent within SPEC, or by being in a head position (or of course by having transited through a projection), with the possibility of variability for the same projection: in some cases the Spec of a particular projection is overt, in some the head. This is an extremely difficult task. Take for example the problems that arose when, , because of the phonology, verbal inflectional morphology was eroding. The eroding morphology makes it hard to decide if a particular morpheme is an overt head or a covert one. Thus it becomes more difficult to decide if a lexical head has left adjoined to a morphological head (i.e. has undergone head movement), or is within a bigger pied-piped phrase in the Spec of the relevant projection, causing the head to be zero. We might even expect the two grammars to coexist (pied-piping or head movement), depending on the way zero morphology is treated. If it is treated as an overt affix, head movement will proceed, if not, pied-piping. In any case, movement will take place. Whether pied-piping applies or head movement can have further effects on the distribution of other elements, in turn of what can escape to higher positions, etc. The role of eroding morphology can thus be understood as creating the possibility for reanalysis as movement to Spec, but does not necessarily have to be the direct cause of the change.

I will try to illustrate these points through a more detailed discussion of some of the individual developments illustrated in table 1, which deals in large part with the distribution of V. There will be a tension of the loss of OV orders (which probably has to be reinterpreted as resulting from movement of the V upwards, or maybe as movement of a maximal projection containing V followed by head movement of V out of this constituent), and loss of apparent V movement in the initial domain, which will give rise to heavier pied-piping. As a casual glance at Table 1 makes clear, many changes affected the initial clausal domain.

3.2.1 Main V to C.

Old English is often analyzed as a V-second language in the same way as other contemporary Germanic Languages. However, it is clear from the description of the data in the literature, which I will briefly present and analyze below in a way consistent with the doubly filled C filter and the split C approach, that Old English was much more like Modern English in this respect than other contemporary Germanic languages (cf. also Roberts, 1993).

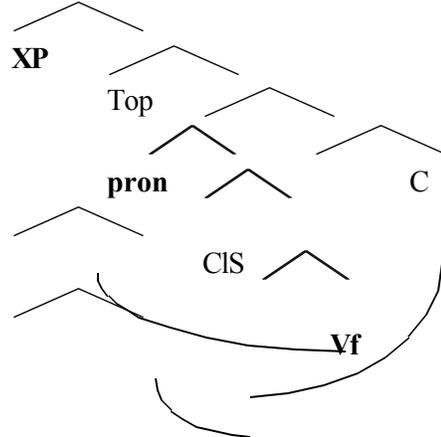
(i) in root clauses containing a topicalized XP, pronominal subject clitics preceded the finite V, showing that the V did not raise up further than the projection immediately below the subject clitic. In embedded clauses, pronominal subjects appeared immediately to the right of C, establishing the projection containing the clitic as being lower than the surface position C occupies:



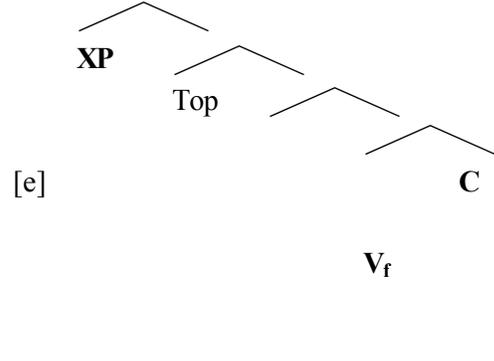
This raises the question how the projection immediately below TOP is licensed in Old English. As we saw earlier in this paper, the finite V raises to this projection in the contemporary V second languages; it is thus licensed by having an overt head. Since the head of the projection must be overt, we conclude that this projection must be licensed by overt material (not by having a trace in the Spec or head position). In Old English, the finite V is not in the head position but somewhere lower. The projection cannot be licensed by the transit of the topicalized XP through its Spec (otherwise there was no need for head movement in modern Germanic languages. It follows from our proposal that in Old English, this projection was licensed by having lexical material in its Spec, i.e. the entire complement of C raises to Spec, CP. Since Spec is overt, C is empty. (The absence of overt C thus provides evidence for the language learner that the Spec is overt). Old English and Modern English do not seem to differ in this respect. They do differ from the other Germanic languages with respect to this projection in the distribution of overt lexical material: either the Spec is overt (Old English/Modern English=(75 a), or the head is overt (other Germanic languages=(75 b):

²⁴Although I refer to the pronoun as a clitic, I believe it is more likely to be a weak pronoun in Spec position. It does not look like a determiner (see Koopman, 1993) for discussion)

(75 a) Licensing of C projection (OE/ModE)
(pied-piping to Spec, CP)



(75 b): Licensing of C projection (other Germanic)
(V movement to C)



Thus, C is either licensed by the head of its complement (which contains the lexical V), or by its complement raising to Spec. In non-root environments, the C projection will be licensed by a lexical C. In Modern English, the C raises to a projection above Top (thus giving rise to embedded topics)²⁵.

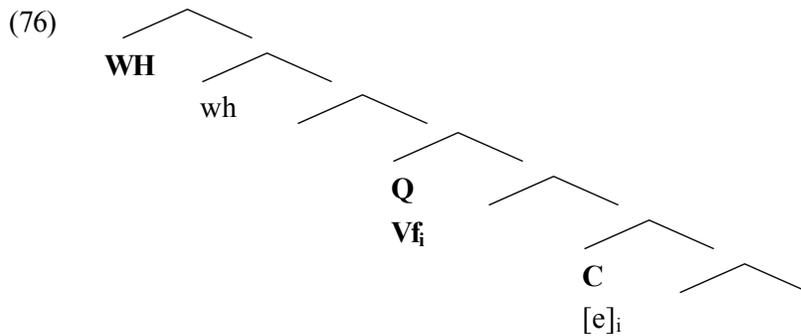
It is clear then that the apparent loss of V2 in declarative root clauses in table 1 is not due to the way in which the C projection was activated, since Old English and Modern English are basically the same in this respect. It rather must be due to changes in the distribution of lexical items lower in the clause. Clauses containing a topic have so often been treated as V-second, because “Subject V inversion” occurred in root clauses with a topic. The finite verb followed the topic and preceded lexical subjects. I return to this point below, after a short excursion into genuine V second environments in OE.

3.2.2 “Residual” V-second

In certain environments, a finite V must occur in “second” position, like in Modern English, but contrary to Modern English, main Vs can occupy this position in Old English. The environments that trigger V second in Old English are partly similar to those of Modern English: yes/no questions, wh-questions, and partly different (clauses starting with the negative preverbal clitic *ne*, and clauses starting with coordinating conjunctions like \oplus a and imperatives²⁶).

Old English and Modern English structure thus looks basically the same:

²⁵Embedded topics in Old English seem sporadically possible (Willem Koopman, personal communication).



Where Old and Modern English differ is that there were more C type heads that attracted the V in Old English. In particular, V second positive imperatives with overt subjects were V second in Old English, but undergo pied-piping in Modern English²⁷. The extremely frequently occurring $\oplus a$ triggering V second mysteriously and quickly died out; *then/now/there/here/so/yet/therefore* which could trigger V second lost this possibility. The question why is an interesting one that I have nothing to say about. Finally, although preverbal *ne* disappeared, negative environments still trigger V second in Modern English. This suggests that the situation concerning clause initial negation and V second has not undergone any fundamental changes.

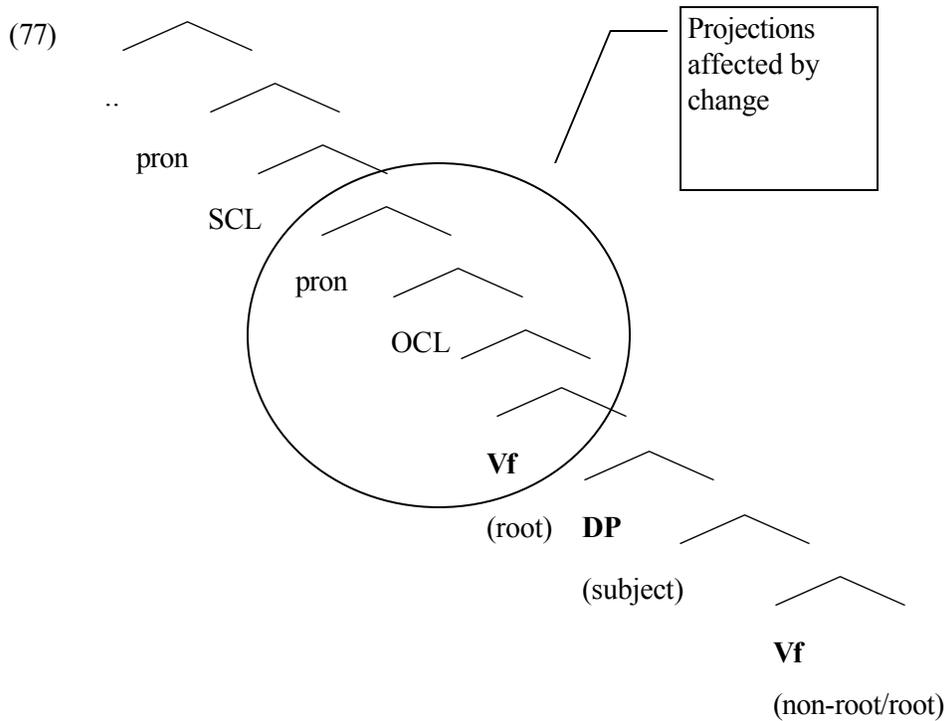
3.2.3 Clitics and Subject DPs.

What to make of the claim that V second in topicalized sentences was “lost” in the 15th Century (Van Kemenade, 1987)? Clauses containing a topic have so often been treated as V-second, because “Subject V inversion” occurred in root clauses with a topic, but as shown in section 3.2.1, these cases are not truly V second cases. We are dealing here with a part of the structure where the distribution of overt elements has indeed changed. Preverbal object pronouns, (“high” object pronouns) are lost in ME, as is the possibility of subject V inversion in root environments, which I interpret as the ability of the finite V to occur higher than the subject DP.

In Old English, the subject pronoun always precedes the finite V in declarative/topicalized contexts. Object clitics could precede the finite verb as well, but did not have to. Object clitics were not cliticized to V, since they could be separated from the V in non-root environments.

²⁶Imperatives: changed to Spec marking only. Declarative imperatives

Object clitics always followed subject clitics, and both subject and object pronouns could precede the finite V. In root clauses, lexical subjects normally followed the finite V, but could also precede it. In non root clauses, the finite V followed the subject DP. I translate these facts into the following tree, using Sportiche's (1992) clitic voices, which will serve as the basis for further discussion:



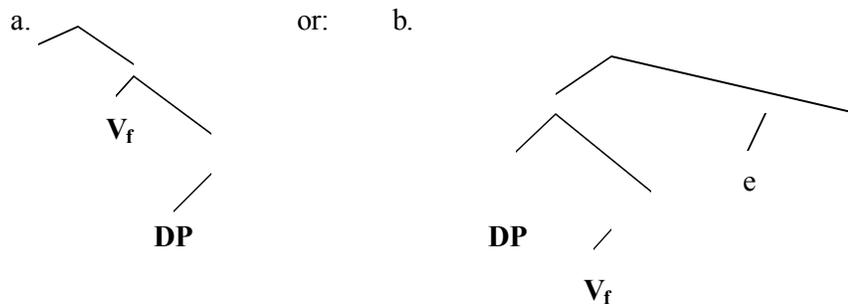
If the boxed part of the tree structure is “deleted”, one ends up with the modern English order. We cannot interpret this as the simply disappearance of these projections in Modern English, give the the theoretical assumptions that we have been making (projections are universally present; languages do not structurally vary). I return to this issue below, but first address some problems with the interpretation of the data.

The lexical subject in root clauses followed the finite V, but could also precede it (making it V third). This could in principle be due to movement of the subject, or to movement of the finite V. Since the position doesn't seem to be influenced by the type of subject, in particular specific DPs like names can be preceded by the object pronoun and/or the finite Vs, I conclude that there

²⁷It is interesting that Belfast English still allows VSO imperatives (*read you that*) (Henry, 1995). The syntax of imperatives is important in so far as imperatives provide an important and easily accessible window for the language learner on syntactic distribution.

is no optional movement of the subject (say to Spec, SCI). Thus, weak pronouns and full DPs always occupy different positions, as argued in Koopman, 1993. The different word orders should therefore be explained in terms of optional V movement, but this of course raises another question: how to treat optional movement. The treatment of optional movement within the Minimalist Program is problematic because the theory does not allow for any optionality. One is basically forced to a position where optionality is a reflection of two separate grammars, i.e. must be treated as a case of bilingualism (or multilingualism) (cf Zwart, 1993). The present proposal can deal with optionality in a quite straightforward way. A projection needs to be licensed: this can happen either by moving an appropriate constituent to its Spec, or by moving an appropriate head to its head. Thus V moves because there is a projection that needs to be activated, not because V needs to satisfy some property which it only can do through head movement. V movement yields V S order. But suppose that V does not move. How then is the projection activated? Well, in exactly the same way as the imperative head, or the C head is licensed, i.e. by pied-piping a XP containing the V to the Spec of this projection:

(78) (root) Head Movement to X (root) XP movement to Spec, XP



In non-root contexts, neither movement in (78) are necessary, presumably because the projection can be licensed independently (by head movement) in these contexts. It is option (78a) then that disappears in the history of English, while (78b), which already existed, remains. (This seems to be a persistent pattern in historical change, where several options coexist, with one dying out, rather than new patterns arising.) What needs explaining then, is why (78a) loses out over (78b). This might be related to what happens lower in the clause, where we can talk about the same configurations as illustrated in (78b). The general configuration in (78b) is only possible if the head of the projection does not contain any bound material: if it would, head movement would be

forced. Thus, (78b) should go together with the loss of overt bound heads²⁸. The loss of verbal morphology creates the possibility for ambiguous analyses, as either (78a) or as (78b). Depending on how speakers dealt with the zero verbal morphology, different syntactic arrangements follow, and could coexist. However, it might very well be the case that the possibility of head movement higher in the clause, depends on the possibility of head movement lower in the clause (this is of course an old insight into the distribution of verbal elements in modern English). More in particular, it might be argued that Vs that are pied-piped and occur in a Spec position may not undergo further head movement, i.e. that head movement is truly restricted to heads of complements. As earlier, this discussion is somewhat tentative, and is dependent on issues in the theory of heavy pied-piping that have not yet been solved. However, it provides a potentially interesting alternative to the current theory which posits a direct relation between the loss of V movement and the loss of verbal morphology. Under the pied-piping view, there is no direct causal relationship between the loss of verbal morphology and the loss of high verb movement. The loss of verbal morphology created the possibility for ambiguous analyses, as either (78a) or as (78b), which in turn had consequences for high V movement or not. This view seems to fit the historical data better, as V movement and pied-piping have coexisted for quite a long period. This case then would be a genuine case of the shift from movement to the head position of a projection to movement of its Spec. .

Let's next turn to the loss of the high object pronouns. Van Kemenade (1987) dates this loss to the 14th Century, and states that it goes hand in hand with the loss of verbal morphology. More precisely, she proposes that the loss of clitics is part of a more general phenomenon, the loss of inflectional morphology. I do not know what content to give to this proposal. In what sense were high pronominal objects inflectional affixes? What is an inflectional affix? Given my assumptions, inflectional affixes are syntactically bound lexical items, which head their own projection (recall that I do not follow the base generated theory to inflection proposed in Chomsky 1992). However, it is unlikely that pronominal objects were in the head position of the projection in which they are licensed: they were not attached to any lexical category (they could be separated from V yet precede the subject DP); they had the same morphological shape as all other pronominal objects; and they did not “look” like determiners in any sense (like French

²⁸This argument holds for the projection in which verbal morphology must be “checked”, independently of the question of whether this projection is identical to the projection that was activated by V movement or XP movement to Spec, or whether this projection never contained any lexical material to start with.

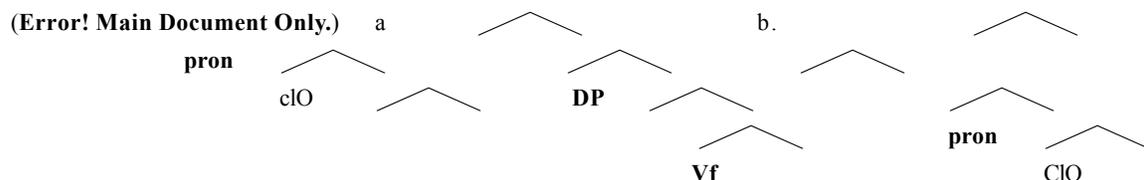
clitics look like Ds, and Bantu clitics like class morphemes). As mentioned before, this leads me to treat them as weak pronouns (projections smaller than full DPs occurring in Spec position of a designated projection, cf. Koopman, 1993) occupying the Spec position of the licensing projection. It is true that some inflectional morphology was lost, but the verbal morphology was not extremely rich to start with, and some of it remains in Modern English. Nominal Case morphology was lost, but from that it does not follow that clitics are lost as well: Case morphology was lost in the history of French, yet clitics were not. Consequently, I do not know how to interpret the claim that inflectional morphemes were lost, nor what precisely the link between the loss of verbal morphology and the loss of high pronominal clitics would be.

When one considers the loss of high object pronominals it is important that only a relatively small percentage (12%, (see footnote 22) of sentences involving weak object pronouns fit the structure in (77), with the weak pronoun occurring in the high pronominal object position. There are many other cases in which seemingly weak object pronouns, having the same shape as the high pronoun, appear lower in the clause (following the subject DP or the finiteV). How should such sentences be analyzed to begin with? It is unlikely that these pronouns are being treated differently from high pronominal objects, i.e. involve different projections. Thus, the problem is to explain their different distributional properties, but maintaining the idea that both cases involve the high clitic projection.

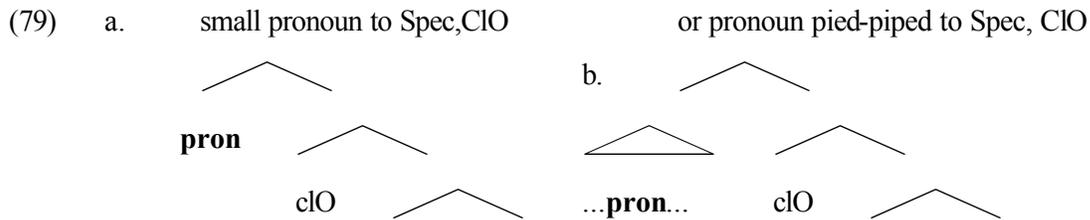
3.2.3.1 *Size of the pied-piped constituent.*

Suppose that sentences with weak object pronouns have the same basic structures, with the CIO projection activated by overt lexical material.²⁹ The different orders would arise by the fact that instead of a small XP (the pronoun) occupying the Spec of the CIO position, a heavy XP

²⁹There is another possible analysis which maintains the idea that object clitics were not lost; that the projection where object clitics are licensed was not lost, and that sentences containing object pronouns have a Ocl projection that needs to be activated by “appropriately” related lexical material. In the preceding section, I entertained the idea that different sizes of XPs were occupying Spec, CIO. We could also entertain the idea that weak object pronouns *always* occur as small XPs in Spec, CIO, and that the different orders fall out from what constituent, if any, has undergone pied-piping to a Spec position to the left of CIO, stranding all lower material:



containing the pronoun is forced to occur in the Spec position. Both then would be possible in Old English, with small XP movement (79a) happening 12% of the time, and heavy XP movement happening elsewhere.



This in turn raises the question how pied-piping is constrained. Unfortunately, present theories of pied-piping do not seem to offer much insight into the issues that arise with heavy pied piping.

In the best of all possible worlds the theory will force the issue. Suppose small XP movement is preferable to heavy pied-piping, but requires a certain configuration as a prerequisite for further extraction. If that configuration fails to arise, heavy pied-piping follows (We could call this the “it-all-started-way down” theory). This theory would have the advantage of allowing a direct link to percentages. (In 12% of the cases, the configuration must have been such that the object pronoun could escape by itself, etc.). I will leave these questions for further future research. Let me point out that if this general idea about the loss of high object pronouns is correct, the difference between Old English and Modern English is not between head marking or Spec marking, as I hypothesized earlier, but rather a difference in the size of the pied-piped element (heavy pied piping in Modern English) This is one of the ways in which I argued modern English *wh*-questions vary 2.2.6.2 and one of the ways in which languages vary crosslinguistically, so it should also be one of the ways in which languages change. It is interesting that the winning pattern *was* already the dominant pattern in Old English. The question that needs to be answered then is why configurations changed lower down in the clause. However, answers will need to wait till we gain a better understanding of the workings of heavy pied-piping.

References

- Abney, S (1987) *The Noun Phrase in its Sentential Aspect*, unpublished Ph.D. Dissertation, MIT.
- Androtsoupoulou, Tonia (1994) 'The Distribution of the Definite Determiner and the Syntax of Greek DPs'. CLS 30, University of Chicago Press.
- Bhatt, R. and J. Yoon (1992) "On the Composition of COMP and Parameters of V2", in *Proceedings of the West Coast Conference on Formal Linguistics*.
- Cheng, L. (1991) *On the Typology of Wh-Questions*, PhD Dissertation, MIT.
- Cheng, Lisa (1989) "Aspectual Licensing of pro", ms. MIT.
- Chiu, B. (1992) *The Syntax of Functional Words in Chinese*, PhD Dissertation, UCLA.
- Chomsky, N. (1986a) *Barriers*, MIT Press, Cambridge, Mass.
- Chomsky, N. (1986b) *Knowledge of Language: Its Nature, Origin, and Use*, Praeger, New York.
- Chomsky, N. (1992) "A Minimalist Program for Linguistic Theory", *MIT Occasional Papers in Linguistics* 1, Cambridge, Mass. [Published (1993), in Kenneth Hale and Samuel Jay Keyser (eds.) *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, Cambridge, Mass. MIT Press, 1-52.]
- Chomsky, Noam (1995b) Chapter 4 , ms. MIT.
- Chomsky, Noam (1995) "Bare Phrase Structure" in Gert Webelhuth (ed) *Government and Binding Theory and the Minimalist Program*, Blackwell, Oxford UK and Cambridge.
- Chomsky, Noam and Howard Lasnik (1977), "Filters and Control" in *LI* 8.3.
- Fukui, N. (1986) *A Theory of Category Projection and its Applications*, MIT PhD dissertation.
- Garrett, Susan (1995), *A History of Negation in Spanish*, paper presented at DIGS IV, Université du Québec à Montréal.
- Haegeman, L and R. Zanuttini (1991) "Negative Heads and the NEG Criterion", *The Linguistic Review*, 8, 233-251.
- Hale, K. and J. McCloskey (1984) "On the Syntax of Person-number Inflection in Modern Irish", *Natural Language and Linguistic Theory*, 487-533.
- Hallman, Peter (1995) Complementizers in German, this volume.
- Hallman, Peter (1995), "German Complex Complementizers", ms UCLA
- Henry, Alison, (1995), *Belfast English and Standard English. Dialect Variation and Parameter Setting*, Oxford University Press, New York, Oxford.
- Hoekstra, Teun (1995), "The status van van", in *Tabu* 15, 160-164.
- Jaeggli, O. and K. Safir (1989) *the Null Subject Parameter*, Kluwer.
- Kayne, R. (1989) "Facets of Romance Past Participle Agreement", in P. Beninca, ed., *Dialect Variation and the Theory of Grammar*, Foris Publications, Dordrecht.
- Kayne, R. (1995) *The Antisymmetry of Syntax*, MIT Press.
- van Kemenade, A. (1987), *Syntactic Case and Morphological Case in the History of English*, Foris Publications, Dordrecht.
- Kinyalolo, K. (1990) *Syntactic Dependencies and the Spec/Head Agreement Hypothesis in Kilega*, Doctoral Dissertation, UCLA.
- Koopman, H. (1983) "ECP Effects in Main Clauses", in *Linguistic Inquiry* 14, 346-351.
- Koopman, H. (1984) *The syntax of Verbs: from Verb movement rules in the Kru languages to Universal Grammar*, Foris Publications.
- Koopman, H. and D. Sportiche (1985) "Theta Theory and Extraction", Abstract of a talk given at

- the 1985 GLOW colloquium in Brussels, *GLOW Newsletter*, February 1985, Foris Publications, Dordrecht.
- Koopman, Hilda. (1987) "On the absence of Case Chains in Bambara", ms. UCLA. [Published in 1992 NLLT 10, 555-94]
- Koopman, H. (1993) "The Internal and External Distribution of Pronominal DPs", to appear in Papers in Honor of Osvaldo Jaeggli, K. Johnson and I. Roberts, eds, Kluwer Academic Press.
- Koopman, H. (1994) "Licensing Heads", in N. Hornstein and D. Lightfoot, eds., *Verb Movement*, Cambridge University Press.
- Koopman, H. and D. Sportiche (1991) "The Position of Subjects" in *Lingua* 85.2/3.
- Koopman, Willem (1990), "Word Order in Old English" *Amsterdam Studies in Generative Grammar* 1.
- Larson, R. (1988) "On the Double Object Construction", *Linguistic Inquiry* 19, 335-392.
- Larson, Richard (1985) "On the syntax of disjunctive scope," *Natural Language and Linguistic Theory* 3, 217-64.
- Mahajan, A. (1990) *The A/A-bar Distinction and Movement Theory*, MIT Ph.D. Dissertation.
- McCloskey, J (1994) "Subjects and Subject Positions in Irish", to appear in Robert Borsley and Ian Roberts, eds *The Syntax of Celtic Languages*, Cambridge University Press.
- Moritz, Luc (1993). "The internal Structure of the Ncufie DP". in Hilda Koopman and Murat Kroch, A. (1988) "Reflexes of Grammar in Patterns of Language Change", *Journal of Language Variation and Change* 1. 199-244.
- Kural (eds) *Aspects of Ncufie Grammar*, UCLA Working Papers.
- Mustanoja, T. (1960) *A Middle English Syntax*, Philological Society, Helsinki.
- Nkemnji, Micheal (1995): "Heavy pied-piping in Nweh", UCLA dissertation series.
- Pearson, Matt (1996), A raising and small clause analysis of existentials in Malagasy, UCLA MA thesis.
- Pollock, J-Y. (1990) "Verb Movement, Universal Grammar and the Structure of IP", in *Linguistic Inquiry* 20, p. 365-424.
- Ritter, E. (1991) "Two Functional Categories in Noun Phrases: Evidence from Modern Hebrew", ms., UQAM, Montreal.
- Rizzi, L. (1995) "On the Fine structure of the Left Periphery", ms. Université de Genève.
- Rizzi, Luigi (1982) *Issues in Italian Syntax*, Foris Publications, Dordrecht.
- Roberts, I. (1993). *Verbs and Diachronic Syntax. A Comparative History of English and French.*, Studies in Natural Language and Linguistic Theory, Kluwer Academic Publishers, Dordrecht.
- Schlonsky, U. (1989) "The Hierarchical Representation of Subject-Verb Agreement", ms., University of Haifa, Israel.
- Speas, M. and Fukui N. (1986) "Specifiers and Projections", *MIT Working Papers* volume 8.
- Sportiche, D. (1992) "Clitic Constructions", to appear in *Phrase Structure and the Lexicon*, L. Zaring and J. Rooryck, Kluwer Academic Publishers, Dordrecht.
- Szabolsci, A. (1996) "Strategies for Scope Taking", in Szabolci, A. ed. *Ways of Scope Taking*, Kluwer Publications, Dordrecht.
- Sportiche, D. (1994) "Adjuncts and Adjunctions", ms., UCLA.
- Sportiche, D. (1995) "Sketch of a Reductionist Approach to Syntactic Variations and Dependencie's", in H. Campos and P. Kempchinsky eds., *Evolution and Revolution in Romance Syntax*, Georgetown University Press.
- Sportiche, D. (1995a) "French Predicate Clitics and Clause Structure", to appear in *Small Clauses*, A. Cardinaletti and M.T. Guasti, eds., Syntax and Semantics, volume 28, Academic Press, NY.

- Sportiche, D. (1996) "Pronominal Clitic Dependencies", in *Language Typology: Clitics in the European Languages*, Henk van Riemsdijk, ed., Mouton de Gruyter, Berlin.
- Szabolcsi, A. (1987) "Functional Categories in the Noun Phrase", in I. Kenesei ed., *Approaches to Hungarian*, vol 2, Budapest:Jate Szeged
- Szabolcsi, A. (1994), "The Noun Phrase" In F. Kiefer and K. É. Kiss, eds. *The Syntactic Structure of Hungarian*. Syntax and Semantics 27. Academic Press, San Diego, California.
- Valois, D. (1991) *The Internal Syntax of DP*, Doctoral Dissertation, UCLA.
- Zagona, K. (1982) *Government and Proper Government of Verbal Projections*, Doctoral Dissertation, University of Washington at Seattle.
- Zanuttini, R. (1991) *Syntactic Properties of Sentential Negation: a Comparative Study of Romance Languages*, unpublished Doctoral Dissertation, University of Pennsylvania.