Chapter 1

Verb movement and functional projection

1. Introduction

Recent developments in linguistic theory fail to shed a new light on verb movement parameters. Although the language variation in this area has been well documented, theoretical approaches tend to be descriptive rather than explanatory in nature. It is the aim of this thesis to formulate triggers for verb movement in declarative clauses that account for cross-linguistic differences. Let me clarify in more detail.

There are two verb movement operations of which the existence is well established. One of them, usually coined V to I movement, takes the finite verb from its base position and places it in a higher position which is, roughly stated, between the projection of the verb and the position in which the subject usually appears. It is commonly assumed that this movement is observable because the finite verb surfaces on the left of adverbs that are taken to be located at the left edge of the VP (as in the structure in (1) on the next page). The other verb movement under consideration is known as V to C movement and places the verb in a position higher than the structural subject position. An underlying assumption here is usually that, if the verb moves to C, it must do so via the I-position: V cannot move to C directly by skipping I.

Adding up, we are led to postulate the structure in (1), where the lexical domain, VP, is dominated by a functional domain consisting of two projections from functional heads, IP and CP. The first owes its name to the fact that its position is taken to be one where inflection is generated or licensed, the second to the fact that the C-position can be occupied by complementizers. Languages differ as to where the verb surfaces in declarative clauses: Both V to I and V to C appear to be parametrized options. It has been claimed in the literature that a language can have V to I movement but not V to C (French), or vice versa (Swedish), or that a language can have both
(Icelandic) or neither (English). We will also see that the position of the finite verb in main clauses can be different from the position in embedded clauses (German, Dutch, Swedish).

(1)

The structure in (1) has led to three related but independent questions, which can be stated as in (2):

(2)  
   a. What is the nature of the positions to which the verb moves?  
   b. What triggers verb movement to these positions?  
   c. What explains cross-linguistic and language-internal differences in verb placement?

Linguistic theorizing has been reasonably successful in formulating ideas that bear on questions (2a) and (2b) but far less successful in tackling question (2c). It is my belief that the lack of progress is a consequence of the following. It is generally accepted that the functional domain consists of a set of heads that instigate movement of elements from the lexical domain. This has led to the view that it must be properties of these functional heads that are responsible for word order differences in general, including differences in verb placement. To give an example, if language A has V to C and language B not, then C must have some property P in language A that is absent in language B. Although not an unreasonable hypothesis, it has proven to be extremely difficult to formulate a property P that can be independently motivated. In general,
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proposals on verb movement parametrization more often than not have an ad hoc character: Property P is assigned to language A and not to language B so as to account for the observed difference in verb placement. Hence, what appears to be an arbitrary word order difference is accounted for in an equally arbitrary way. Given this state of affairs, there is ample justification for the formulation of alternative conceptions of verb movement.

The starting point of the alternative theory is my belief that (2a), and consequently (2b), are the wrong questions to ask if the attempt is to account for word order parametrization. Instead, I would like to take one step back and ask the more general question stated in (3):

(3) Why does the verb need to move to higher positions in the structure?

In a minimalist conception of syntax (Chomsky 1995), there is only one answer to (3): Output requirements determine that the verb cannot stay in a particular position. Since we know that verb placement is parametrized (that is, the finite verb surfaces in different positions in different languages or clause types), we must conclude that the verb can sometimes stay in a particular position without violating output conditions. The task is then to formulate conditions that have the effect of triggering or blocking verb movement in the right environments. On the basis of these conditions, we can then build a theoretical implementation that is descriptively and explanatorily adequate.

So far, nothing I have said here is new. The only deviation from standard discussion is that the central question is more general, thereby allowing more ways of tackling it. To be more specific, the question in (3) does not imply the importance of prefabricated head positions (I and C in the structure above) in the explanation of verb movement parameters. This is exactly what I would like to make use of. Following Chomsky (1995), I will assume that the verb is inserted fully inflected. Given the standard view on functional projections, adopted in checking theory, verb movement itself is enough to reveal the presence of a head position higher in the structure: If the verb enters the derivation with a complete feature matrix, verb movement implies the presence of some head triggering the movement. This is not a necessary implication, however. An alternative view becomes possible by combining two theoretical proposals from the literature, one by Kerstens (1993) and one by Ackema, Neeleman & Weerman (1993). Let me discuss each in turn.

Kerstens proposes that functional structure is projected from functional features of a lexical head. Phi-features, for instance, can project from the morphological head that they are a part of. Agreement features that are combined with the noun in morphology are taken to be essentially syntactic features that can (and in fact must) project from the noun. Rather than taking an empty head from the lexicon and merge it with NP, the head noun can project features from its morphological complement, agr,
after it has itself projected into NP. The result is given in (4), where syntactic AGR must be seen as directly projected from the agr features that are part of the morphological object:

\[
\text{(4)} \quad \text{AGR} \quad \text{NP} \\
\text{N} \\
\text{n} \quad \text{agr}
\]

Although the origin of the functional projection is somewhat different, Kerstens' proposal is basically a notational variant of the standard conception, in which the lexical and functional projections constitute two separate domains. Under the assumption that N must ultimately move to AGR, the net effect is identical to that derived in checking theory, where N moves to check features with AGR. What both proposals have in common is that every feature is present twice. In checking theory, Agr features are generated on the verb as well as on an empty functional head. In Kerstens' proposal AGR and agr are identifiable as two elements in the structure. Such redundancy is conceptually undesirable (cf. Brody 1998 for a recent discussion) and I think unnecessary. In order to see this, let us turn to the second proposal that I will make use of.

Ackema et al. (1993) propose that functional projections in the verbal domain are basically reprojections of the same verb. What happens is that the verb moves and merges with the structure it has already projected (cf. 5a). After this operation, the verb projects again and the result is a VP dominated by a functional projection (cf. 5b).

\[
\text{(5)} \quad \begin{array}{l}
\text{a.} \\
\text{b.}
\end{array} \\
\text{VP} \quad \text{V} \\
\text{V'} \quad \text{V} \\
\text{DP} \quad \text{VP}
\]

This view on functional structure eliminates feature redundancy. All features are present once, including the categorial features: They can simply project more than once. Chomsky (1995), however, provides a conceptual argument against such self-attachment of the verb to its own projection. It leads to an ambiguous phrase marker since the computational system cannot decide whether the top node is a projection of
the left or right branch. In set-theoretic terms, the node receives the same definition in both cases.\(^1\) Even if we accept this objection against self-attachment, however, it is not necessary that this problem actually occurs. Observe that both feature redundancy and Chomsky's objection disappear once we combine Ackema et al.'s proposal with Kerstens' idea that lexical heads can project their functional features. Instead of assuming that the verb moves in order to "check" or "pick up" some feature, I propose that the verb moves in order to project it. In other words, the features are present only once, namely on the verb, and can be projected from the verb after movement. Let us adopt Giorgi & Pianesi's (1997:15) Feature Scattering Principle:\(^2\)

\[(6) \quad \text{Feature Scattering Principle} \]
\[\text{Each feature can head a projection.}\]

Suppose furthermore that morphological affixes themselves introduce the features that they refer to: The Tense affix introduces Tense features, the Agr affix introduces agreement features, etcetera. Given (6), every affix has the potential of becoming a syntactic head after the verb has moved. To be explicit, the lexical representation of a finite verb taking one affix looks as in (7):

\[(7) \quad \text{V} \quad \text{F} \]

The structure in (7) is a complex of two heads, V and F. What I propose is that the lexicon makes available such complex heads without specifying which of the elements is the head in the syntax: Syntactic headedness is solely determined by output conditions, in line with minimalist assumptions. In principle, both V and F have the potential to head a syntactic projection. When the complex in (7) is inserted in the structure, however, V has no choice but to project. Otherwise this head could not discharge its theta roles, under standard assumptions. Therefore, (7) projects into a VP. Suppose now that in some language F must head a projection of its own in order to

\(^1\) I do not think that this argument against self-attachment is convincing as it stands. It stipulates that the computational system cannot handle the ambiguity that arises. Alternatively, one could hypothesize that the grammar has a very good reason to analyze the top node in (5a) as a projection of the left branch. If it were a projection of the right branch, the top node VP would dominate two head positions, namely the verb and the trace of the verb. Under the standard assumption that every projection must have a unique head (which admittedly requires an explanation), such an analysis is consequently blocked. (Note by the way that Ackema et al. take a relativized view on bar levels (following Muysken 1982) in which VP becomes V after self-attachment. I will assume throughout that it remains maximal, i.e. VP.)

\(^2\) Note that the entailment is not that every feature must head a projection, only that it can. Which feature must project depends on one's formulation of output conditions.
satisfy some output constraint. In that case, the verb is forced to move. It is therefore taken from the structure and merged again with VP. The result of this operation is given in (8a). After self-attachment of the verb to VP, nothing excludes syntactic projection of F, as in (8b). In that case, no ambiguity arises and the phrase marker is well formed.

\[(8) \quad \begin{align*}
& \text{a.} & \text{b.} \\
& \tau & F \\
& [V [F]] \quad \text{VP} & \quad [V [F]] \quad \text{VP} \\
& \text{t} & \text{t}
\end{align*}\]

To conclude, the statement that verbs enter the derivation fully inflected can be made compatible with the idea that there is no empty head triggering verb movement. Under the assumption that an affix can project after movement, the result is a functional projection dominating VP. Of course, still needed is a set of output conditions that together account for the array of verb placement facts. They must explain why the verb needs to project certain functional features in a VP-external position and, consequently, why such projection is sometimes blocked, namely when no verb movement can be observed. Chapters 2 and 3 will offer triggers for V to I and V to C respectively. In order to understand more clearly where these proposals come from, some background is provided in this chapter. The organization is as follows.

Before we can start designing triggers for verb movement, we must establish how many of these operations have to be minimally accounted for. For this reason, section 2 will focus on the evidence for verb movement. On the basis of the facts discussed, I will conclude that indeed two verb movements are well established. Although more operations cannot be categorically excluded, I will show that their prime motivation hinges on additional theoretical assumptions. This implies that they are significantly less reliable as a basis on which to formulate a theory of verb movement parametrization.

In section 3, I will discuss previous theoretical approaches to verb movement and the link with functional structure. Attention will be paid to the idea that functional heads comprise morphological affixes as well as to a more abstract view on functional structure. I will conclude from the discussion that, despite their insights, the answers to

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3 Note that, besides eliminating feature redundancy, there is another conceptual advantage over checking theory: Head movement is no longer an adjunction operation. After movement, some features of the head project. Hence, verb movement no longer violates the extension condition (Chomsky 1995), requiring that every overt movement extends the root of the clause.
the questions in (1) that are provided by these approaches are only satisfactory to a limited extent when it comes to explaining verb movement parametrization.

In section 4, finally, I will give more substance to the alternative theory that I have sketched above. On the basis of previous observations and insights I will suggest two triggers for verb movement that will be worked out in subsequent chapters. This section will end with an overview of the thesis. The triggers that I propose will both refer to the notion "predicate". It is therefore essential to understand what assumptions concerning predication and theta role assignment I have in mind. In the appendix to this chapter I will spell these out.

2. Evidence for verb movement

Since the existence of verb movement is hardly a matter of debate within the generative tradition and has received a lot of attention, it will come as no surprise that none of the evidence presented here is new. The goal of this chapter is different, namely to set up the empirical domain that is relevant for the central questions of this thesis. Since I am mainly concerned with verb movement parametrization, the goal will be to locate those environments where verb positioning clearly differs across languages.

As we will see, the evidence for V to I and V to C is relatively straightforward and depends on distributional facts that are more or less transparent. There are also environments, however, where differences in verb positioning are less obvious. Although this potentially complicates the task of designing a theory of overt verb movement, note that it is not so clear that all evidence for verb movement is directly relevant for the issue of what determines verb movement parametrization. In order to see this, take the case of predicate-internal verb movement. It has been argued (cf. Larson 1988; Hale & Keyser 1993; Chomsky 1995, among others) that at least (in)transitive predicates consist of two VP-shells, the higher often coined 'small V', or \( v \). In overt syntax, V moves to \( v \) as indicated (cf. 9). This higher head is sometimes taken to be a causative element, licensing an agentive argument. In some proposals \( v \) is explicitly equated with a causative morpheme.
This structure with predicate-internal verb movement is motivated by binding facts (cf. Barrs & Lasnik 1986). In English, for instance, an indirect object is able to bind an anaphoric direct object (cf.10), suggesting that the former c-commands the latter, as is indeed the case in (9).

(10) a. John showed Tim, himself
      b. John showed each teacher, his, pupil

Since the verb precedes both internal arguments, it must have moved from its base position. Even if this evidence is taken to be conclusive, it tells us nothing about the nature of v yet. The hypothesis that small v is a licenser of an agentive argument is not undebated. I refer to Jackendoff (1990) and Neeleman & Weerman (1999) for alternative views. At this point I have nothing to add to this discussion. What is relevant here is that the proposed movement is one that seems to take place in languages invariably. Since I take it that these binding facts can be repeated for all languages referred to in this thesis, overt verb movement to v will have to be postulated for all of them, under the assumption that it is the right solution. In this sense, it can be distinguished from the verb movement operations that will be considered, namely verb movement to the head of IP and movement to the head of CP. These two movement operations are clearly parametrized options: Languages can have one, both or neither of the two. So, if the aim is to find out what is fundamental about differences in verb placement, the topic of this thesis, we had better focus on those instances where languages clearly differ. For this reason, it makes sense to leave V to v movement aside for the moment. In section 2.3.1 and 2.3.2 I will argue that a similar conclusion is

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4 Whether V to v takes place overtly in OV languages is very much dependent on one’s theoretical assumptions about these languages. If vP is a head-final projection in OV languages, the operation is string-vacuous and hence invisible to the eye. If vP is head-initial, the verb either does not move to v or the internal arguments have moved out of the predicate, making it hard to establish whether V to v has taken place.
warranted for proposals to split up IP into several projections, as argued by Pollock (1989) and Belletti (1990). Rizzi (1995) proposes to split up CP in a similar way. As I will discuss in section 2.4, this proposal is not immediately relevant for the issues at hand either, since the proposed functional system he proposes is not V-related to the same extent as the IP-system is.

Also excluded from the discussion is verb raising. According to standard analyses (Evers 1975; Rutten 1991), this operation moves a verb and adjoins it to a higher one, as indicated in (11).

(11) a. Dat Jan [dit boek lezen] wil
    b. Dat Jan [dit boek t] wil lezen,

I will pay some attention to this phenomenon in chapter 2, where it is shown that there are reasons to assume that the operation should not be analyzed as a case of verb movement but rather as the output of a reconstruction process (Huybregts 1983; Haegeman & van Riemsdijk 1986 and others). If so, it does not bear on the issues of this thesis. In any event, the availability of the reconstruction analysis of these verb clusters makes it less straightforward to consider these facts as central to the formulation of a theory of verb movement parametrization.

Let us now turn to environments where verb positioning is clearly parametrized and where verb movement is relatively uncontroversially assumed.

2.1 V to C movement

It is a striking phenomenon within the Germanic language group that, with the exception of English, the finite verb appears in second position in main clauses. If another element than the subject appears in first position, subject-verb inversion is obligatory. This basic fact is illustrated below for Icelandic (cf. 12a), Yiddish (cf. 12b), Swedish (cf. 12c) and Danish (cf. 12d) respectively. The sentences in (12) all become ungrammatical if some element is placed between the sentence-initial XP and the finite verb.

(12) a. [CP Bókina keypti [Jón ekki]]
    books bought John not
    Icelandic
    b. [CP Dös bukh shik [ikh avek]]
    the book send I away
    Yiddish
    c. [CP Boken köpte [Ulf inte]]
    books bought Ulf not
    Swedish
    d. [CP Denne film har [børnene set]]
    this film have the children seen
    Danish
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The most straightforward analysis of the general pattern is to adopt two movement operations: One moves some XP to sentence-initial position, the other puts the finite verb in second position. Given standard X-bar assumptions, verb second is then straightforwardly captured by postulating a functional projection, mostly referred to as CP. The fronted XP then fills the unique specifier position of the moved verb, as indicated in (13):

\[
\text{(13)} \quad \text{CP} \\
\text{XP} \quad \text{C'} \\
\text{C} \quad \text{V} \\
\text{IP} \\
\]

In short, verb second effects present us with evidence for a verb movement operation that roughly moves the verb from its base position and places it in a position higher than the subject.\(^5\)

If (1) is taken to be the underlying structure of clauses in general, i.e. of main and embedded clauses alike, a consequence is that we can explain why verb second only takes place in root clauses in languages such as Dutch, German and Mainland Scandinavian. Den Besten (1983) suggests that if C is filled by a complementizer in embedded contexts, verb movement fails to apply because it simply cannot. Hence, the Dutch and German examples (14a’-14b’) are ungrammatical. Likewise, no subject-auxiliary inversion takes place in embedded WH-questions in English (cf. 14c): The WH-constituent presumably moves to the embedded spec-CP, the head of which is filled by a phonologically empty complementizer. Hence, verb movement is out (cf. 14c’).

\(^5\) If the subject is used as a diagnostic for verb movement, a question is whether the analysis in (13) should also apply when the subject itself appears sentence-initially. Some hold it that verb second is a uniform process and that the subject moves to the same position other XPs move to (Den Besten 1983; Weerman 1989; Vikner 1990), accompanied by verb movement to C. Others have argued that when the subject is in sentence-initial position, it is structurally lower than fronted XPs are, i.e. in spec-IP or some equivalent position (Travis 1984; Zwart 1993). The issue is notoriously difficult to settle because arguments go both ways (cf. Schrijnemakers 1999 for a recent overview). At this point, I merely note the debate here and conclude that if Travis and Zwart are right, subject-initial clauses in V2 languages provide evidence for V to I rather than for V to C. The analysis of verb second presented in chapter 3, however, is incompatible with this view.
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(14) a. Ik geloof [CP dat [IP Jan de waarheid spreekt]]
   
   I believe that Jan the truth speaks

a’.
   *Ik geloof dat spreekt, Jan de waarheid ti

b. Ich glaube dass es nicht funktioniert
   
   I think that it not works

b’.
   *Ich glaube dass funktioniert, es nicht ti

c. I wonder [CP what, ø [IP John will tell ti]]
   
   *I wonder what, will, John ti tell ti

c’.

Hence, these root/non-root asymmetries are accounted for by assuming an identical structure for main and embedded clauses.

Unfortunately, it is not true that the presence of a complementizer always blocks verb second from taking place. In Icelandic and Yiddish, we find the phenomenon in embedded clauses quite unrestrictedly, as the following examples show.

(15) a. að í herberginu hefur kyrin staðið
   
   that in the room has the cow stood

b. az morgn vet dos yingl zen a kats
   
   that tomorrow will the boy see a cat

Under the assumption that clauses usually consist of VP plus IP and CP (cf.1), it is not obvious how we should account for data like (15). Roughly two different approaches can be found in the literature. One way of looking at these data is to conclude that Yiddish and Icelandic have a richer tree structure in embedded clauses, consisting of two functional heads c-commanding the canonical subject position. Vikner (1990, 1995), for instance, suggests that the data are best accounted for by allowing CP-recursion, a process originally introduced to capture the phenomenon of embedded verb second under bridge verbs mentioned in footnote 6 (cf. for instance de Haan & Weerman 1986 for Frisian, Holmberg 1986 for Swedish). The structure of an embedded clause in (15) would then look as in (16):

6 In Yiddish and Icelandic, subject verb inversion in embedded clauses is almost always a possibility. In Mainland Scandinavian, only a couple of verbs, like ‘say’, ‘believe’, ‘think’, etc. are able to select complement clauses showing subject verb inversion. This class of so-called bridge verbs is basically the same one that allows for ‘erlebte Rede’ in German, embedded clauses with main clause order. For some reason, the complementizer is obligatorily dropped in German only. The general consensus is that these structures should be analyzed as ‘embedded main clauses’ in some sense. In the remainder of this thesis, I will discard these cases and focus instead on the contrast observable with non-bridge verbs: Mainland Scandinavian and German display a root/non-root contrast, unlike Icelandic and Yiddish. I refer to Vikner (1994, 1995) for further discussion.
Others have argued that the parametrization lies in spec-IP being either a structural subject position, as in (17a), or a(n optional) topic position, as in (17b) (cf. Diesing 1990; Santorini 1992 for Yiddish; Rögnvaldsson & Thráinsson 1990 for Icelandic). In Icelandic and Yiddish the latter option (cf. 17b) is chosen, thereby allowing topicalization to spec-IP and verb movement to I (Evidence for a head position between CP and VP will be discussed extensively in section 2.2).

(17)  a.  

    CP
     /\      /\  
    spec  C   C
     /\  |   |
    C    IP  su/top
         |     |  
         I'

    b.  

    CP
     /\  
    spec C
     /\  
    C    IP
         |     
         su/top
         |  
         I'
Since this section discusses the evidence for the number of verb movement operations and functional head positions, it will be clear that a choice between the two proposals is not trivial: It immediately affects the number of verb movement operations to be accounted for in Icelandic and Yiddish and therefore influences the theory on verb movement in general.

I will not go into a detailed comparison of the two proposals however (see Vikner & Schwartz 1991, Vikner 1995 and Rohrbacher 1994 for this), but make a more general remark instead. Note that both approaches raise a similar question. If Yiddish and Icelandic have CP-recursion in embedded clauses and Dutch, German and Mainland Scandinavian do not, the question is why the distribution across languages is as we find it. Why, for instance, do we not find precisely the reverse situation? In a theory stating that spec-IP can be an A’-position in Yiddish and Icelandic and not in Dutch, German and Mainland Scandinavian, the exact same question arises. Hence, the distributional facts mentioned so far are inconclusive as to a choice between the two approaches and neither satisfactorily accounts for the noted contrast among verb second languages. The structural solution that den Besten offered is inconclusive once all the data are taken into consideration. In chapter 3 I will offer an explanation for the fact that some but not all languages move the verb in embedded contexts. This analysis has more in common with the structure in (16) than with the one in (17). Chapter 4 will provide additional evidence for the approach taken.

To conclude, the verb second phenomenon provides evidence for one verb movement operation, hence for one functional projection dominating VP. This projection is commonly labeled CP. We have seen that there is a split among the verb second languages. Languages like Dutch, German and Mainland Scandinavian display verb second in main clauses only, whereas in Icelandic and Yiddish the phenomenon takes place in embedded clauses too.

2.2 V to I movement

In this section, I will discuss the distributional evidence for V to I movement and evaluate to what extent proposals for a more elaborate structure are (i) empirically motivated and (ii) relevant for the issues at hand.

Let us first establish what we mean by V to I movement. It is well known that in some languages the finite verb obligatorily precedes a particular class of elements, including sentence adverbs, negation and floating quantifiers, whereas in other languages, the finite verb must follow elements belonging to this class. This contrast is illustrated in (18):
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(18) a. ... subject $V_{finite}$ $adv/neg/FQ$ ...

b. ... subject $adv/neg/FQ$ $V_{finite}$ ...

Of course, to give legitimate examples, we must control for the effect of other verb movement operations such as V to C. Under the assumption that verbs in English and French do not move as high as C in declarative clauses, given the lack of verb second, the contrast in (19) can be observed in these two languages (cf. Emonds 1976; Pollock 1989).

(19) a. Jean <*souvent> embrace <souvent> Marie
   \hline
   Jean often kisses often Marie \hfill (= 18a)

b. John <often> kisses <*often> Mary
   \hline
   (= 18b)

Under the assumption that the adverbs are left-adjointed to VP, the verb has crossed this constituent on its way to I in French but not in English.

In Mainland Scandinavian (Swedish, Danish and Norwegian), finite clauses embedded under a non-bridge verb never display subject-verb inversion (cf. footnote 6). The finite verb must in these cases follow VP-adverbs, indicating that it has not left its base position:

(20) a. at Peter <ofte> havde <*ofte> læst den Danish
   \hline
   that Peter often had often read it

b. att Jan <ofta> kysser <*ofta> Maria Swedish
   \hline
   that Jan often kisses often Maria

Hence, clauses selected by a non-bridge verb show us in a direct way that Mainland Scandinavian is like English. Once verb second is controlled for, the finite verb does not leave its base position.

In Icelandic and Yiddish, subject-verb inversion is possible in embedded clauses too, as we saw in the previous section. This makes it impossible to test in a direct way whether these languages have independent V to I movement. However, Vikner (1990, 1995) observes that subject-verb inversion is blocked in embedded clauses that are introduced by wh-words like af hverju ‘why’.

(21) a. *Ég veit ekki af hverju í herberginu hefur kýrin staðið Icelandic
   \hline
   I know not why in the room has the cow stood

b. *Ikh veys nit ven in tsimer iz di ku geshtanen Yiddish
   \hline
   I know not when in the room has the cow stood
Vikner concludes from these data that verb second is blocked in these contexts. Therefore, they serve as a testing ground to see whether verb movement takes place since verb second is now controlled for. Indeed we find that the finite verb precedes VP-adverbs, indicating that it moves to a VP-external position even when the effect of verb second is filtered out:

(22) a. Ég veit ekki af hverju kýrin <hefur> oft <*hefur> staðið í herberginu  
\( I \) know not why the cow has often has stood in the room
b. Ikh veys nit ven di ku <iz> oyfn <*iz> geshtanen in tsimer  
\( I \) know not when the cow has often has stood in the room

Hence, the contrast between (21) and (22) can be taken as an illustration of the contrast abstractly displayed in (18). Under the assumption that elements of the adverbial class occupy a fixed position across these languages (say, at the left edge of VP), the finite verb in Icelandic and French crosses the adverb on its way to a functional position, usually called I(NFL) (cf. 23a). In contrast, finite verbs stay in their base position in English and Mainland Scandinavian (cf. 23b).

(23) a.  
```
IP
 Su I'
   
   I
   
  V_i
  I
  
   Adv
  t_i
```

b.  
```
IP
 Su I'
   
   I
   
  Adv
  V_i
```

The other logical option, suggested by Williams (1994), would be to say that the verb occupies a fixed position across languages and that the difference in (18) lies in whether adverbs can be right-adjoined to V, as illustrated in (24).
Under this analysis, the contrast does not involve verb movement at all but results from the possibility arising in some languages to build \([v \, V\text{-Adv}]\) complexes in the lexicon. Williams argues that such a lexical operation is blocked in English, since it has a right-headed morphology, unlike French.

Although it may be appealing to allow lexically adjoined adverbs in some languages (as we will see later on), the analysis still faces at least two serious questions. First of all, what remains unanswered is why the possibility of syntactically generating an adverb to the left of VP is radically excluded in a language like French. That this option must be allowed in principle seems evident from infinitival constructions, where the infinitive can follow the adverb without any problem.

\[(25)\]
Jean aime de souvent embrasser Marie

\textit{Jean loves to often kiss Marie}

Note that we cannot simply say that in this case the adverb has been left-adjoined to V. In that case, we would fail to understand why the same option is blocked with finite verbs (cf. 19a).

Second, and more importantly, it has been observed by a great number of scholars (Kosmeijer 1986; Platzack & Holmberg 1989, 1991; Roberts 1993; Rohrbacher 1994) that the placement of the finite verb before or after sentence adverbs does not seem to be an arbitrary difference. Looking at paradigms of verbal subject agreement, one can observe that languages with many distinctions within this paradigm (like Icelandic) place the verb to the left of adverbs. In contrast, languages with a poor agreement paradigm (like Swedish) tend to favour placement after adverbs. A lot of data support this generalization, as we will see in chapter 2. For now, I provide one illustration of it by contrasting Icelandic with Swedish (26):

\[(26)\]

<table>
<thead>
<tr>
<th></th>
<th>\textit{Swedish} (inf. bit-a)</th>
<th>\textit{Icelandic} (inf. segj-a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SG</td>
<td>PL</td>
</tr>
<tr>
<td>1\textsuperscript{st}</td>
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Even more strikingly, one can establish that if a language loses (some of) its subject agreement through time, the order gradually switches from $V_{\text{finite}}$-Adv to Adv-$V_{\text{finite}}$. Old Swedish, for instance, has the paradigm displayed in (27). As can be observed in (28), the finite verb precedes the negation marker, the order which is ungrammatical in present day Swedish (data from Rohrbacher 1994; see Roberts 1993 for similar observations regarding the diachrony of English).

(27) $\text{Old Swedish}$ (inf. ålsk-a)

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<th>PL</th>
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<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>ålsk-a(r)</td>
<td>ålsk-um</td>
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<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>ålsk-a(r)</td>
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<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>ålsk-a(r)</td>
<td>ålsk-a</td>
</tr>
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</table>

(28) ...æn han sivngær ægh thigianda messu... $\text{Old Swedish}$

*if he sings not silent mass*

It is unclear why richness of inflection should determine whether or not lexical adjunction of adverbs is possible. If, however, we have a theory that explains why verbs carrying a rich agreement affix must move to a VP-external position, we not only explain the contrasts we have so far observed, but also understand why verb movement is lost as a consequence of deflection. Such a theory will be presented in chapter 3.

To conclude, we have seen reason to assume that $V$ to $I$ movement is real. Cross-linguistically, we can observe that the finite verb is systematically in one of two positions, following or preceding a homogeneous class of elements: adverbs and floating quantifiers. We therefore have evidence for one VP-external head position, which we will call I(NFL). In sections 2.3 and 2.4 I will evaluate proposals for a more elaborate structure and conclude from this discussion that splitting up IP into several functional projections is not an inevitable move. I will focus on two studies, Pollock 1989 for French and Belletti (1990) for Italian, since these were the first to propose more than one functional head position in the I-domain on the basis of distributional evidence.

### 2.3 Short verb movement

We have seen above how the position of adverbs with respect to the finite verb can be used as a diagnostic of verb movement taking place. On the basis of this logic, Pollock (1989) argues that evidence can be obtained for another functional head position. What he proposes, then, is that IP should be split up in two projections, which he coins TP and AgrP. In fact, he postulates a third functional projection, NegP, but its head
position is taken by a negation marker and hence unavailable as a landing site for verb movement. The resulting structure is depicted in (29):

(29)

```
TP
  spec T'
     T NegP
       Neg AgrP
            spec Agr'
              Agr VP
                Adv VP
```

Belletti (1990) undertakes a similar enterprise for Italian with roughly similar conclusions. In this section I will evaluate these proposals and conclude that the distributional evidence for a second landing site is not very strong. In this, I will largely follow Latridou (1990), who shows, convincingly I think, that the data under discussion do not inevitably lead one to postulate an additional functional projection. Even more, such an analysis encounters some problematic data.

### 2.3.1 French

The structure in (29) provides two diagnostic elements for the position of the verb: One is negation, situated between TP and AgrP, the other is the adverb that is left-adjoined to VP. It will be clear that the order V<sub>finite</sub>-Adv in itself does not tell us anything about the number of functional head positions. In that case V<sub>finite</sub> has presumably moved to T, leaving no clue as to the number of head positions it has passed through. Evidence for Agr, Pollock reasons, comes from cases where the verb cannot move over negation, yet precedes adverbs. English infinitival auxiliaries instantiate one such case. Under the

---

7 Belletti deviates from Pollock in positioning AgrP above TP. Since tense morphology is inside agreement morphology in both Italian and French verbs, this proposal makes sense, especially if the functional head positions contain actual affixes. In that case, the verb picks up tense morphology first. Since this section is concerned with the distributional evidence for head positions only, I will not discuss the content of the functional projections at all.
assumption that *frequently* is left-adjoined to VP, the difference between (30a) and (30b) is arguably due to optional infinitival movement to Agr.

(30)  

a. John is believed to frequently have criticized Bill  
b. John is believed to have frequently criticized Bill

As pointed out by Iatridou (1990), however, it is unclear whether the contrast in (30) is most plausibly related to verb movement. Since the examples contain two verbs, the structure might simply contain two VPs, each with its own adjunction site for adverbs. The contrast in (30) is readily explained under the assumption that *frequently* has adjoined the projection of the auxiliary verb in (30a) but to the projection of the main verb in (30b).

(31)

That both possibilities can be realized in one sentence is shown by (32):

(32) John is believed to frequently be rudely criticizing Bill

Iatridou therefore concludes that it first has to be shown that (30) cannot involve different base-generations before a movement account can be convincingly argued for.

The other illustration of short verb movement that Pollock uses is infinitival movement in French. As can be observed in (33), lexical infinitives obligatorily follow negation. Adopting the structure in (33), one could say that they are blocked from moving to T.
(33)  a. Ne pas comprendre l’italien...
   *not understand Italian
b. *Ne comprendre pas l’italien...
   *understand not Italian

In contrast, the same verbs can either follow or precede adverbs without any difference in grammaticality, as can be observed in (34):

(34)  a. À peine comprendre l’italien
   *hardly understand Italian
b. Comprendre à peine l’italien
   *understand hardly Italian

Hence, Pollock concludes, the contrast in (34) signals optional movement of the infinitive to Agr. Again, Iatridou points out that the movement analysis is not the only thinkable one. DiScullio and Williams (1987) argue that French and Italian have the possibility of adjoining adverbs to V in morphology, like in (35). Travis (1988) analyses these structures as involving some sort of complex verb.8

(35)

Let us refer to these as head-adjunction analyses. What we end up with, then, is two different accounts for one fact, namely the alternation in (33). Under Pollock’s view the parametric difference between languages is whether or not they allow optional movement to Agr. Under the alternative account, the parametric difference is whether languages allow right-adjunction of adverbs to the verb. On the basis of the data presented so far, there is no way of preferring either one of them. It seems to be the case, however, that looking at more data brings the movement account into immediate

---

8 Recall that earlier we concluded that such an analysis is unlikely to account for the basic contrast in finite verb positioning (i.e. Icelandic versus Swedish) since it does not explain (i) why in some languages right-adjointing adverbs to VP should be excluded in finite contexts only and (ii) why we find the correlation with rich agreement and adverb positioning. Therefore, the possibility of adjoining adverbs to V only becomes an interesting alternative to a movement account iff the order Adv-V is also attested. As can be observed from (34), this is the case with infinitives.
troubles that the head-adjunction analysis can stay out of. Iatridou raises both points presented below.

First, it is possible in French to position both the auxiliary and the participle in between negation and an adverb.

(36) Ne pas avoir lu complètement/entièrement ce livre...
cl. not have read completely/entirely this book

Given the structure in (29), the movement account is forced to assume that both verbal heads have moved into Agr. In that event, Iatridou reasons, one would expect the opposite order, under the assumption that avoir moves first and lu subsequently adjoins to the left of avoir. There are in fact independent reasons for not wanting to allow this possibility. For instance, it is typically not allowed in verb second languages to move a participle along to C, irrespective of its surface order with respect to the auxiliary. Example (37) illustrates this for Dutch:

(37) *Dit boek [heeft gelezen]/[gelezen heeft] Jan gisteren
this book has read/read has Jan yesterday

If on the other hand only avoir in (36) has moved to Agr, the adverb must be generated somewhere within VP and by allowing that possibility the argument for short verb movement to Agr collapses. Note that the alternative analysis involving morphological adjunction to V encounters no trouble in accounting for (36) since the adverb can simply be right-adjointed to the participial verb, irrespective of one’s assumptions about the rest of the structure.

Second, if we insert two adverbs into the structure, we find that the infinitive can either follow (cf. 38a) or precede (cf. 38b) both.

(38) a. Souvent mal faire ses devoirs, c’est stupide
frequently badly make your homework that is stupid
b. Faire souvent mal ses devoirs, c’est stupide
make frequently badly your homework that is stupid

This is expected if the infinitive optionally moves to Agr. Under the head-adjunction analysis, (38b) can be handled by allowing multiple adjunction to the verb. So we again have two different hypotheses accounting for the same fact. Note, however, that the infinitive can also appear between the two adverbs, as is shown in (39):

(39) Souvent faire mal ses devoirs, c’est stupide
frequently make badly your homework that is stupid
Under the assumption that adverbs are adjoined to VP, the pattern in (39) is predicted not to exist under Pollock’s analysis. Note that the morphological adjunction analysis again handles this case straightforwardly, with *souvent* left-adjoined to VP and *mal* right-adjoined to the infinitive. In order to uphold the movement account, one could of course loosen the attachment sites of adverbs, for instance by allowing them to be adjoined to VP and AgrP only. In that case, the infinitive would only have crossed one VP-adjoined adverbial on its way to Agr. Such a solution, however, is very tricky without an explanation as to why adjunction to TP (or NegP) is excluded. Note that it must be. Otherwise adverbs can freely precede negation. More importantly, the explanation for the different patterning of finite verbs and infinitives is lost altogether, since all verbs are predicted to be able to occur after adverbs, contrary to fact. Furthermore, by allowing adjunction to AgrP, a case for the existence of Agr can no longer be made on the basis of contrasts like (34) but then hinges on (39) alone, so that the distributional evidence for it is reduced even further.

Hence, from an empirical perspective the evidence for more than one head-position c-commanding the predicate is debatable. Note furthermore that, from a purely theoretical perspective, Pollock’s analysis seems suspicious too. In all cases where the order *verb-adverb* is supposed to show movement to Agr, the order *adverb-verb* is grammatical too. Therefore, all movement to Agr must be optional. Given recent assumptions about movement and economy, for instance the idea that the features in functional heads triggering overt verb movement are always strong, there should be no alternation in V-Adv patterns in the first place. Allowing features to be optionally strong is nothing more than an ad hoc way of accounting for the data observed. Besides, verb movement to a position higher than Agr is never optional. The ordering between finite verb and adverb is absolute in French, with the former obligatorily preceding the latter. Likewise, verb second is not optional in contexts where it takes place. Hence, claiming that verb movement to Agr is optional is surprising against the background of other, less controversial, verb movement operations.

To conclude, Pollock’s evidence for short verb movement in either English or French is problematic, both from an empirical and a theoretical point of view. Alternatively, it is far less controversial to claim that (i) adverbs can appear in more than one position and (ii) adverb positioning is subject to cross-linguistic differences. Both assumptions need to be made anyway, it seems. That (i) is true is apparent from a sentence like (40), where the adverb can appear in four positions:

(40) (Soon) John’s luck (?soon) will (soon) be over (soon)

Support for (ii) can be found in the following section. Italian, for instance, seems to be different from English in its positioning of sentential adverbs like *probabilmente*. 
Of course, showing that there is not much evidence in support of more than one verb movement operation does not categorically rule out that more than one functional head position triggering movement is present. It may be the case that the verb has passed through several head positions on its way to its final landing site. There are simply not enough diagnostic elements in the structure to reveal these intermediate movements. Adverbs could be adjoined to VP and FP, resulting in the same order.

(41)  

\[
\begin{align*}
&\text{IP} \\
&\quad \text{su} \\
&\quad \text{FP} \\
&\quad \text{I} \\
&\quad \text{F} \\
&\quad \text{FP} \\
&\quad \text{VP} \\
&\quad \text{V} \\
&\quad \text{ob}
\end{align*}
\]

The point, however, is that we cannot be sure that intermediate heads actually trigger movement themselves or whether verb movement to F is simply parasitic on the movement to I. Given this, it is even harder to determine whether V to F is a parametrized option. This makes hypothetical F a very unreliable candidate on which to base one's theory of verb movement parametrization (cf. section 2.4 for further discussion). For this reason, I will ignore hypothetical F completely and prefer to focus on verb movement parameters for which the evidence is more direct.

2.3.2 Italian

In this section I will discuss Belletti’s (1990) study on verb movement in Italian and conclude that, at least from a purely distributional point of view, it does not provide convincing evidence for splitting up IP into two or more functional projections.

Belletti points out that the Italian negation marker acts as a clitic. In finite as well as infinitive clauses, we find it left-adjacent to the verb.

(42)  

a. Maria non parlava di lui

\text{maria not talked of him}
b. Gianni ha deciso di non tornare
   
   Gianni has decided to not come back

Whether *non* is base-generated onto the verb or syntactically moves and adjoins to it, it is useless as a diagnostic for verb movement. Therefore, we have to look closely at adverbs in order to detect verb movement operations. Belletti distinguishes three classes of adverbs:

(43) a. Sentence adverbs like *probabilmente* ‘probably’, *evidentemente* ‘evidently’, etc.
   b. Negative adverbs: *più* ‘anymore’, *mai* ‘ever’, *ancora* ‘yet’, etc.\(^9\)
   c. ‘Lower’ adverbs: *spesso* ‘often’ and *completamente* ‘completely’, etc.

Let us discuss each set in turn and establish to what extent they tell us something about verb movement.

Sentence adverbs usually occur sentence-initially or sentence-finally. In the latter case, a noticeable pause must precede them, indicating that they are dislocated.

(44) a. Probabilmente/evidentemente Gianni telefonerà alle 5
   *probably Gianni will call at 5*
   b. Gianni telefonerà alle 5, probabilmente/evidentemente

Obviously, these patterns tell us nothing about verb movement. Sentence adverbs can also follow auxiliaries, as shown in (45):

(45) Maria ha evidentemente rivelato il segreto
   *Maria has evidently told the secret*

We already concluded from the discussion of Pollock’s analysis that these cases do not necessarily involve movement of the finite verb over the adverb: Since there are two verbal heads, there might be two VPs. For (45) one could hypothesize that *evidentemente* is adjoined to the projection of the main verb, so that no movement has to be assumed. All in all, sentence adverbs are unrevealing in the search for verb movement.

Alternatively, sentence adverbs can also show up between the subject and the auxiliary:

---

\(^9\) Negative adverbs are so called because they co-occur with the negation marker *non* and hence seem similar to French *plus* and *rien*. These adverbs seem to have positive (‘reinforcing’) counterparts (*pur* ‘indeed’, *ben* ‘already’) which do not require the presence of negation. They have more or less the same distribution as negative adverbs.
Verb movement and functional projection

(46) Maria evidentemente ha rivelato il segreto
   Maria evidently has told the secret

Belletti argues that the subject has been topicalized or left-dislocated in these examples. If it is topicalized, it receives stress. Now, indefinite quanifiers like  nessuno ‘nobody’ cannot be left-dislocated in Italian. Hence, it is predicted that the order Subject_{left} - Adv –auxiliary is only possible with contrastive stress on the subject, as is indeed the case:

(47) NESSUNO/*Nessuno probabilmente ha sbagliato
    Nobody probably has mistaken

Therefore the order in (46) does not arise as a consequence of verb movement crossing evidamente failing to apply overtly.

Negative adverbs are more interesting, as will become clear. I will start out by presenting Belletti’s most complex structure first (which includes at least five functional projections) and establish what minimally has to be said in order to account for the word order patterns found in Italian. From there, I turn to the simpler cases and show that all patterns can be made to follow by assuming one verb movement only.

In complex tenses, negative adverbs show up in two positions: between the auxiliary and the participial verb (cf. 48a) or after the participial verb (cf. 48b).

(48) a. Gianni non ha più parlato
    Gianni not has anymore talked
 b. Gianni non ha parlato più

According to Belletti, negative adverbs can be generated in the specifier position of NegP, situated between AgrP and TP or adjoined to the VP. The structure she proposes is the one in (49). What happens is that the auxiliary moves through T to Agr and the participial moves from its base position to lower Agr (which might include Aspect). When the negative adverb is generated in spec-NegP, the order in (48a) is obtained, whereas (48b) surfaces when it is adjoined to VP.
Recall from the discussion of French that we accepted the head-adjunction analysis as a possible alternative to movement in those cases where both verb-adverb and adverb-verb orders are attested. This is again what we find here. Like Belletti, we can assume that adverbs like più appear in two positions but without reference to any functional projection. By assuming that più can be adjoined to the verb in the morphological component, (48b) is accounted for. The order in (48a) arises when più is left-adjoined to the projection of the main verb. In short, the patterns in (48) do not necessarily provide any distributional evidence for verb movement.

In order to see whether negative adverbs can be used as a diagnostic for verb movement, we should look at simplex tenses instead. Here we find that finite verbs cannot follow negative adverbs, as can be observed in (50).

(50)  

a. Gianni non parla più  
*Gianni non parlerà più* 

b. *Gianni non più parla*
If VP-adjunction is generally an option for negative adverbs, given (48a), the examples in (50) show us that the verb must have moved to a VP-external position. Hence, the data in (50) again provide evidence for one head position c-commanding the predicate: They do not provide distributional evidence for the existence of a second head position, however, as in Belletti’s analysis.

Let us now turn to the third class of adverbs. ‘Lower’ adverbs are so called because they cannot be generated as high as sentential adverbs, i.e. clause-initially. Their distribution runs more or less parallel to that of negative adverbs, although idiosyncratic behaviour seems more common within this class. The adverb completamente ‘completely’ can precede or follow a participial verb (cf. 51). The same is true for floating quantifiers (cf. 52).

(51) a. (In quelle circostanze) Gianni ha completamente sbagliato

   in those circumstances Gianni has completely mistaken

b. Quel dottore ha risolto completamente I tuoi problemi

   that doctor has solved completely your problems (minimal pair!)

(52) Gli invitati hanno (?tutti) salutato (tutti) Maria

   the guests have all greeted all Maria

---

10 For some unclear reason, spesso ‘often’ cannot occur between the auxiliary and the participial verb, like completamente in (49a), as shown in (i).

(i) *(In quelle circostanze) Gianni ha spesso sbagliato

   in those circumstances Gianni has often mistaken

On the other hand, the distribution of spesso is larger than that of completamente in that it can precede finite verbs and even appear clause-initially:

(ii) Gianni spesso/compleamente sbaglia

   Gianni often makes mistakes

(iii) Spesso/compleamente Gianni sbaglia

Belletti argues that in (ii) and (iii) spesso has been topicalized, followed by left-dislocation of the subject in (i). This analysis then correctly predicts that topicalization of another constituent is effectively blocked:

(iv) *MARIA (spesso) Gianni (spesso) incontra in vacanza

   Maria often Gianni often meets on vacation

Given (i), however, Belletti is forced to assume that for some reason spesso cannot, like completamente, be adjoined to TP or AgrP. The non-movement analysis must state that spesso cannot adjoin to VP. In both analysis, the different behaviour of the two adverbs does not receive a straightforward analysis.
Note that, again, finite verbs must obligatorily precede these elements, which is expected when they always move to a VP-external position:

\[(53)\]
\[
\begin{align*}
a. & \quad \text{Gli invitati (\text{*tutti}) salutarono (\text{tutti}) Maria} \\
& \quad \text{the guests all greeted all Maria} \\
& \quad \text{Gianni completamente sbaglia} \\
& \quad \text{Gianni completely makes mistakes}
\end{align*}
\]

Therefore, lower adverbs, just like negative adverbs, provide evidence for one verb movement operation. So far, Italian runs completely parallel to French, the only difference being that the positions in which adverbs are generated seem to be somewhat different. There is, however, one important difference. Infinitives, like finite verbs, obligatorily precede those elements that participial heads can follow (namely negative and lower adverbs, as well as floating quantifiers).

\[(54)\]
\[
\begin{align*}
a. & \quad \text{Gianni ha deciso di non (\text{*più}) tornare (\text{più})} \\
& \quad \text{Gianni has decided to not anymore come-back anymore} \\
& \quad \text{Quel medico sostiene di (\text{*completamente}) risolvere (completamente)} \\
& \quad \text{that doctor claims to completely solve completely the problems of his patients} \\
& \quad \text{Quel medici pensano di (\text{*tutti}) risolvere (tutti) il difficile problema di quel paziente} \\
& \quad \text{those doctors think to all solve all the hard problem of that patient}
\end{align*}
\]

In other words, given the impossibility of the \textit{adverb-infinitive} order, we are forced to conclude that in Italian, unlike in French, infinitives obligatorily move, just like tensed verbs. Since the distribution of finite verbs and infinitives looks identical, there is no reason from a distributional point of view to postulate an additional head position. In other words, it depends on your theory whether the landing site for finite verbs and infinitives should be conceived of as one and the same. It seems impossible to distinguish them empirically. I will have little to say about infinitival movement and focus instead on the verb movement taking place in declarative clauses.

Zooming in on adverb placement in Italian, we conclude that again distributional evidence for one functional projection in declaratives can be obtained. Hence, the same conclusions we reached earlier for French can be extended to this language.
2.4 Non-distributional evidence

On the basis of observable verb movement operation evidence can be obtained for two functional projections, IP and CP. Of course, verb movement is not the only motivation that can be used for postulating functional structure. It is very common that functional projections must be assumed because some theoretical assumption leaves no other choice. I will give two examples of such theory-internal motivation that I think are representative and influential, namely the spec-head configuration and Kayne's (1994) antisymmetry hypothesis.

It has been observed that a pervasive subset of syntactic relations is encoded in the form of a spec-head configuration. This has led to the assumption that this structural template is a prominent, if not the only, mechanism of the computational system to encode dependencies. In Chomsky (1995), a spec-head configuration is the quintessential domain for feature checking. It is even suggested that anaphoric binding, a relation between two maximal categories, can be viewed as another instantiation of a spec-head relationship (cf. Reuland 1998 for instance). Taken to its extreme, every syntactic dependency requires the presence of a functional projection. Under this view, Pollock's (1989) split-IP hypothesis is granted strong conceptual support, despite the lack of strong empirical motivation. Although not identical but at least in the same spirit is Rizzi's (1995) proposal to split up CP into several functional projections, which he labels ForceP, TopP, FocP and FinP. On the basis of this structure, Rizzi is able to account for a cluster of data from Italian, French and English involving WH-movement, focus fronting, topicalization. Considerable attention is paid to (im)possible word orders that arise when these operations apply simultaneously. Although Rizzi is keen to point out the empirical advantages, the core reason for postulating FPs rather than attempting an analysis involving one or more adjunction operations is conceptual. He assumes that the movement operations referred to have to satisfy some criterion. The fronted XP must end up in the specifier position of a head carrying similar features. This conceptual assumption implies that all XP-fronting operations provide evidence for a specific functional projection, even if there is no accompanying verb movement.

Kayne (1994) proposes that word order is determined by what he calls the Linear Correspondence Axiom (LCA). The basic idea is that two elements, \( \alpha \) and \( \beta \), can be ordered as \( \alpha \) preceding \( \beta \) if and only if \( \alpha \) asymmetrically c-commands \( \beta \). The most important consequence of this proposal is that, universally, a specifier is generated to the left of a head, whereas a complement is always generated on the right of a head, as in (53):
Any deviation from this general pattern will lead to an ordering conflict at PF. The hypothesis that the language system only generates head-initial projections has consequences for the analysis of for instance verb-final clauses. Dutch embedded clauses, in which the verb follows the object, can no longer be analyzed as containing a head-final VP, as in (54a), but must involve leftward movement of the object to some specifier position. Zwart (1993, 1996) analyzes the landing site as spec-Agr$_o$ (cf. 56b).

If we are forced to analyze OV orders as involving leftward movement of the object, the order itself provides evidence for the presence of a functional projection. There are reasons to assume that the verb does not move to Agr$_o$ in overt syntax. Dutch allows objects to scramble across adverbs.

(57)  a.  dat Jan altijd jouw naam noemt  
\[that \ Jan \ always \ your \ name \ mentions\]
Zwart (1993, 1996) proposes that the object obligatory moves to spec-Agr,P. What differs is the attachment site of the adverbial. Since structure in (56b) consists of two projections, adverbs can be adjoined to Agr,P, leading to the unscrambled order, or to VP, leading to the scrambled order. Note that the verb follows the adverb in both cases, so that it cannot have left VP. Since the presence of Agr_o is neither morphologically motivated nor ever overtly filled here, this head position is postulated in order to circumvent having to generate an OV base order, which makes its motivation conceptual.

An even more far-reaching consequence of the LCA is the fact that adjunction to a maximal projection, as in (58), is ruled out.

\[ (58) \]

The point is that YP and ZP are in a mutual c-command relation and therefore cannot be ordered with respect to one another. A prototypical example of the structure in (58) would be that of an adverb left-adjoined to VP. The alternative analysis compatible with the LCA is one in which the adverb occupies the specifier projection of another functional projection, as in (59):\(^{11}\)

\[ (59) \]

\(^{11}\) The restriction is not entirely correctly stated. In Kayne's theory, specifiers are adjuncts and X' is XP. In that case, what the LCA prohibits is multiple adjunction. This difference does not affect the point made in the main text, however.
Under the LCA, constituents that look like they are adjoined to a maximal projection in fact provide evidence for the presence of a functional category. For adverbs, this line of reasoning has been worked out in detail by Cinque (1997), who indeed proposes a significant number of functional projections designed for adverb placement.

Since the motivation for additional head positions is largely conceptual in the above-mentioned proposals, presenting empirical counterexamples is unlikely to have an impressive effect. They could be considered nothing more than interesting problems which the conceptual change in the theory has to face. Two remarks are in order.

First of all, the advantages of both a uniform spec-head template (either formulated in terms of checking or criteria) and the LCA are a simplification of the base. In checking theory, for instance, syntactic dependencies only come in one shape, that of a spec-head configuration. This means that c-command, m-command and government can be dispensed with. Under the LCA, all projections are head-initial and no parametrization has to be postulated in this area. It is not true, however, that there is no cost attached to these simplifications. Note that both checking theory as defined above and Kayne's LCA lead to a proliferation of functional structure. It is far from clear what mechanism constrains the expansion of the functional domain, if any. As a result, it becomes harder to empirically falsify theoretical claims. Neeleman & Weerman (1999) for example observe that in many languages thematic relations hold exclusively between traces, since all arguments, as well as the verb, have left VP, thereby making it hard to test claims about theta theory. In short, it is far from clear that the effect of these theoretical proposals is an overall simplification of the grammar: There is a trade-off. Since alternative proposals are readily available, it is an empirical issue whether extra FPs are required to account for the facts.

Second, even if these FPs are necessary, it is not obvious that they are relevant for the main goal of this thesis, which is to offer explanations for parametric differences in verb placement. If we want to understand the nature of overt verb movement, we must look at instances where we find clear parametrization (recall the remarks concerning V to v movement). When the motivation for functional projections is largely conceptual, the relation with verb movement parametrization is not always straightforward. The distributional evidence for Agr, in French, for instance, was not very strong (cf. section 2.2). We just saw that this head is not overtly filled in Dutch either. This makes Agr, an unsuitable candidate for the questions put central in this thesis. Likewise, of the projections involved in Rizzi's split-CP hypothesis, only wh-
Verb movement and functional projection

fronting triggers overt verb movement. Rizzi stipulates that the finite verb carries a WH-feature and must move to the head FocP to satisfy the WH-criterion. For the other projections, TopP and FocP, the head inherently carries a topic- or focus feature, so that verb movement seems entirely unnecessary. This entails that at least part of the C-system as proposed by Rizzi cannot be seen as extended projections of the verbal domain, to borrow Grimshaw's (1991) terminology. Hence, it is expected that the head positions are inaccessible for the finite verb. If so, we can safely ignore them for the moment since the enterprise is to develop a theory of verb movement parametrization not to develop a theory of functional structure in general, a far more ambitious task.

Given these considerations, I believe it is methodologically justified to largely ignore functional projections that have been motivated on conceptual grounds and try to account for verb movement phenomena that are less controversial and for which the evidence is more direct. Even if we accept the existence of more functional structure, it is an unreliable basis on which to formulate a theory of verb movement parametrization.

3. Previous theoretical accounts

Having established the basic empirical data, I will now discuss how the relation between functional structure and verb movement has previously been conceived of from a theoretical perspective. The task is to find out to what extent approaches have explained verb movement parametrization. In this section I will discuss two dominant views on the nature of functional projections. One hypothesis has it that functional heads contain morphological affixes. This view, which I will refer to as the Morphological Head Hypothesis (MHH), will be discussed in section 3.1. Under another view, functional projections are headed by empty categories containing abstract features, the Abstract Head Hypothesis (AHH). Its best known implementation, checking theory, will be reviewed in section 3.2. The conclusion will be that both views fail to provide satisfactory answers to the questions we put central in section 1. A prominent factor that seems to resist a unification of V to I and V to C is that the former is directly related to morphology (in the sense that rich agreement triggers movement) whereas this is not apparent for the latter. This dichotomy between the two verb movement operations is not predicted by either the MHH or the AHH and hence not straightforwardly accounted for.

3.1 The Morphological Head Hypothesis

One of the earliest, and by no means archaic (cf. Bobaljik 1995), ideas about the role of functional projections is that they contain morphological information that must be
related to the verb in some way at surface structure (see for instance Chomsky 1957; Emonds 1976). If functional heads contain actual morphological affixes that have to be spelled out on the verb, it will be clear that functional structure plays a vivid role in overt syntax. Under the assumption that a suffix is generated in a position distinct from the verb, it follows that some rule must ensure that the two are united. Second, since the affix must be present in overt syntax (otherwise we would not see it) such a rule must apply before spell-out. The rule that springs to mind, of course, is verb movement.

We have already seen a clear case where the verb is caused to move in order to pick up affixes that are generated in a higher position. Belletti (1990) argues for Italian that Agr,P dominates TP, as illustrated in (60).

(60)

```
Agr,P
  \   / \\
 Gianni \ / Agr,‘
   \   /   \
    Agr, T
     -no V
         -eva
             legg-
```

Under the hypothesis that affixes cannot float around in syntactic structure, most obviously for phonological reasons, (60) is ruled out by for instance Lasnik’s (1981) Stray Affix Filter if nothing happens. Successive-cyclic movement of the verb to T and Agr, will bind the suffixes and consequently bring about the correct order of affixes, as can be observed from (61).

(61)

```
Legg-eva-no
read-imperfect-3rd plural
```

In short, the hypothesis that affixes reside in functional slots but have to be bound before spell-out explains why verb movement takes place. Moreover, from the order of affixes on the verb we can derive the order of functional projections in syntax, a hypothesis most explicitly expressed by Baker’s (1985) Mirror Principle.
(62)  

The Mirror Principle
Morphological derivations must directly reflect syntactic derivations (and vice versa).

(Baker 1985:275)

Note that the Mirror Principle is not intended as a syntactic explanation of the order of affixes we find on the inflected verb. It merely hypothesizes that there is a correlation between syntax and morphology in this respect. An independent explanation is needed to derive the syntactic ranking that is postulated. All things being equal, then, it is not clear that the order of affixes has to be derived through syntax. If stating the correct order is what is at stake, lexical rules can do the same. We could for instance state that a verb selects a tense affix, which in turn selects an agreement affix. Under this approach the question becomes not why the order of functional projections is as it is but why the subcategorization frames are as they are.

Under the lexical account of affixation, it trivially follows that we see the affixes on the verb overtly: That is how the inflected verb is inserted in syntax after application of lexical rules. The syntactic account at least raises the question of why affixes would have to be generated in a VP-external position in the first place. Without a clear answer to this, one might justifiably ask whether the empirical evidence really leads us to assume that. Strong support for the VP-external generation of inflectional verbal morphology would be if its presence always triggers verb movement. In that case, the lexical account would have to formulate a trigger for verb movement, something that automatically follows from the syntactic account of inflection. I believe that such strong support is lacking. Although Italian can be seen as directly supporting the syntactic approach, the hypothesis is too strong in the following two respects:

(63)  

a. Realization of a verbal position external to VP does not always coincide with the presence of overt morphology.

b. The presence of overt morphology on the verb does not always trigger verb movement.

Let us first turn to (63a). As an illustration, it can be pointed out that in languages that have both V to I and V to C movement (for instance Icelandic), the verb looks the same whether it is in I or C. Under the standard assumption that tense and agreement affixes reside in I (or in T and Agr,P respectively), it remains unclear what triggers V to C movement. There is no apparent affix to be picked up (cf. also Koopman 1984:149 and Bobaljik 1995:299 for this point). The same argument can be made for ‘short verb movement’ to Agr_o, as postulated by Pollock (1989). Although infinitives are taken to optionally move to this head, and all finite verbs pass through it, French lacks object agreement on the verb, at least in declarative clauses. Even if short verb movement is
real, the morphological support for labeling the head position Agr of is poor. This, then, again begs the question as to what would trigger the movement.

In fact, the weakness of a link between movement and morphological material is even apparent from IP/TP in English. Although there is a good deal of support for the presence of a functional head position c-commanding the predicate, it is not obvious that it should contain morphological content. The observation is that there is a class of elements (consisting of modals, auxiliaries have and be, a form of do and an infinitival particle to) that show some common behaviour. They can all precede negation (cf. 64), and support VP-ellipsis (cf. 65). Besides, these elements are mutually exclusive (cf. 66):

(64) a. John will not go to work today
    b. John does not go to work today
    c. John decided to not go to work

(65) a. Mary has gone to work but I don’t think John will
    b. Mary likes work but I don’t think that John does
    c. Mary decided to go to work, but John decided not to

(66) a. *Mary decided to will work today
    b. *Mary will have not gone to work

Since these elements divide across the [±Tense] distinction, one could postulate a functional head T above negation which can host all of these elements, but only one at the time.\(^{13}\) Showing that these elements can all appear in a particular slot, however, does not reveal that there is an actual Tense morpheme that needs to be picked up. In any case, the Tense affix should be something abstract, perhaps phonologically corresponding to –\(p\), since one cannot isolate clear [±Past] affixes on the basis of the diverse verbal elements that can occupy T (am, have, will, was, might, etc.). The same point must be made for realization of agreement, whether realized in T or somewhere else. If some projection were to host an actual morpheme –\(s\), one would expect it to show up on modals, contrary to fact (witness *may-s). Again, agreement does not

---

\(^{13}\) Note that the evidence for TP in English does not rely on movement per se, since the elements residing in it could be base-generated in this position. Of course, this still counts as distributional evidence. Note, however, that the reasons for postulating TP seem rather unique to English. In a language like Dutch, for instance, the infinitival marker te cannot be separated from the verb (or verbal cluster). Verbs like zullen ‘will’ and moeten ‘must’ have infinitival forms that can freely co-occur and be combined with te. Moreover, it does not have VP-ellipsis in the same way. This conjures up the question whether, despite the lack of evidence, a TP projection must be assumed for Dutch. Reuland 1990 as well as van Gelderen 1993 bring up this similar point. If languages can lack TP altogether it again casts doubt on the hypothesis that tense affixes, or affixes in general, are generated in a VP-external position.
correspond with a unique affix and must be something more abstract. In order to uphold the view that functional heads contain actual morphological affixes, one is forced to assume quite a number of distinct null affixes in order to deal with examples of (63a). This begs the question whether functional heads should be morphologically motivated.

Let us now turn to (63b), cases where morphology does not trigger movement. Straightforward examples are Germanic languages with overt agreement morphology that nevertheless leave the verb in situ in non-V2 contexts. A clear example is Hallingdal Norwegian (cf. Holmberg & Platzack 1991). The agreement paradigm looks as in (67):

\[
\begin{array}{c|cc}
  & \text{SG} & \text{PL} \\
1\text{st} & \text{kasta} & \text{kastæ} \\
2\text{nd} & \text{kasta} & \text{kastæ} \\
3\text{rd} & \text{kastar} & \text{kaste}
\end{array}
\]

Nevertheless, the finite verb remains in situ, as can be concluded from looking at embedded clauses, where verb second fails to apply:

\[
\begin{array}{cc}
(68) & \text{Noko gamlæ mænna som ikki haddæ vore mæ ve kyrkja} \\
 & \text{some old men who not had been along at church}
\end{array}
\]

Apparently, non-movement does not neatly correlate with absence of verbal morphology. Another example showing the same is English clauses without not, where again the verb remains in situ in spite of its carrying tense or agreement inflection:

\[
\begin{array}{ll}
(69) & a. \text{John probably/often stayed at home} \\
 & b. \text{John probably knows too much}
\end{array}
\]

If morphology is generated in a VP-external position, it remains unclear how it can be spelled out on the verb if the latter remains in its base position.

There are two ways of upholding the affixal view on functional projections and deal with problem (63b). The first is to assume a rule of affix lowering. In those languages where presence of verbal morphology does not lead to movement of the verb to the affix, the affix lowers onto the verb. This option is not taken very seriously anymore, given the pervasive property of language that movement only seems to take place to a c-commanding position. Second, one might argue that movement is not the only way in which the affix and verb can be brought together. Since PF is the level at which Lasnik’s (1981) Stray Affix Filter most naturally holds, PF adjacency might suffice to ensure that the verb and its affix are spelled out as one unit. Bobaljik (1995)
and Bobaljik & Thrainsson (1998) exploit this idea in an original and interesting way. I refer to these proposals as the 'PF-adjacency approaches'. What they propose is that a language with agreement and no verb movement has a structure as in (70). Since no element intervenes between I and V, they will be adjacent at PF and can hence be spelled out appropriately:\footnote{Two additional assumptions are needed, however. First, since a one to one mapping from syntax to phonology would produce the order I-V, some phonological readjustment rule must be postulated in order to derive the correct order, V-I. Second, adverbs must be PF-invisible for some reason. They apparently do not disrupt PF-adjacency, given examples like (69).}

\[(70)\]

\[
\text{IP} \quad \text{spec} \quad I' \quad \text{VP} \quad V \quad \text{DP}
\]

The proposal is that a language with overt verb movement should be characterized as one in which an affix is not adjacent to the verb at PF:\footnote{In fact, it is not compulsory for a 'PF adjacency approach' to look upon functional projections as containing real affixes. An alternative view, which Bobaljik & Thrainsson (1998) explicitly mention, is to say that adjacency is required for feature checking to take place. In (70) the verb can check its features with I in situ, whereas the Agr\textsubscript{P} features in (71) are not local enough with respect to the verb. Under the checking approach, verb movement is still triggered in (71) only.} This typically is the case when another projection intervenes. A language like Icelandic, then, must have a split-IP, at least consisting of Agr\textsubscript{P} and TP. In (71), Agr\textsubscript{s} is not syntactically adjacent to the verb in its base position, since T intervenes. As a consequence, the verb has to move, at least to T, in order to get adjacent to Agr\textsubscript{s}.}
Under this theory, then, one verb movement signals the presence of (at least) two, rather than one, functional projection dominating VP. Support for this approach over one that takes verb movement as indicative of only one functional projection should then come from showing that there are indeed two. Note that, under the assumption that a subject obligatorily moves to spec-Agr,P in a structure like (71), spec-TP will at most contain a subject trace. Hence, no immediate distributional evidence can be obtained from either head or XP-movement that a language like Icelandic has at least two projections between CP and VP.

As most direct evidence for their claim, Bobaljik & Thrainsson argue that the difference between (70) and (71) accounts for the (im)possibility of having expletive constructions with transitive predicates, a contrast exemplified by Icelandic (cf. 72a) and Danish (cf. 72b) below:

(72) a. Pað hafa margir jólasveinar bordað búðing
    there have many Santa Clauses eaten pudding
    Icelandic
b. *Der har nogen spist et æble
    *there has someone eaten an apple
    Danish

---

16 Bobaljik & Thrainsson assume that Icelandic also has Agr,P between TP and VP, which under their view accounts for the fact that it has object shift. Excluding this projection here does not affect the discussion. See chapter 4, footnote 26, however, for some remarks.
The contrast in (72) follows under the assumption that Icelandic has two specifier positions available, spec-Agr,P for the expletive and spec-TP for the subject (cf. 71), whereas these constituents strive for the same position, namely spec-IP, in Danish (cf. 70). Thus, the different structures do not only account for the verb movement difference between Icelandic and Swedish, but also for the contrast in (72). Since Icelandic has a more richly structured I-domain, including two functional specifier positions, generation of a transitive expletive construction (henceforth TEC) becomes possible.

In short, Bobaljik’s and Bobaljik & Thráinsson’s analyses provide a way of upholding the claim that functional heads are filled by affixes even though some languages have inflected verbs in the absence of verb movement. The PF-adjacency account hence overcomes the problem stated in (63b). Three remarks are in order, however.

First of all, the other problem of a generalized morphological approach to functional structure, mentioned in (63a), still stands. Like in earlier analyses, overt verb movement to C is not triggered by the need to pick up some overt affix. This again highlights the fact that morphology cannot underlie overt verb movement in general but at most a subset of verb movement operations. Let me make explicit that it is not the intention of either analysis to overcome this problem in the first place. It only shows that they also need to resort to abstract morphology to account for verb second effects. This entails that the difference between verb second and no verb second remains obscure, as Bobaljik (1995:283, fn. 26) explicitly mentions.

Second, in both analyses overt V to I movement indicates the presence of at least two functional projections, including two specifier positions, although the movement itself only reveals one functional head position. The (im)possibility of TECs functions as independent evidence for this claim. However, there is reason to doubt the validity of the correlation between overt V to I and the presence of TECs. Vikner (1990, 1995) observes that these constructions are allowed in a language if it has both V to I and V to C movement: Two overt verb movement operations are required. The contrast in (72) then still follows, since Danish has verb second but lacks V to I, unlike Icelandic. If Vikner is right, however, and verb second is a relevant factor, it is not two specifier positions in the I-domain that are relevant (namely spec-Agr, and spec-TP) but rather spec-IP and spec-CP. This view will in fact be defended in chapter 4, which aims at deriving Vikner’s generalization. It will be clear that under this analysis the independent evidence for the claim that overt V to I reveals the presence of two functional projections within this domain disappears.

Third, differences in verb placement remain ultimately underived. Even if the hypothesis is correct that inflectional morphology is syntactically generated in a VP-external position and thus can trigger verb movement, the question remains why this should be so. Of course, it could simply be the way language works. Suppose it is. The
PF-adjacency approach then relates the distinction in verb placement to an underlying structural difference, namely the size of the I-domain. By this, however, the question about the nature of the verb movement parameter is simply shifted back: Icelandic has V to I since it has a more developed I-domain than Danish. The question remains what causes the difference in structural size.

A potential factor might be the number of affixes realized on the verb. Bobaljik & Jonas (1996) and Bobaljik (1995) observe that in a language with a simplex IP the agreement affix disappears in the past tense, where no -s is spelled out in third person singular contexts (see also Vikner 1997). In a language with a split-IP domain like Icelandic, on the other hand, both tense and agreement affixes show up.

The contrast correlates nicely with the structural difference observed. English has one functional slot and is able to fit in one but not two affixes. Consequently, realization of past tense blocks realization of agreement and we observe only one affix in the past tense. Since Icelandic has two inflectional head positions, both affixes can be inserted without any problem and past tense does not block realization of agreement.

Although the correlation between morphology and syntax is a very interesting one and potentially significant, I reject the claim that morphology actually determines the functional make-up of a clause for the following reason. If morphology is the crucial factor determining the number of functional projections in the I-domain, it turns out to be a rather unreliable cue. A language like Yiddish, for instance, does not have a

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17 In chapter 1, Bobaljik (1995) tries to derive the correlation between morphology and syntactic movement by indeed proposing that morphology determines the syntax. Assuming a universal structure, he argues that in languages with complementary tense and agreement morphology, the syntax must make sure that the functional T and Agr nodes become one (through movement) before morphological affixes are inserted (post-syntactically). In chapter 5 he rejects this idea but for a different and more conceptual reason than the one mentioned in the main text. The chapter 1 proposal entails that morphology actually determines that syntactic T-to-Agr must take place and that syntax must therefore be able to ‘peek into’ morphology. Such a look-ahead strategy is generally considered an undesirable property of a model of grammar.
simple past tense but uses a periphrastic (auxiliary) construction instead. Therefore, the
morphology of this language does not motivate a split-IP. Nevertheless it should have
one, given that transitive expletive constructions are possible:

(74) Es hot imitser gegesn an epl  
Yiddish
there has someone eaten an apple

Bobaljik (1995) notes this and suggests that a language (by default) has a split-IP
domain, unless tense morphology blocks agreement morphology. This, however, raises
a problem for Afrikaans. Like Yiddish, this language expresses past tense forms
periphrastically. Nevertheless, it does not allow transitive expletive constructions:

(75) *Daar het baie mense baie bier gedrink  
Afrikaans
there have many people much beer drunk

Even more strongly, in Mainland Scandinavian, morphology should block a split-IP, as
transitive expletive constructions are ungrammatical (cf. 72b). However, languages like
Danish and Swedish do not show any person/number distinctions in the present tense.
Assuming that they therefore lack subject agreement altogether, there is no morphology
that past tense will block. Hence, morphology in Mainland Scandinavian cannot be
factor determining the size of the functional domain under the reversed generalization.

I therefore conclude that the paradigm structures in (73) are at most
compatible with the syntactic structures postulated for English and Icelandic
respectively but do not support a stronger hypothesis according to which morphology
actually determines the distinction between split- or unsplit-IP. This means that the
cause for the choice languages have between generating a split- or an unsplit-IP
remains undetermined.

To sum up this section, we have seen that a one to one correspondence between
functional heads and morphological affixes breaks down on many occasions. The
predictions made by the MHH are both too broad and too narrow. We saw that
inflection can show up on the verb even if it has not moved. Although Bobaljik and
Bobaljik & Thráinsson formulate an answer to this question, the analysis they propose
does not make the distinction in verb placement less arbitrary: They only shift the locus
of parametrization to a difference in structural size and it remains unclear which factor
determines the choice between a simple or split-IP. Second, abstract morphology is
postulated for triggering verb movement to C. Since there is nothing in the system that
that determines when verb movement is triggered by overt morphology and when by
abstract morphology, the MHH can only deal with the dichotomy between V to I and V
to C in an ad hoc way.
3.2 The Abstract Head Hypothesis

In this section, I will relate the presence of functional structure to overt movement from the viewpoint of checking theory and conclude that this relation is only sketchily defined. The consequence is that it is unclear to what extent checking theory serves as an explanation for verb movement parametrization across languages.

In a way, checking theory can be seen as an attempt to overcome the shortcomings of the morphological approach discussed in the previous section. Functional head positions like Agr or T do not host morphological material since the verb enters the syntactic structure fully inflected. Instead, all functional heads contain abstract features and there is no longer a distinction between the I- and C-domain in this respect.\(^\text{18}\) The features present in functional heads come in two kinds, verbal and nominal, and these have to be 'checked off' against lexical elements at some point in the derivation. Every functional projection has a head position, to which the verb can adjoin, and a specifier position, which can host a maximal projection. The idea is that specifier-head agreement establishes, through F, a match between the verb adjoined to the functional head and the maximal projection in the specifier position:

\[
\begin{array}{c}
\text{FP} \\
\text{XP} \\
F \\
F \\
F & V
\end{array}
\]

Additional properties of functional heads cause word order differences between languages. A verb for instance is forced to move overtly to a functional head position if this position contains a strong verbal feature. If F has a strong nominal feature, some XP must be overtly realized in spec-FP, either by merging or moving it into this position. Checking theory does not dictate that head positions must be filled overtly. If therefore the verbal feature of F is weak, the verb is not forced to move overtly. This does not entail that no dependency relation is established at all. It means that this movement takes place covertly, after the syntactic structure has been spelled out. Likewise, no XP is forced to move overtly to spec-FP if F has a weak nominal feature.

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\(^\text{18}\) The conceptual advantage is very limited though. Now, the question is why abstract features in the I-domain are associated with overt morphology in such a way that the correlation can be derived, in contrast to those in the C-domain.
Let us see how this works with a concrete example, the V to I parameter. If one controls for verb second, Icelandic can be shown to have another overt verb movement, V to I, in contrast to Danish. In terms of checking theory, the difference in verb placement would arise as follows. Both languages are alike in that Agr, the head we will use for illustrative purposes, has a strong nominal feature. Hence, the subject is overtly realized in spec-Agr. In Icelandic, however, Agr also has a strong verbal feature. Hence, the verb must move overtly to this head, thereby crossing adverbs that are presumably adjoined to VP:

(77)

In Danish, on the other hand, Agr, has a weak verbal feature. Hence, the verb will stay in its base position in overt syntax and will only move after the structure has already been spelled out. For this reason, we see it in a position following the adverb. This approach to verb movement parametrization has been worked out in detail by Zwart (1993, 1996), among others.

Although the strong/weak dichotomy provides the tools for describing word order variation, it does not in itself explain it. As it stands, the distinction between strong and weak features is completely arbitrary and not related to overt morphology. Although observations concerning for instance V to I movement may have initially led to this hope, the hypothesis is immediately falsified by V to C movement. Hence, in the absence of clear definitions of strong and weak, no testable predictions about overt verb movement can be formulated. It is therefore fair to say that in its formulation described above checking theory does not provide any real insight into verb movement parametrization.

In Chomsky (1998) checking theory is redefined in such a way that verb movement no longer plays any role in it. This reduces our understanding of language variation in this area even further. Chomsky postulates the notion AGREE, which refers to the 'matching' relation between the merged element, α, and some β that resides in

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19 This leaves open the possibilities that the subject is merged in this position or that it has moved here from a lower position in the structure, for instance spec-VP. The choice is not relevant for the discussion.
the piece of structure that $\alpha$ is merged with. In order to establish a match, $\alpha$ and $\beta$ must satisfy some locality condition, which reduces to "closest c-command": A merged element cannot enter an AGREE relation with some $\beta$ it c-commands, if there is another matching element in $\alpha$'s sister which c-commands $\beta$. When merged with a predicate, a subject can enter into an AGREE relation with the verb, since this head is the closest head in the complement of the subject that it can agree with. Consequently, no specifier-head configuration needs to be established for that and verb movement is redundant. When merged in the structure, $T$ can AGREE with its sister and everything that this sister dominates. Hence, $T$ can check all the features it wants to check with $V$, even if the latter remains in situ. Hence, it remains unclear why the verb would ever move.

Chomsky suggests (p. 32, footnote 69) that this phenomenon might be located in the phonological domain: Movement of the verb is not syntactically triggered. At least at this point, it is not obvious how to formulate phonological triggers that provide insight into the verb movement parametrization that we observe. How, for example, do we state the observed correlation with rich agreement? Why was verb second lost in English and not in Swedish? Moreover, verb movement parameters correlate with other syntactic phenomena. Recall that transitive expletive constructions only seem to occur in languages that have both V to I as well as verb second (see also chapter 4). As will become clear later, the loss of verb second in English coincides with the rise of do-support in negative contexts and VP-ellipsis. If verb movement parameters are truly phonological in nature, such effects on syntax are rather unexpected.

To conclude, the hypothesis that functional structure consists of projections from empty functional heads does not obviously provide insight into the nature of verb movement parametrization. The most influential theoretical proposal, checking theory, makes use of a strong/weak dichotomy to account for word order differences: Strong features in a functional head trigger overt movement, weak features trigger covert movement. As it stands, it is unclear how this theory would formulate testable predictions about verb placement instead of locating strong features on an ad hoc basis. Since 'strong' does not obviously correlate with 'overt morphology', the fact that rich agreement seems to trigger overt verb movement is merely coincidental. Therefore, the AHH has little to say about the dichotomy between V to I and V to C, like the MHH.

4. Discussion

I will now present the alternative proposal on verb movement and functional structure again but this time the light of the data from section 2 and the theoretical accounts sketched in section 3. We have seen that distributional data motivate an underlying tree structure in which VP is dominated by two functional projections, IP and CP:
I is the landing site for the verb that we see in V to I constructions and C is overtly filled in verb second constructions. As for the nature of C and I, we have seen that there are reasons to suppose that morphology is in some way relevant for functional structure and there are reasons to suppose that it is not: V to I seems strongly related to the richness of agreement, whereas V to C does not correlate with any observable morphological effect: Verb second languages do not stand out morphologically in any way. In a language with asymmetric verb second, for instance, the moved verb in main clauses looks the same as the one in situ in embedded clauses. We saw that this posed a problem for both the MHH and the AHH. If functional projections are headed by affixes, as under the MHH, a correlation between V to I and richness of inflection at least suggests that verb movement and morphology are related in some way (although, as we have seen, an account is not straightforward). However, morphology must be interpreted rather abstractly in order to account for V to C. Alternatively, the hypothesis that functional heads are abstract categories in general no longer predicts that verb movement correlates with some morphological effect. Although this appears to be correct for V to C, the correlation between V to I and richness of inflection now becomes coincidental. In short, under both the MHH and the AHH there is some dichotomy between C and I, or between the relations that these functional heads entertain with the verb. Therefore, neither approach achieves a true unification of V to C and V to I: It is not so clear what V to C and V to I have in common, apart from the fact that they are both verb movements. An ideal theory of verb movement should therefore have the qualities stated in (79):

(79) a. It should explain the verb movement parametrization we observe.
b. It should unify V to C and V to I.

Let us now turn to the alternative theory adopted in this thesis. Recall that I propose that verb movement takes place in order to project some feature of the verb. This
already suggests that V to C must be morphology-related to the same extent as V to I is. I therefore reject the dichotomy between I and C and argue that it is illusory. Apparently, the verb can move twice in some languages (cf. Icelandic and Yiddish) so there must minimally be two features that the verb can project after movement. On top of that we must find a motivation for the need of these operations. In short, the theory should answer the questions in (80):

(80) a. Which features must the verb project after movement in the case of V to I and V to C?
b. Why must the verb project these features?

In the alternative conception of functional structure, overt verb movement is not an operation that adjoins the verb to an empty head but an operation that the verb undertakes in order to project some feature. The absence of prefabricated empty slots makes it possible to formulate triggers that are ‘positional’ in nature. The central hypothesis that I would like to put forward is that this is what V to I and V to C have in common. The verb must project some feature F because F must occupy a particular structural position with respect to other elements in the structure. To be concrete, I propose the following two triggers for V to I and V to C respectively:

(81) a. V to I movement is an operation that the verb undertakes in order to put rich agreement features in the predicational domain of VP.
b. V to C movement is an operation that the verb undertakes in order to put tense features in a position where they take scope over the subject and the predicate.

Note that both triggers refer to the notion ‘predicate’. It is therefore essential to explicitly state what definition I have in mind. For this reason I have decided to put my assumptions concerning predication and theta role assignment coherently together in the form of an appendix at the end of this chapter. One should be able to understand subsequent chapters without reading this appendix and use it as a back up in case the main text proves too dense.

The rationale behind (81a) is as follows. I will argue in chapter 2 that V to I is required if the verb is richly inflected for subject agreement. What triggers movement is the fact that rich Agr actually functions as the grammatical subject of a clause and must therefore be brought into a position where it can be properly interpreted as such. For this reason, AgrP is projected: Under the assumption that this position is external to VP, as assumed in predication theory (Williams 1980 and further work), we see the verb crossing VP-adjoined adverbs. The assumption underlying (81b) is that, semantically, the predicative verb and its tense features do not form a unit: Tense is a
property of a proposition or event and is not part of the denotation of the verb itself. They are interpreted distinctly. The hypothesis I put forward in chapter 3 is that the semantic discontinuity of the verb and tense is syntactically encoded and that V to C is one instantiation of this: The verb moves in order to project a TP. As I will show, differences in verb placement will reduce to independently motivated properties of a language as well on the way in which V to I and V to C interact.

Note that the view on functional structure adopted in this thesis and the specific triggers I will argue for are logically distinct. That is, the view of functional projection may be correct but the proposed triggers wrong, or vice versa. I hope to show, however, that it is the combination of the two that allows a better explanation of cross-linguistic differences in verb placement. Irrespective of the precise triggers for verb movement, however, the alternative view on functional structure has three immediate advantages. First of all, it overcomes the dichotomy between V to C and V to I in that both verb movements create a projection corresponding to a morphological property of the verb, Tense and Agr respectively. Second, feature redundancy is drastically reduced. At least in the default case, Tense and Agr are only present once, namely on the verb. We no longer need empty heads with similar features: Like categorial features, we simply allow Tense and Agr to project after the verb has moved.

Third, the proposal allows a more restricted, and therefore more principled, diagnostic for the presence of empty heads in the realm of verb placement. In a standard perception of functional structure, heads can remain empty in overt syntax, for instance because the V-feature of it is weak, so that movement is postponed until LF. This means that verb placement will only reveal a fraction of the head positions that might be available. Since overt verb movement is not necessary to license these heads, it is in fact unclear what restricts their occurrence, if anything. If functional projections exist by virtue of the verb having overtly moved, the question becomes whether we have to postulate empty heads at all if we want to account for the full array of verb placement facts. I think that we do but in a very restricted sense. Let us, as a first step towards a more restrictive approach, adopt the principle in (82):

(82) Empty heads must be licensed.

As it stands, this principle is imprecise. The generative literature reveals that there are at least two categorically distinct ways in which empty heads can be licensed. One is syntactic: An empty head can be generated if it occupies a particular position or if some operation on it is performed, for instance being identified or governed by a lexical head (cf. Travis 1991). In this light, many licensing and identification requirements have been developed, of which the Empty Category Principle (Chomsky 1981) is perhaps the best known example. It is not unreasonable, therefore, to look upon verb movement as
either a licensing or identification operation on an empty head. A second possibility is that empty heads are paradigmatically licensed: Given a particular paradigm of overtly distinct forms, a null form can be adopted if it fills a particular slot in the paradigm. This approach has been successfully exploited in the area of morphological theory. From the perspective of the view on functional structure proposed here, the status of syntactic licensing becomes rather obscure. Verb movement is no longer a movement operation to an empty head and absence of verb movement no longer indicates the presence of a head that remains absent in overt syntax. Therefore, verb movement cannot have anything to do with syntactic licensing of empty heads. On the basis of this reasoning, I conclude that if empty heads are postulated in the realm of verbal syntax, they must be paradigmatically licensed. Since the existence of a particular paradigm is a prerequisite for the postulation of such an element, the search space is severely restricted, both for the child and for the linguist.

I believe that English provides a prime example of what I have in mind. It is a well known fact that this language has the do-support paradigm. Recall from the discussion of the Morphological Head Approach that in this language negation has a blocking effect. That is, the presence of negation forces realization of a verbal head in a higher position. Standard analyses account for this by hypothesizing that not blocks some relation between the verb in its base position and another head, hence the contrast between (83b) and (83c):

(83) a. John completely forgot his appointment
    b. *John not forgot his appointment
    c. John did not forget his appointment

If a relationship, whatever its nature, can apparently be established in (83a), it must be between the verb and some element that is not phonologically spelled out. In other words, the English do-support paradigm actually reveals the presence of this head position. In chapter 3, I will in fact use the availability of this element in English to explain the limited scope of verb movement in declarative clauses. Now, if empty heads must be licensed, it must be paradigmatically rather than syntactically. This is, I believe, where things fall in place. It is a well known fact about English that it has a paradigm of elements that can appear in a VP-external position, namely the modals. Hence, English is in fact unique within Germanic in two respects: (i) It is the only language revealing the presence of an empty element by the facts in (83) and (ii) it has a modal paradigm. We can therefore hypothesize that the two are directly related: It is the modal paradigm itself that licenses the empty head. In other words, the invisible element in (83a) is a phonologically and semantically empty modal. In this way, the postulation of an empty element will help to account for cross-linguistic facts about verb placement but in a way that finds independent support.
Some caution is warranted at this point. If the number of verb movements correlates with the number of functional projections present, the conclusion must be that languages differ in the amount of functional structure that they generate, at least in overt syntax. Nevertheless, it is a widespread belief, perhaps best known as the universal base hypothesis, that all languages are fundamentally similar at some level of representation. This hypothesis implies that word order differences are merely a surface phenomenon and that apparent cross-linguistic differences are ultimately reduced or eliminated, for instance by covert checking operations (Chomsky 1995). If so, clausal structure must be much more uniform than my alternative proposal suggests. It is very hard to directly evaluate the theory presented in this thesis in the light of the universal base hypothesis and checking theory. The latter are conceptual ideas and as such not immediately falsifiable (recall the discussion in section 2.4). Showing that a piece of structure is not used in a particular language is not the same as showing that it does not exist. The goal of this thesis is not to argue against either the universal base hypothesis or checking theory in any direct way. They are not truly incompatible with the current proposal anyway. The only claim I would like to make is that, even if the universal base hypothesis and checking theory are entirely correct at some fundamental level, they have contributed little to our understanding of word order parametrization. Proponents of these views are therefore invited to look upon this thesis as a proposal on the workings of overt syntax which, in one form or another, is needed anyway.

Let me finish with an overview of this dissertation. In chapter 2, I will motivate claim (81a): V to I is triggered in languages with rich agreement since Agr must be interpreted as the grammatical subject. The task includes providing a concrete definition for 'rich'. This definition will allow a description of the fact that not all languages with rich agreement (and consequent V to I movement) allow the occurrence of argumental null subjects.

Chapter 3 is devoted to the idea that the Tense features of the predicate must be visible in a position c- or m-commanding the subject and the predicate. I will propose ways in which this requirement can be met such that an account is offered for the fact that V to C is a root phenomenon in some languages (such as Mainland Scandinavian and Dutch) but applying in main and embedded clauses alike in languages such as Icelandic and Yiddish. In addition, it will be explained why English is the odd one out within the Germanic language group in not displaying V to C in

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20 If both the approach taken in this thesis and the universal base hypothesis are correct, it entails that empty heads must come in two kinds. One type is subject to paradigmatic licensing (cf. the condition on empty heads in (82)), whereas the other type is invisible for these constraints. If so, my claim would be that the first type is relevant for the description and explanation of differences in verb placement and the second type is not. Whether there are constraints on the second type of empty heads is an interesting and obviously very difficult question, but not one that plays a role in this thesis.
declarative clauses. One consequence of the universal Tense condition is that V to I movement in Romance and V to C movement in verb second languages satisfy the same need: Both take place in order to project Tense features in the right position. This might be unexpected on two counts. First of all, Romance languages also have rich inflection so that projection of AgrP is expected as well. Second, Germanic languages display verb second effects, unlike Romance languages. If TP is projected in both cases, what then causes this distinction? One of the purposes of this chapter is to look into these issues and provide answers.

It follows from the theory that verb movements are indicative of the number of functional projections active in overt syntax. Since both V to C and V to I are parametrized options, languages will differ with respect to the size of the functional domain. Chapter 4 will show that there is an important consequence of this: Only in languages where the verb moves twice can expletives co-occur with a transitive predicate, a correlation observed by Vikner (1990, 1995). Generation of these transitive expletive construction is blocked in languages in which the verb only moves once. Since structural size seems to be directly relevant for this contrast, chapter 4 offers independent confirmation for the theory outlined in chapters 2 and 3.
Appendix: Predication theory

Many theories make a distinction between internal and external relations. Internal relations, such as c-selection, hold between a head and a phrase contained in its maximal projection. External relations, on the other hand, hold between phrases. An example is anaphoric binding: there is no sense in which an anaphor’s antecedent is contained in its maximal projection.

Whereas c-selection and binding clearly instantiate internal and external relations, it is less obvious how predication should be characterized. One view is that it is an internal relation: Stowell (1981, etc.) argues that subjects are specifiers of predicative heads.

(1)

\[
\begin{array}{c}
\text{XP} \\
\text{subject} \\
\text{X'} \\
\text{X} \\
\text{object}
\end{array}
\]

Since verbs are predicative heads, the entailment is that the subject of a clause is base-generated in spec-VP. From this position the subject can move into a higher specifier position in overt syntax. The claim that the spec-VP is the structural subject position in which the subject receive its theta role is generally known as the VP-internal subject hypothesis (Koopman & Sportiche 1991).

In this thesis I will adopt the alternative view, according to which predication is an external relation. As commonly assumed, a head may assign one or more theta roles to constituents within its maximal projection (cf. 2a). Williams (1980, etc.) argues that, in addition, a maximal projection may assign a theta role to a constituent external to it. It is this external thematic relation that defines predication: The constituent theta marked by XP is XP’s subject (cf. 2b).

(2) a. \[
\begin{array}{c}
\text{[XP } X \ldots \text{ DP]} \\
<\Theta_{XP}> 
\end{array}
\]

b. \[
\begin{array}{c}
\text{[VP DP } \ldots \text{ XP]} \\
<\Theta_{VP}> 
\end{array}
\]

Certain properties of predication follow from its characterization as an external relation. First, selectional requirements imposed by the head do not affect the subject. So, although a verb may c-select an object of a particular category, the category of the subject cannot be selected for (Marantz 1984). Second, predication, like other external relations, is unique. The
anaphor each other in (3a) must have a unique antecedent (Koster 1987). It can be related to either the women or the men, but not to both at the same time. Similarly, the secondary predicate drunk in (3b) must have a unique subject, either the women and the men, but not both.

(3)  
   a. The women introduced the men to each other  
   b. The women met the men drunk

Third, just like an anaphor must find its antecedent in a c-commanding position, a predicate must be c-commanded by its subject (Williams 1980). The examples in (4) are ungrammatical for the same reason.

(4)  
   a. *[John’s brother] showed Bill to himself,  
   b. *[John’s brother] met Mary nude

Predication is not only an external relation, but also a relation involving theta role assignment. This has consequences for the domain in which it can take place. Following common practice, I assume that theta role assignment is phrase-bound. This implies that a head can only assign theta roles to constituents contained within its maximal projection, as noted. Similarly, a maximal projection must m-command the constituent it takes for subject. Hence, a predicative relation can be established between $\alpha$ and $\beta$ iff (i) $\alpha$ c-commands $\beta$ (ii) $\beta$ m-commands $\alpha$ and (iii) $\beta$ assigns a theta role to $\alpha$.

Predication theory plays a crucial role in this thesis, as it is involved in the explanation of both V to I movement and the distribution of expletives. Let us therefore consider where we may find the subject of VP. In principle, two positions are available. The subject may appear in the specifier position of the first functional projection dominating VP (cf. 5a), or it may be base-generated as an adjunct to VP (cf. 5b).

(5)  
   a. $[FP \text{DP F} [VP \ldots V \ldots]]$  
   b. $[VP \text{DP} [VP \ldots V \ldots]]$

The structure in (5a) does not require much discussion. The subject c-commands VP and it appears within VP’s m-command domain. Hence, the structural conditions on predication are met. The structure in (5b) also meets these conditions, but only if a particular view of structural command is adopted. Chomsky (1986b:8-9) argues that command should be defined in terms of categories rather than segments. Thus the following definitions of c-command and m-command obtain:
(6) a. A category $\alpha$ c-commands a category $\beta$ if and only if (i) $\alpha$ does not dominate $\beta$, and (ii) every category that dominates $\alpha$ dominates $\beta$.

b. A category $\alpha$ m-commands a category $\beta$ if and only if (i) $\alpha$ does not dominate $\beta$, and (ii) every maximal category that dominates $\alpha$ dominates $\beta$.

Crucially, the DP in (5b) is not dominated by the category VP, although it is dominated by one of its segments. This implies that according to the definitions in (6) DP c-commands VP and is contained within VP’s m-command domain. (5b) consequently qualifies as a configuration that allows predication, a conclusion which echoes claims made by Manzini (1983) and Koopman and Sportiche (1991).

Although predication theory allows both (5a) and (5b) it also excludes certain structures. First, on the definition of m-command adopted in (6), subjects cannot be generated in a functional projection that does not immediately dominate VP. Although the DP c-commands VP in (7), it does not appear within VP’s predicational domain. Hence the structure is ruled out.

(7) $\*[^{FP \ 2} \mbox{DP}^{\ 2} \ [^{FP \ 1} F^{\ 1} \ [VP \ ... \ V ...]]]$

Second, it may be possible to realize the subject in more than one position, but it is not possible to generate more than one subject. As said, the unicity of external relations extends to predication, and hence if there is one predicate (in this case VP), only one subject position can be realized. A structure like (8), in which both DPs are subjects, is ruled out.

(8) $\*[^{FP} \mbox{DP}^{\ 1} \mbox{VP} \ [^{VP} \mbox{DP}^{\ 1} \ [VP \ ... \ V ...]]]$

In sum, VP takes a single subject within its m-command domain.

In a minimalist theory of syntax, theta theory must be located at the LF interface: It is a theory about the mapping of syntactic positions to semantic functions. Thus far, these semantic functions have been represented as theta roles, but I will assume that they are most properly expressed by logical formulas. In particular, I will adopt the view according to which an n-place predicate $P$ is represented as in (9), where every combination of a lambda operator and the variable it binds corresponds to a thematic function. Saturation of a theta role can be seen as the application of the formula in (9) to an argument.21

21 The fact that thematic functions involve lambda operators does not imply that every lambda operator can be used to motivate an A-position. It is assumed here that variables motivating thematic functions have specific restrictions such as $\mbox{THEME}$ or $\mbox{GOAL}$. In the lexical representation of the verb like $\mbox{paint}$ the internal theta-role is represented as $\lambda x \ [\mbox{THEME} \ (x)]$. 
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(9) $\lambda x_1 ... \lambda x_n [P (x_1 ... x_n)]$

In most cases, it is harmless to represent ‘$\lambda x ... x$’ as a theta role. The formula in (10), for example, is the semantic representation of a verb taking two objects, but no problems are caused by saying that this verb assigns two internal theta roles.

(10) $\lambda y \lambda z [V (y z)]$

As we proceed, however, representing the semantic properties of predicates by theta roles will turn out to obscure a generalization concerning base-generated and derived subjects, namely that both are related to VP by predication.

If predication is an external relation and VP assigns an external theta role to a subject, this role should be represented as in (11).

(11) $\lambda x [\text{VP} ... (x) ... ]$

Although discharged by maximal projections, external thematic functions should be encoded in the lexical entry of the head, if only to explain why not all heads project them. The question is how this can be achieved, especially in view of the fact that external theta roles cannot be assigned by the verb. Suppose that the external thematic function of a verb is lexically represented as a variable, rather than as a variable bound by a lambda operator. Thus, the variable $x$ in (94) lexically represents $V$’s external thematic function. Since $V$’s lexical entry does not provide a lambda operator for it, $x$ cannot be used to license an internal argument.

(12) $\lambda y \lambda z [V (x y z)]$

Of course, if $x$ is to represent an external thematic function, a lambda operator for it must be introduced at some point. I propose that VP (and perhaps other predicative categories) inherently introduces a lambda operator at the level of semantic interpretation (Partee 1973 and Williams 1977). After discharge of its internal thematic functions, the verb in (12) will therefore project a category of the required type (cf. 11). In other words, the difference between an internal and external theta role concerns the level at which the relevant lambda operator is introduced, namely at the level of $V$ and VP respectively.

The theory of predication as developed thus far suggests a particular formulation of the EPP, the requirement that every clause have a subject. If VP inherently introduces a lambda operator, this category must always function as a predicate, and consequently there must always be subject that satisfies its thematic function. This implies that the EPP and the rule that introduces a lambda operator at the VP level can be analyzed as one and the same:
Chapter 1

(13) **Extended Projection Principle**
Map the syntactic category VP onto $\lambda x \left[ \text{[VP]} \right]$

It is commonly assumed that the EPP is responsible for NP raising in passive and unaccusative contexts. At first sight, this seems at odds with the view of subjects adopted here. If passive and unaccusative verbs assign their theta roles internally (to their complements), how can a derived subject be related to VP by predication? And if a derived subject is not related to VP by predication, how can the principle in (13) trigger NP raising?

These problems disappear once it is recognized that theta roles are epiphenomenal in nature. If theta roles were primitive grammatical notions, the assignment of a theta role to object position would imply that the thematic function it represents will never be available elsewhere in the structure. However, assuming that theta roles are most properly expressed as logical formulas that involve the combinations of a lambda operator and an associated variable makes it possible to say that, at least from the perspective of predication theory, a VP with an unsaturated thematic function is equivalent to a VP containing the trace of NP movement. Both contain a ‘gap’ that makes it possible for VP to function as a predicate.

More specifically, suppose that traces of NP movement, like other traces, are interpreted as variables. This means that the syntactic structure in (14a) will give rise to a semantic representation in which the verb’s internal thematic function is satisfied by a variable. The resulting (partial) formula is given in (14b), which reduces to (14c) after lambda conversion. In the structure at hand the lambda operator introduced by VP binds the variable introduced by the trace. I thus follow Kitagawa (1989) and Chierchia (1995a) in assuming that the syntactic structure in (14a) is ultimately mapped onto the semantic representation in (14d).

(14) a. $[\text{VP } V \ i]$

b. $\lambda y \left[ V \ (y) \right] x$

c. $V \ (x)$

d. $\lambda x \left[ \text{VP } V \ (x) \right]$

As it turns out, then, the semantic representations of a VP containing the trace of NP movement and a VP with an unassigned external theta role (cf. 11) are identical. This suggests that derived subjects, like base-generated subjects, are thematically related to VP. The only difference between the two lies in the origin of the thematic function they satisfy (Williams 1994 and Neeleman & Weerman 1999). The impression that derived subjects occupy a non-thematic position only arises if a predicate’s argument-taking properties are represented as theta roles.

If the semantics of NP raising is as suggested, the operation can indeed be triggered
by the version of the EPP assumed here. A VP projected from an unaccusative verb can only be interpreted as a predicate if the object is promoted to subject, and a structure like (14a) is created. If no such movement takes place, there is no variable to be bound by VP’s lambda operator and hence the resulting structure is uninterpretable. A rationale behind the extended projection principle as formulated here, suggested to me by Eric Reuland, is to assume that VP is the canonical realization of a predicate and consequently of type &lt;e,t&gt;. If the theta role of the unaccusative verb is saturated VP-internally, the structure is interpretable as a proposition but a type mismatch would result. Hence, no truth value can be assigned to it. To overcome this problem, the structure must be ‘broken open’. Thus, NP raising is an operation through which passive and unaccusative VPs can meet the extended projection principle. Of course, the question remains whether an LF condition like that in (13) can trigger overt movement. Why NP raising is overt under certain conditions is an issue that will be taken up in chapter 4.

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22 Given this analysis, the theta criterion should be formulated in terms of restrictions like THEME or GOAL. As argued in footnote 21, such restrictions determine the interpretation of thematic variables. Suppose that no argument (chain) may be associated with two such restrictions. Then, the contrast between regular NP raising and raising to a theta position follows. Even if in examples like [John arrived t] the raised DP and its trace form a chain (something that will ultimately be denied), this chain is associated with a single thematic restriction. In examples like [John killed t], however, either the chain {John, t} is associated with two thematic restrictions (if NP raising involves chain formation), or John is (if it does not).