Why phrases probe

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Abstract
This paper looks at the arguments for the stipulation that only heads are probes. Three areas where there traditionally have been made a difference between heads and phrases are examined. These areas are, phrase structure, movement, and selection. The strongest argument against probing phrases seems to be selection. Furthermore, Hallman's (2004) suggestion to conflate selection and feature checking is argued against. The conclusion is that there are no theory internal reason that bars phrases from probing. In the second part of the paper it is shown that there are no empirical reasons either. In addition, an approach to binding and control that is compatible with the inclusiveness condition is outlined. The conclusion of the paper is that it is external Merge that unifies all instances of probing.

1 Introduction

This paper investigates the status of phrases and heads in relation to two recent but central components in the derivation of syntactic structure, namely *probes* and *goals*. In all approaches making use of these components, it is stipulated that phrases are goals, and heads are probes, or at least that there is a very close connection between them. Considering the developments in phrase structure theory (for example Carnie, 2000; Chomsky, 1995; Starke, 2001) where the distinction between heads and phrases has more or less disappeared, it is important to see if there is any independent motivation for maintaining the stipulation that only heads are probes. More specifically, the assumption in the Minimalist Program is that both heads and phrases can be goals, but only a head can be a probe. The purpose of this paper is twofold; one purpose is to examine the theory internal arguments for why a phrase *cannot* be a probe and also present the theory internal arguments for why phrases *can* be probes. The second purpose is to see what happens in the syntactic derivation if phrases are probes. Is a theory that allows phrases to probe empirically discriminating from a theory that does not?

The outline of the paper is as follows. The second section summarizes the distinctions between probes and goals. It also explores what a probe *is*. The third section is a presentation of the arguments for keeping the stipulated difference between phrases and heads when it comes to probing. I concentrate on

three areas where there is, or used to be, a well-known difference between heads and phrases namely; phrase structure, movement and selection. Also I investigate whether any of these properties can be unified with probing. The fourth section looks at the same three areas and lists the arguments for letting phrases be probes. The fifth section shows what happens if we let phrases be probes. The sixth section is a very brief outline of a minimalist approach to binding and control that probing phrases make viable. This section also gives a principled explanation to probing. The last section is a conclusion to the paper.

2   What are probes and goals?

In all models of the syntactic computation that make use of *probe* and *goal* (for example Chomsky, 2000, 2001, 2004; Frampton and Gutmann, 2000; Pesetsky and Torrego, 2001, 2004) it is simply postulated that probes are heads and goals are phrases. On closer examination, though, the distinction is not as clear cut. A head, on the one hand, is a probe when it is first merged with another element. Once it has probed it has the possibility of being a goal for a probe higher in the structure.[1] Phrases, on the other hand, can only be goals. Since different approaches within the Minimalist Program (MP) have slightly different definitions of a probe, it is important to first make clear what a probe actually is.

   In some syntactic models (Chomsky, 2001, 2004; Frampton and Gutmann, 2000) a probe is a head:

(1)   Feature checking, then, resolves to pairs of heads $<$H, H$'>$ [. . .]. For optimal computation, one member of the pair must be available with no search. It must, therefore, be the head H of the construction α under consideration, α={H, XP}. Call H a *probe* P, which seeks a *goal* G within XP;. . . " (Chomsky, 2004, 113)

The head H is a probe only if it has uninterpretable/unvalued feature(s) (Chomsky, 2001, 2004). This means that in these models there is a tight connection between unvalued features and heads; a head that is a probe *must* have an unvalued feature.[2]

   In other models, e.g. Pesetsky and Torrego's (2001; 2004) and Rezac (2003), it is not the actual head that probes but the unvalued feature. Pesetsky and Torrego's (2004, 2) definition of a probe is given in (2) (their (2i)):

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[1] Different approaches make a distinction here whether the head still has unvalued features or not.

[2] Not all heads are probes. V, for instance, is not a probe in Chomsky (2001, 2004).

(2)   an unvalued feature F (a *probe*) on a head H scans its c-command domain for another instance of F (a *goal*) with which to agree. (emphasis in original)

The consequence of this is that one single head may have more than one probe. Even though a probe and a head are not the same thing in this model there is still a tight connection between the two; only heads have unvalued features that are probes.

Clearly, there is no motivation in neither definition why only heads with unvalued features, or unvalued features on heads, are probes.[3]

If we take for granted a tight connection between probes and heads, one (in)direct reason to assume that unvalued features in phrases do not probe outside the maximal projection of the phrase could be that there are substantial differences between heads and phrases in other areas of syntax. The fact that both heads and phrases may act as goals is not surprising. All features (valued and unvalued, interpretable and uninterpretable) of heads and phrases are in the c-command domain of higher probes. This is a consequence of the syntactic derivation and not a stipulation. Hence, that both phrases and heads may be goals will not be discussed further in this paper.

The following discussion makes no distinction between the definitions in (1) and (2). What I say about heads with unvalued features is applicable to unvalued features on heads as well.

3   Why phrases don't probe

Until recently, heads and phrases have been considered different things in the Minimalist Program, and the question is if it is possible to tie the probing function to one of those differences, thereby getting a principled explanation for the connection between heads and probes. We will search for such a connection within the three areas where there is traditionally a clear distinction in the behaviour of heads and phrases: phrase structure, movement, and selection.

3.1   Phrase structure

There are mainly two reasons why there is a distinction between heads and phrases in the building of syntactic structure. Firstly, if phrase structure is built according to the rules of X-bar theory (3), one difference between heads and phrases is that heads project and determine the type of phrase that is projected.

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[3]We will return the allusion to 'optimal computation' and 'no search' in (1) in section 6.1.

Phrases on the other hand do not project and can only occupy the specifier position of X, YP in (3) and the complement position, ZP in (3).

(3)   XP
          ╱   ╲
       YP   X′
              ╱   ╲
            X^0 ZP
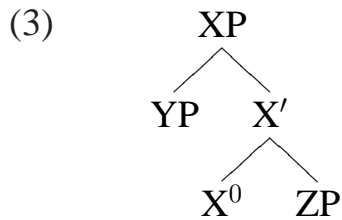
Hence, the ability to probe could be tied to the ability to project. However, there is no clear connection between the two since projection works 'upwards' in the structure, whereas probing is 'downwards'.
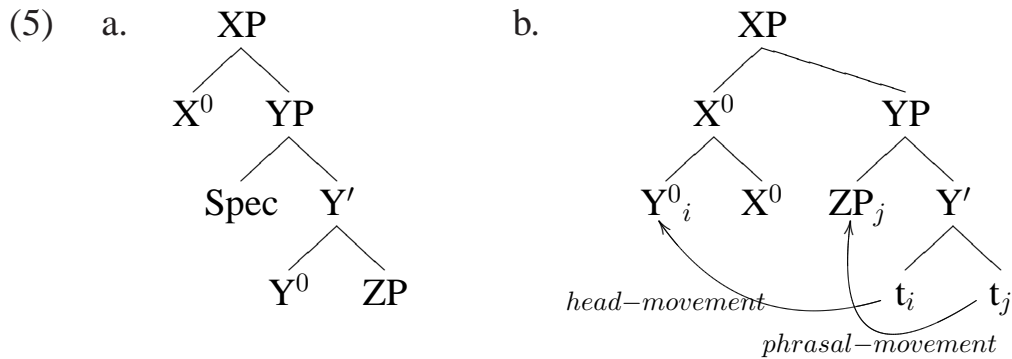
Another difference is that heads are single lexical items merged into a structure from the lexical array without any previous tampering in narrow syntax, whereas phrases are structures already formed in the working space. With this in mind, probing could be connected to 'first Merge'. Once a head has merged with another item and probed its c-command domain it can no longer probe, but only function as a goal. This, on the other hand, would introduce a new kind of Merge to the already existing ones, external and internal Merge. If heads are formed in the syntactic derivation as suggested by Matushansky (2002) also 'first Merge' must be ruled out as the criterion for probing.

3.2   Movement

Matushansky (2002, 3,4; and references therein) identifies the following differences (among others) between head-movement and phrasal movement.

(4)   a.   Head-movement is not to a c-commanding position, whereas phrasal movement is.

b.   Only a head can be adjoined to a head; only a phrase can be merged as a specifier.

c.   Head-movement is more local than phrasal movement.

d.   The probe and the target act as one constituent after head-movement.

First, consider (4a-c). In (5) we see movement of a phrase, ZP, and a head, Y. (5a) is before movement takes place. If we look at (5b) we see that the head (Y^0) does not c-command its trace-position (t_i). The phrase (ZP), on the other hand does c-command its trace-position, (t_j).

(5) a.

```
          XP
         /  \
       X^0   YP
            /  \
         Spec   Y'
               /  \
             Y^0   ZP
```

b.

```
              XP
             /  \
           X^0   YP
          /  \   /  \
       Y^0_i X^0 ZP_j  Y'
                      /  \
                    t_i   t_j
```

head−movement   phrasal−movement

The fact that the phrase moves to a specifier position, and the head adjoins to another head position has long been recognized in syntactic theory. It also seems to be a fact that head movement is more local than phrasal movement (4c), in the sense that a phrase can skip intervening spec-positions but a head can only move to the next head-position (Travis, 1984). Another fact is that an adjoined head cannot be extracted, and neither can the head it has adjoined to. Compare this to phrasal movement, where an adjoined phrase is possible to extract (4d). Even if these differences are substantial there does not seem to be anything directly connected to the head–probe stipulation. In current versions of MP probing takes place when a head is merged to a phrase, not after it has moved. In other words, probing precedes movement.

Even so, these differences in movement seem to indicate a real difference between heads and phrases which makes it at least plausible that there could be something here that singles out heads as the only probe.
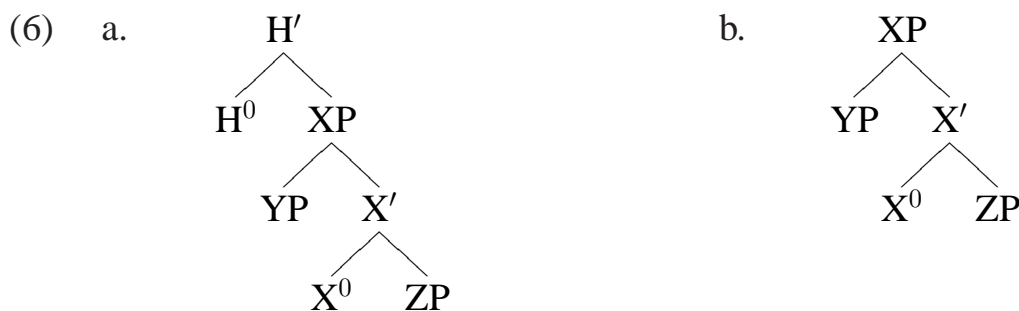
3.3   Selection

Another difference between heads and phrases is that heads c-select their complements, whereas phrases do not select, but are selected. Selection is probably the most compelling argument for the stipulation that only heads probes.

A theory where phrases select their heads is ruled out because a phrase is formed in narrow syntax which makes it impossible to mark it with selectional restrictions in the lexicon. It seems that selection is a real difference between phrases and heads and that a syntactic theory where phrases select is, even if possible, not something we want. The question is if this difference can be tied to the head–probe stipulation.

One argument for unifying selection and probing is that the domain a probe (head) probes is its sister, i.e. its complement. The complement is also what the head selects. In (6a) XP is selected by the head H, a potential probe. XP is also the search domain for the probe.

Phrases, on the other hand, do not select. In (6b) when the specifier YP is merged it does not select. One might assume that this is what makes the head a possible probe and rules out phrases as probes. Neither the subject nor the object select their verb. Hence, phrases do *not* probe.

(6)   a.   H′   b.   XP
                   / \   / \
                 H⁰   XP   YP   X′
                      / \   / \
                    YP   X′   X⁰   ZP
                         / \
                       X⁰   ZP

Note that any other heads dominated by XP that still have unvalued features are in the domain of H. In (6a) X^0 is such a head. Consequently such a head will function as a possible goal for H, i.e. if X^0 has unvalued features it is an active goal for H.

If selection is the explanation for the probe–goal distinction, it would be nice if we could conflate the two and say that selection is probing. If this is the case, lexical heads seem to be an exception. The head V, for instance, selects its DP complement but does not probe it. This begs the question why?

If we want to maintain that selection is probing there are two different answers to that question. First, one reason that V does not probe in Chomsky's approach (2001; 2004) is that the verbal head, V, does not have any unvalued features. Hence, it is inactive and does not probe. Second, V is not an exception: in other approaches e.g. Frampton and Gutmann (1999) and Collins (2002, 47) the lexical verb has θ-features and these features *are* probes. In fact, at least one attempt has been made that unifies selection and feature checking (probing) (Hallman, 2004), as we will see in section 4.3.

Apparently selection seems to be the principled explanation for treating only heads as probes.

4   Why phrases should probe

In the last section, we have highlighted certain differences between heads and phrases that may be taken as support for the assumption that only heads are able

to function as probes. In this section we demonstrate that there are nevertheless good theory internal reasons to assume that phrases can probe.

The first subsection presents arguments against the split between heads and phrases regarding phrase structure. The second subsection presents arguments, mainly from Matushansky (2002) against the movement distinction. The third subsection presents the arguments against selection as the thing separating heads and phrases.

As we will see in this section, Chomsky's (2001; 2004) treatment of the expletive fits all the arguments against the stipulation that only heads are probes.
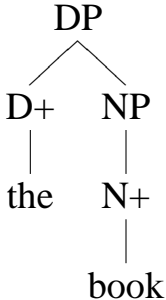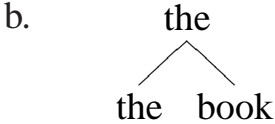
4.1   Phrase structure

In the Minimalist Program (Chomsky, 1995, 2000, 2001, 2004), the phrase structural differences discussed in section 3.1 are not as clear cut as they appeared to be. As a matter of fact, the way structure is built in the Minimalist Program constitutes the main reason for letting both heads and phrases with unvalued features probe.

Chomsky claims (1995; 2001) the following, (7):

(7)   there are no such entities as XP (X^{max}) or X^{min} in the structures formed by C_{HL} [Computation Human Language], [...]. A category that does not project any further is a maximal projection XP [...](Chomsky, 1995, 242)

In Chomsky's bare phrase structure, (BPS) (1995, 242-244) two items α and β are merged and they form the object K, the set $\{\alpha, \beta\}$. K has a label, something that defines the type to which it belongs (e.g. verbal or nominal), K = $\{\gamma \{\alpha, \beta\}\}$.

Chomsky's assumption is that γ is either α or β. The object that projects is the head of K. Suppose α projects, then K = $\{\alpha \{\alpha, \beta\}\}$. Chomsky gives the following structures as examples (8) (1995, 246). It is specifically pointed out that instead of (8a), we have (8b).[4]

(8)   a.

b.

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[4]The plus signs in the structure are irrelevant for the current discussion.

If we want to fully implement BPS, the consequence is that only the head (in (8b) this would be *the*) is available for future merge in the syntactic computation. In other words, what Chomsky calls DP in (8a) is D, in the computation. In a strictly derivational syntax (like Epstein et al., 1998; Chomsky, 2001, 2004) the notions head and phrase have no meaning in the computation. Whether something is a head or a phrase is not known until after the two items have merged and one of them projects. Another consequence of BPS in a derivational approach to syntax is that the internal structure, i.e. the derivational history, of the objects α and β is opaque to the derivation, (see 8). Since there is symmetric c-command between two elements that are merged, they enter an Agree relation and can value each other's features. Because of this symmetric c-command relation it does not make sense to call one element probe and one element goal.

But it is a fact that there is a difference between X and XP. The structure of a VP, for instance is not $[_{VP}$V D]. It is $[_{VP}$ V DP]. One possible solution in BPS is to say that there is a distinction between DP and D, not in their features, but in the values of their features (cf. Pesetsky and Torrego, 2004).[5] X and XP have the same interpretable and uninterpretable features. Some of the features do not have a value on X but they have been valued on XP. One distinction between D and DP may be that D has unvalued φ-features and/or definiteness, whereas DP has values for those features (cf. Longobardi, 1994). Also, there is a difference between e.g. T and TP. T has unvalued φ-features, but as soon as one, or more of them are valued we get a TP in the syntactic derivation.

In other words, the notions head and phrase are only part of the derivational history. Whether one of the objects α or β is a head is not determined until after they have been merged and one of them projects. Now, if there are any unvalued features left on D after it has merged with NP, this unvalued feature will make DP/D a probe when it is merged to the extended projection of V. The case feature is just such a feature (Chomsky, 2004, 116).

If we turn to Chomsky's (2004) discussion of the expletive we will see that even though Chomsky treats the expletive as a head, in BPS, the expletive must be a phrase according to Chomsky's definition of minimal and maximal projections.[6]
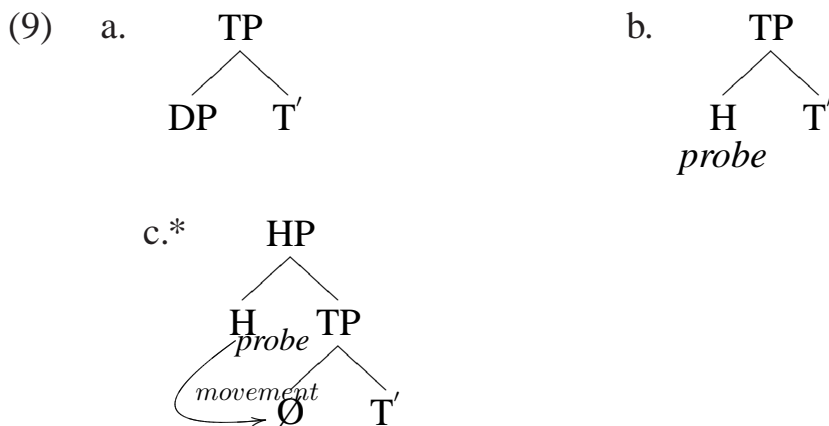
First, some background on the expletive. It is generally assumed that the purpose of the expletive is to fill the specifier position of TP because of what was originally called the extended projection principle (EPP), the requirement that every clause have a subject (Chomsky, 1981). The expletive is extensively

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[5]This is similar to Frampton and Gutmann's *pivot* (1999)and Collin's *locus* (2002).

[6]Frampton and Gutmann (1999) do not treat the expletive as a head. But on the other hand they allow for a head to probe its specifier, a relation that Chomsky explicitly rejects.

treated in the literature and based on, among other things, position, movement and case, it is usually considered to be a phrase, rather than a head (see, for example, Chomsky, 1981; Holmberg and Platzack, 1995; Holmberg and Nikanne, 2002).

Now, let us look at what Chomsky says about the expletive. Adopting bare phrase structure and its consequence that there can be no Spec-head relation, Chomsky (2004, 113-114) claims that the EPP-feature cannot be satisfied simply by external Merge, Agree is also necessary. The reason is that an unvalued feature can get its value only by Agree, a relation between a probe and a goal. The only thing that can satisfy an EPP-feature is either internal Merge, i.e. movement induced by Agree, or external Merge and Agree, in other words, the merging of a probe. In (9a) the subject has moved after Agree and satisfies the EPP-feature of T. Another possibility is external Merge of a probe in the Spec-position of the head with the EPP-feature. The probe values the features of the head and satisfies the EPP-feature at the same time (9b). Since the EPP requires that the Spec-position is occupied by something, a higher probe can value the unvalued feature, but it cannot move downwards to satisfy the EPP-feature (9c).[7]

(9) a.

```
        TP
       /  \
     DP    T′
```

b.

```
        TP
       /  \
      H    T′
    probe
```

c.*

```
         HP
        /  \
       H    TP
     probe  /  \
           Ø    T′
     movement
```

According to Chomsky (ibid) the only instance of (9b) is the expletive.[8]

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[7]In Chomsky's analysis it is unclear why the EPP cannot be satisfied by the expletive, without Agree, and a higher probe H can give the values to the unvalued features in T in (i).

(i)

```
      HP
     /  \
    H    TP
  probe  /  \
       Expl  T′
            /  \
          T⁰    ZP
```
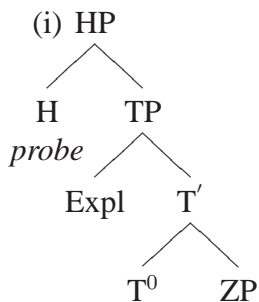
[8]The reader is referred to Chomsky (2001) and Frampton and Gutmann (2000) for the analysis involving the expletive.

Since the assumption is that *only heads are probes*, Chomsky is forced to assume that the expletive is a head (Chomsky, 2004, 114).

If we look at the definitions ((7), repeated below) that Chomsky uses in BPS, we see that it is not unproblematic to call the expletive a head.

(7)   there are no such entities as XP (X^{max}) or X^{min} in the structures formed by C_{HL} [Computation Human Language], [...]. A category that does not project any further is a maximal projection XP [...] (Chomsky, 1995, 242)

By definition, everything that does not project is a phrase. The structure formed by merging the expletive and T is (10a).

(10)   a.   ?   b.   ExplP   c.   TP

         Expl   T   Expl^0 TP   ExplP   T^0
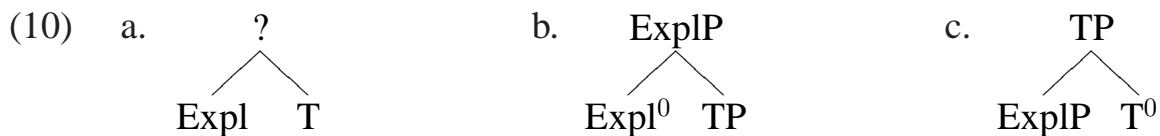
Since the label, or rather head/phrase status is determined after Merge we have two possible outcomes. First, if we want to maintain that the expletive is a head it *must*, by definition, project a phrase, here called ExplP. The expletive is the label and a minimal projection. T, on the other hand does not project and is therefore a maximal projection, a phrase, (10b).

The other possibility is that T is the label and projects. In that case the expletive must, by definition, be a maximal category, a phrase. Accordingly, we get the structure in (10c).

To my knowledge there are no theories of expletives that do *not* assume that it is T that projects when the expletive has been merged, i.e (10c) is the correct structure. Note that Chomsky's analysis (2001; 2004) is no exception to this.

However, in the BPS approach, when two items, in this case the expletive and T, are merged their derivational history is opaque. It does not make sense to define them as neither head nor phrase. The result is that the analysis of the expletive Chomsky (2004) presents does not need to be changed. What *has* to be changed however is our notion of probe. Any item, be it a phrase or a head, merged to another is a possible probe, depending on its unvalued/uninterpretable features.

Chomsky's BPS is not the only theory of phrase structure that obliterates the differences between heads and phrases. Two extensions of BPS, Carnie (2000) and Collins (2002) also obliterate the distinctions between heads and phrases, to a certain degree. These theories Chomsky (1995); Carnie (2000); Collins (2002) suggest that there is a difference between phrases and heads, but that difference is a result of how structure is built, it is not the input to the building

of the structure. Starke (2001), on the other hand, makes no distinction between heads and specifiers (phrases). He claims that specifiers, too, project.

To summarize, the way syntactic structure is built does not give an explanation to why probes are heads and not phrases. What current theories of phrase structure *do* tell us is that there is no difference between heads and phrases in the derivation. Obviously this makes the stipulation that heads are probes whereas phrases are not, very difficult to maintain.

4.2 Movement

In section 3.2 four main reasons for distinguishing between heads and phrases were presented. Even though none of the reasons seems to be related to the head–probe question in any obvious way I will present some arguments against treating phrasal- and head-movement as two separate kinds of movement. Pesetsky (2000) treats all kinds of movement, be it head or phrasal, in the same way:

> I use *phrasal movement* as a cover term for movement of any syntactic unit that is word-sized or larger. Thus, what is traditionally called *head movement* is an instance of phrasal movement in my sense. (Pesetsky, 2000, fn.3) (emphasis in original)

Pesetsky and Torrego (2001, 363) claim that the difference between head movement and phrasal movement is just an effect of the distance between the attractor and the attractee. They formulate this in the *Head Movement Generalization* (11):

(11) *Head Movement Generalization*
      Suppose a head H attracts a feature of XP as part of a movement operation.
      a.   If XP is the complement of H, copy the the head of XP into the local domain of H.
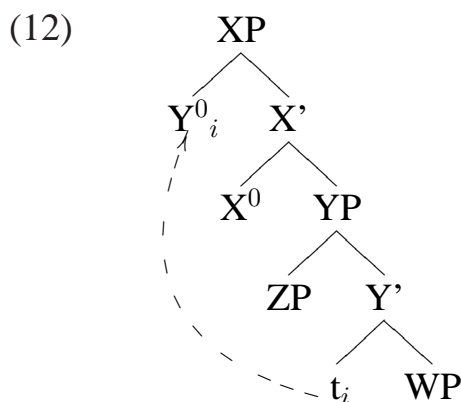   b.   Otherwise, copy XP into the local domain of H.

Matushansky (2002) gives the following analysis of movement. Her claim is that head movement and phrasal movement are caused by the same factors and as a consequence are instances of the same phenomenon (p.15). This phenomenon is *Agree*. Based on the assumption that the minimal units in the syntactic derivation are features (see Bejar, 2003, for a similar discussion), she analyses heads as minimal trees consisting of features syntactically merged. [9] First

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[9]Matushansky (2002, 16) presents the idea that "... a head is a minimal syntactic unit, which [...] is not, strictly speaking atomic, since it consists of features."

Matushansky claims that (4a) and (4b) (repeated below) are not accurate.

(4)   a.   Head-movement is not to a c-commanding position, whereas phrasal movement is.

       b.   Only a head can be adjoined to a head; only a phrase can be merged as a specifier.

       c.   Head-movement is more local than phrasal movement.

       d.   The probe and the target act as one constituent after head-movement.

Her hypothesis is that head movement renders the following structure (12) (2002, 24):

(12)

```
              XP
             /  \
           Y⁰ᵢ   X'
          /     /  \
         /    X⁰    YP
        /          /  \
       /         ZP    Y'
      /               /  \
      \ _ _ _ _ _ _ tᵢ    WP
```

In (12) the moved head c-commands its trace and it conforms to the extension condition. The head is moved to a specifier position instead of adjoining to the X^0 head.[10] The questions then are why head movement is more local than phrasal movement, (4c) and why there is no excorporation involved in head movement, i.e. the head movement constraint (4d).

In order to account for (4c) Matushansky follows Julien (2002), and claims that c-selection is a form of Agree. A selecting head Agrees with a categorial feature of its complement. The locality of head movement follows from the fact that c-selection is local.[11]

The fact that a moved head incorporates with its target (4d) is accounted for with an operation that Matushansky calls m-merger (morphological merger). M-merger is a morphological process which takes as input two feature trees, i.e. heads, and gives as output one tree. The effect is that after head movement, as in tree (12), and m-merger, we get the 'usual' tree structure (13).[12]

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[10]In BPS it is not obvious how Matushansky's proposal works out.

[11]The reader is referred to Matushansky (2002) for the detailed discussion.

[12]Matushansky's m-merger excludes a phase based account of spell-out, since, in her analysis, morphological processes take place before the syntactic derivation has finished. She recognizes the problem, but has no solution to it.

(13)

```
            XP
          /    \
        X⁰      YP
       /  \
    Y⁰ᵢ    X⁰
```
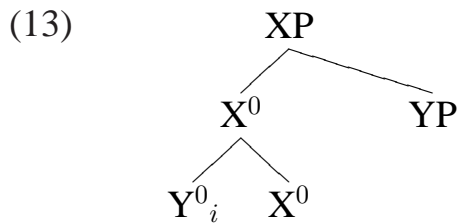
The difference between heads and phrases that we see concerning movement does not seem to motivate the head–probe stipulation. However, Matushansky's unification of the two types of movement makes one crucial distinction between heads and phrases; heads c-select, phrases do not. So, even if the movement argument is not very strong, we see again that selection is induced as a difference between heads and phrases. Selection is what the next section deals with.

4.3 Selection

As we saw in the previous discussion c-selection is the strongest argument for distinguishing between heads and phrases. The question is if it is possible to unify probing and selection. If this is possible we have a reason for why probes are heads and not phrases: heads c-select, phrases do not.

One attempt to unify the two is Hallman's (2004). Hallman (2004, 83,84) starts with identifying four substantial differences between feature checking (or probing), and selection.[13]

First, selection relates a head and a phrase, whereas probing relates a head (or in some versions of the MP a feature) and a feature.

Second, probing can induce movement, selection never does.[14]

Third, the elements merged in the structure because of selection are required just because of selection. Probing does not require any elements to be introduced for its own sake.

Fourth, selection, in contrast to probing, involves a semantic requirement and the selected element is assigned a θ-role.[15]

Hallman's aim is to show that these differences are merely epiphenomenal and can be accounted for by unifying feature checking and selection. In order to solve the first discrepancy Hallman is forced to assume that features such as *gender*, *person*, *plural*, *nominative*, *accusative* etc. have the same status as categories such as DP. What in a non-lexicalist (or weak-lexicalist) frame work

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[13]Hallman's analysis is within an earlier version of the MP (Chomsky, 1995). I will sometimes use the term *probing* instead of *feature checking*. They are fully compatible.

[14]In a theory of movement like the one suggested by Hornstein (2001) selection can induce movement.

[15]Thematic roles in a wide sense. According to Hallman (2004, 88) for instance, tense (T) and illocutionary force (C) are theta roles.

would be taken as effects of Agreement, is to Hallman selectional restrictions. Concerning cases like (14) and (15) (Levantine Arabic) (Hallman's (10) and (11)), where there is a distinction in the agreement marking on the verb depending on whether the subject is marked with feminine (-it in (14a)) or masculine gender no marking (14b).

(14)   a.   Til9-it   sh-ams.   (Levantive Arabic)
                 rose-FEM the-sun
                 'The sun rose'

        b.   Tili9 l-'amar.
                 rose the-moon
                 'The moon rose'

(15)   a.   * Til9-it l-'amar.

        b.   * Tili9 sh-ams.

Hallman claims that the verb with feminime Agreement (14a) selects a DP with the feature FEM, and if it does not the sentence is ungrammatical (15a). And vice versa for the masculine subject (14b) and (15b). Apart from the fact that this is incompatible with current minimalist theorizing, it seems that the lexicon would have to be expanded enormously to contain not only the selectional restrictions of the base form of lexical words, but also the selectional restrictions of their inflected forms. Also, since gender is commonly assumed to be a feature of the N-head (Ritter, 1995), it seems counter intuitive to claim that a verb form triggers the occurrence of a subject of a specific gender, rather than that the gender feature of the subject triggers the inflection on the verb.

The fact that selection never induces movement whereas feature checking does is, according to Hallman, a consequence of the theta criterion. [16] Hallman makes the following assumptions: lexical relations are established prior to functional relations, and a constituent must receive a θ-role before it can be affected in any other way (2004, 87). If selection and feature checking indeed are the same thing, this must be applicable to the building of all phrases, including DPs and APs. Hallman does not discuss this problem but it is not clear how his analysis can be immediately implemented on other phrases than the extended projection of V.
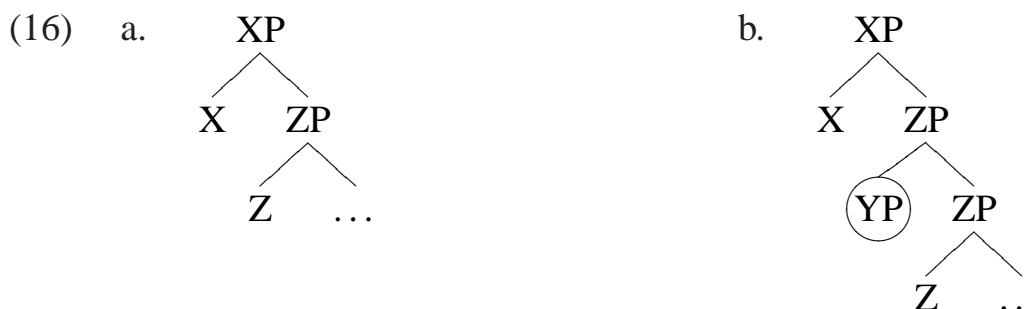
The third problem: that a selector introduces a category in the derivation whereas a checking category does not, is according to Hallman an epiphenomenon of movement and his assumptions about θ-roles. Hallman argues that

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[16]In DbP movement is triggered by the EPP, hence selection and feature checking are similar in this sense.

it only appears that the underlying function of selectors is to introduce a category, and the underlying function of feature checking categories, probes, is to displace categories. On the contrary, according to Hallman, both selectors and probes have the function of specifying *where* a category is at a certain syntactic level.[17] Selectors specify the positions of categories at D-structure, and probes specify their positions at S-structure. Since these levels are not part of syntax in the Minimalist framework, Hallman's unification is hard to maintain.[18]

Given the current approach to syntactic derivations the consequences of Hallman's suggestion to account for the first difference, selection relates a head and a category whereas feature checking relates a head and a feature, are too far reaching to merit a unification of the two.

In addition, Hallman's proposal breaks down when he tries to explain structure building. Hallman tries to reduce feature checking to mutual c-command. By using Kayne's Linear Correspondence Axiom (LCA) (1994), Hallman shows that the subject DP mutually c-commands T.[19] According to Hallman the structure is built in the following way (p93): A head X, selects its complement, ZP (16a). Given Hallman's interpretation of the LCA, the next step in the derivation is that X selects YP, the specifier of ZP (16b). Hallman makes use of Chomsky's extension condition (1995, 189–191), which he interprets as later merged material c-commands previously merged material.[20] If the extension condition is interpreted as 'merge to the root' (as it usually is) the last step in the derivation is clearly a violation of it.

(16) a. XP
           /\
          X ZP
             /\
            Z …

      b. XP
           /\
          X ZP
             /\
          (YP) ZP
               /\
              Z …

In Hallman's analysis a head selects its complement, and the specifier of its complement. The consequence is that v selects its complement, VP and
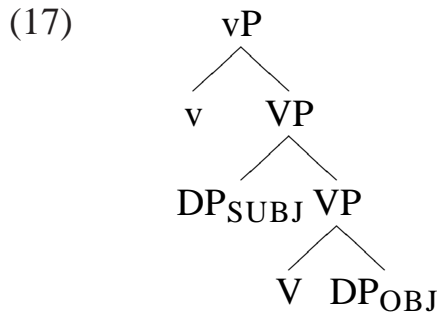
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[17]Again, in DbP, the displacement is triggered by the EPP, so there is a difference between feature checking and selection regarding position. See footnote 4.3.

[18]Hallman's argument is strange since these are not syntactic levels in the framework he uses.

[19]The DP c-commands v and T, T c-commands DP and vP. According to Hallman this is not a problem for the LCA since the material *inside* DP and vP does not c-command outside their phrases. According to Kayne (1994, 16) this kind of c-command *is* a problem. In addition, Hallman's conclusion may be compatible with the LCA in practise, but certainly not in 'spirit'.

[20]Chomsky (1995, 189–191) makes use of the 'extension' version of the cycle in order to prevent exactly the kind of operation Hallman suggests.

the specifier of its complement, namely DP. Hallman suggests the following structure (his (20)):

(17)

$$
\begin{array}{c}
vP \\
\diagup\;\diagdown \\
v \qquad VP \\
\diagup\;\diagdown \\
DP_{SUBJ}\;\; VP \\
\diagup\;\diagdown \\
V\;\; DP_{OBJ}
\end{array}
$$

In line with the derivation in (16) the subject DP is merged counter cyclically. It is unclear in Hallman's proposal why empirically we get a relation between v and DP_{OBJ} and not between v and DP_{SUBJ} which are in a mutual c-command relation. And since feature checking is mutual c-command according to Hallman, it is impossible to get a relation between v and the object. Also, the assumption that feature checking/Agreement is mutual c-command makes any kind of long distance Agreement, such as that between T and the DP complement of V in passives impossible.

To sum up, even though there seem to be certain correspondences between feature checking/probing and selection, there are too many differences that cannot be explained if they are unified. If we look at the expletive in connection to selection and probing we saw in section 4.1 that the expletive is a probe but it is merged to satisfy the EPP and does *not* select T. We seem to be forced to the conclusion that selection is *not* probing.

4.4 Summary

The discussion in the previous section showed that there is no theory internal reason for *not* letting phrases probe. It seems impossible to find an independently motivated trigger in the syntactic derivation that unifies heads and probing, and at the same time excludes phrases. If it is impossible to unify probing and heads by means of existing syntactic tools then the question is: is the stipulation that only heads are probes empirically motivated? We know that if we maintain the stipulation that only heads probe we do not have any empirical problems. Nevertheless, if it turns out that an approach that allows phrases to probe is empirically equivalent to an approach that does not, the theory can do without this stipulation. Hence, we get a more minimal theory.

The next section deals with some syntactic derivations where it is obvious that there is no loss in empirical coverage if phrases probe. In addition, I give a short sketch of an approach consistent with the MP and the Derivation by Phase
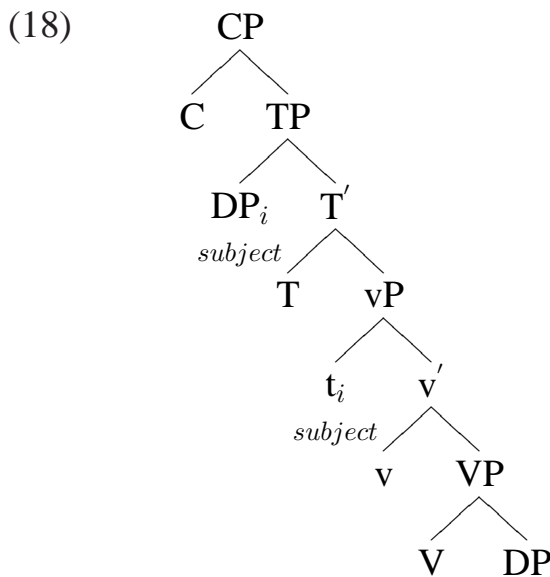
framework (Chomsky, 2001, 2004) where an account for PRO and reflexive pronouns is made possible if phrases are probes.

5 Probing phrases

As we saw in the earlier sections the expletive is one example where it is not only possible, but essential, to assume that phrases with unvalued features are probes. In this section I will briefly sketch what happens in other cases if we let phrases probe.

The following types of clauses will be discussed: main clauses, embedded clauses, raising constructions, and Exceptional Case Marking (ECM) constructions. Admittedly, this is a very limited set of clause constructions. However, these are the types of constructions that have a prominent position in syntactic theorizing.

In the following discussion I will assume that the clausal structure is as in (18) (following Chomsky, 2004):[21]

(18)

```
                    CP
                   /  \
                  C    TP
                      /  \
                  DP_i    T'
                 subject  /  \
                         T    vP
                             /  \
                           t_i   v'
                         subject  /  \
                                 v    VP
                                     /  \
                                    V    DP
```

The subject is externally merged in spec-v and moves to spec-T. I will assume it to be essential that probe and goal are both active, i.e. they have unvalued features (in line with Chomsky 2001, 2004, but contrary to Pesetsky and Torrego 2004). This means that a goal is only visible to a probe iff it has (at least) one unvalued feature (Chomsky, 2001, 4,6). Heads or phrases that lack unvalued features are not visible to the probe. Following Chomsky (2001,

---

[21]The position where the subject is first merged in (18) is indicated with a trace, t, and in the following discussion I will sometimes use the term trace. This can just as well be interpreted as a copy instead.

2004), I assume that the feature set up of D (DP) and T and v is the following
(19) (Chomsky, 2001, 6)[22]:

(19)   a. DP: valued φ-features, unvalued case-feature

       b. v: unvalued φ-features

       c. T: unvalued φ-features

The unvalued case-feature makes the DP active, and the unvalued φ-features
make T and v active. Case is a special feature, though. It is a feature on DP, but
not on v or T. Remember that it is important that the unvalued feature is on D
(DP) and not embedded in DP. In BPS it is only the unvalued features of DP that
can probe. If there are any unvalued features on NP they cannot probe outside
DP. DP gets its case-feature valued as a side effect of φ-feature Agreement. If a
DP values all φ-features on v or T case gets valued (Chomsky, 2001, 2004).[23]

5.1   Main and embedded (active) clauses

Presumably, one reason why phrases are assumed not to probe is that we do not
want there to be a syntactic Agree-relation between the subject and the object, or
the subject and v. In the approaches to MP mentioned above the subject enters
an Agree-relation with one functional head, T, and the object enters an Agree-
relation with another functional head, v. The following sections will show that,
even though phrases are probes, there will be no Agree-relation between the
subject and the object, or between the subject and v. There are two reasons for
this: inactive goals, and the Phase Impenetrability Condition.

5.1.1   Main clauses

As mentioned in section 4.1, when the object DP is merged to the V head we
have two elements that mutually c-command each other. It is unclear what the
feature set up of the lexical head V is. In none of the syntactic approaches men-
tioned above (Chomsky, 2001, 2004; Frampton and Gutmann, 2000; Pesetsky
and Torrego, 2001) does V lack values for its features. Since the object DP lacks
a value for its case-feature it probes V. V cannot value the DP's case-feature and
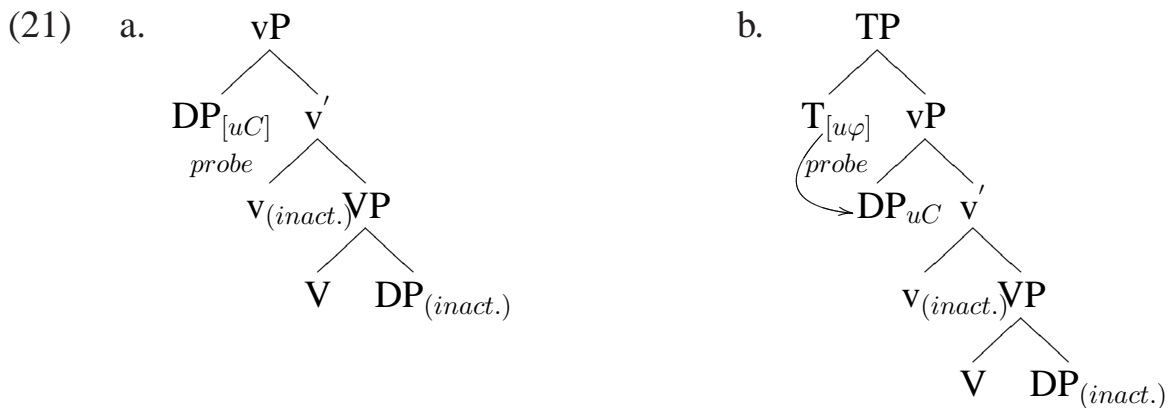
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[22]In Pesetsky and Torrego (2001) instead of case, DPs have an unvalued T (tense)-feature
and, T and v have a valued T-feature. The analysis presented in this paper should, with minor
changes, carry over to an analysis where case is unvalued T.

[23]"Structural Case is not a feature of the probes (T, v), but is assigned a value under Agre-
ement, then removed by Spell-Out from the narrow syntax. The value assigned depends on
the probe: nominative for T, accusative for v (alternatively ergative-absolutive, with different
conditions). Case itself is not matched, but deletes under matching of φ-features." (Chomsky,
2001, 6)

the DP remains active (20a). When v is merged it probes the structure since it has unvalued φ-features. The probe v finds the active object DP and there is match and Agree between v and the object DP (20b). The unvalued φ-features of v get a value from DP, and the case-feature of DP gets a value as a consequence of the φ-feature match. Note that at this time in the derivation both v and the object DP have values for all their features. Since they do not have unvalued features they are inactive.

(20) a.

```
        VP
       /\
      V   DP
    ↑ probe
```

b.

```
        vP
       /\
    v[uφ]  VP
          /\
   probe  V   DP[uC,φ]
```
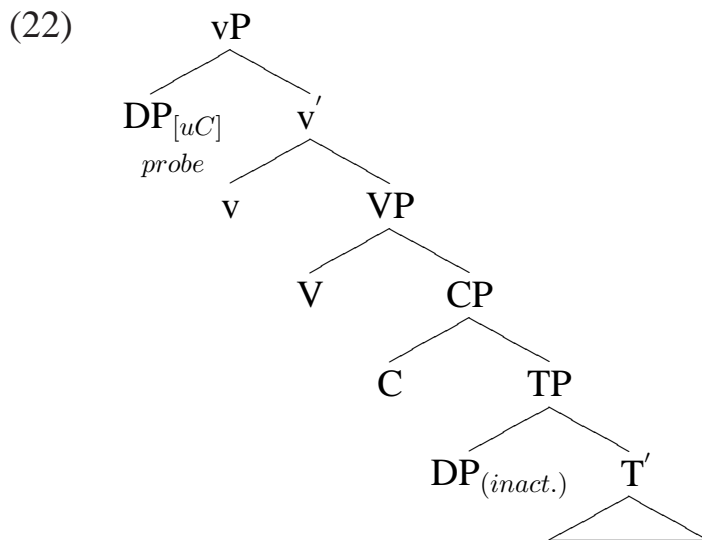
When the subject DP is merged in Spec-v, it lacks value for its case feature, hence it is a probe. The probe searches its c-command domain, but since there are no active, unvalued, features in the domain, the case feature of the subject DP remains unvalued (21a). In the next step of the derivation T is merged to vP. T lacks values for its φ-features and probes its domain. The subject DP, since it has an unvalued case-feature, is an active goal for T. T and DP match and Agree (21b).

(21) a.

```
          vP
         /\
     DP[uC]  v'
      probe /\
        v(inact.) VP
                 /\
                V   DP(inact.)
```

b.

```
           TP
          /\
      T[uφ]  vP
      probe /\
         DP_uC  v'
              /\
          v(inact.) VP
                   /\
                  V   DP(inact.)
```

As we can see, a syntactic Agree-relation between the subject DP and the object DP is never formed, nor is a relation formed between the subject and v. Apparently, there is no unwanted effect of letting phrases be probes in active main clauses. The next subsection takes a look at embedded clauses.

5.1.2 Embedded clauses

In embedded clauses there is again a risk that there is a relation formed between two DPs, this time between the subject[24] in the matrix clause and the subject in the embedded clause. When the subject DP is merged in spec-v in the matrix clause it lacks a value for its case feature, hence it is a probe (cf. (21a)). What prevents this DP to probe its domain and find and Agree with a subject DP in an embedded clause? If we look at the structure in (22) there are two reasons why this is impossible. First, the subject DP in the embedded clause has all its features valued, hence it is inactive and not a possible goal.[25]

(22)

```
                 vP
               /    \
        DP[uC]        v′
         probe      /    \
                   v      VP
                        /    \
                       V      CP
                            /    \
                           C      TP
                                /    \
                         DP(inact.)   T′
                                     /  \
                                    /____\
```

Second, if it were the case that the embedded subject had unvalued features and thereby was active, it would still be impossible to form a relation between the two DPs because of the Phase Impenetrability Condition (PIC) (Chomsky, 2001, 13–14), the consequence of which, is something like (23):

(23)   *The Phase Impenetrability Condition (PIC)*[26]
       At a phase, only the next lower phase head and its specifier(s) are available for operations.

Phases in Chomsky (2001, 2004) are v and C.[27] This means that it is impossible for a probe above CP to find the subject in the embedded clause. This

---

[24]I use subject DPs as examples here. This discussion of subjects in matrix clauses carries over to objects in matrix clauses.

[25]The subject in the embedded clause is externally merged in spec-v, but moves to spec-T.

[26]"If ZP [a phase] = [C [T vP]], then T can access Quirky NOM object within vP [a phase](modifying its feature structure and also that of T),but C can access only the edge of vP [its specifier(s)], so that movement from the domain of v must pass through the escape hatch at the edge of v." (Chomsky, 2004, 108)

[27]See Legate 2003 for arguments for other phases, for example passive v.

is also the case with T in the embedded clause. If the embedded T, for some reason, lacks a value for one or more φ-features, it is impossible, because of the PIC, for the subject in the matrix clause to Agree with T and value its φ-features. All unvalued features in the embedded clause must get a value before CP is formed, or the derivation will crash.

The next section takes a closer look at other types of clauses where the phases CP and transitive v are missing namely, passives, raising-, and ECM (exceptional case marking) constructions.
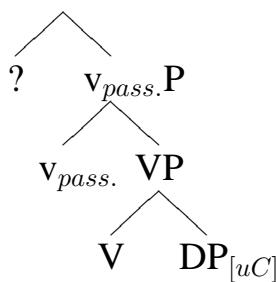
5.2 Passives, Raising, and ECM

This section deals with structures where there are 'defective' probes, i.e. probes that do not value all features and leave goals that are still active and available for higher probes. In these constructions one might suspect that there are cases where DP-probes Agree with other phrases.
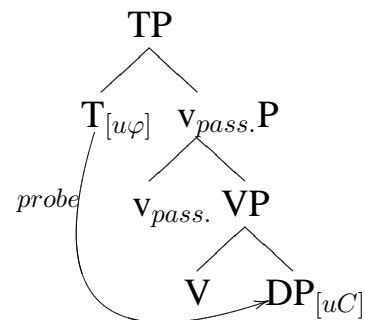
5.2.1 Passives

In passives v is defective and is not a phase and does not assign case to the VP internal DP. The reason it is defective and does not assign case is that it is not φ-complete (Chomsky, 2001, 9,18). The consequence is that the object DP has an unvalued case-feature even after v has been merged to VP. The object is therefore an active goal. In this case it might be expected that a higher phrase can see the active DP and Agree with it (24a).

(24) a.

   ? $v_{pass.}$P
             /   \
        $v_{pass.}$ VP
                    /   \
                   V   DP$_{[uC]}$

      b.   TP
                     /   \
            T$_{[u\varphi]}$ $v_{pass.}$P
                            /   \
        probe $v_{pass.}$ VP
                               /   \
                              V   DP$_{[uC]}$

Since this is a passive v, for θ-theoretical reasons there is no external DP that can probe and Agree with the internal DP before T is merged (Burzio's generalization). T probes, matches and Agrees with the internal DP. The φ-features of T are valued and the DP gets a value for case. Since the valuation is done by T it is nominative (24b). As we can see there does not seem to be any unwanted effects of letting phrases be probes in passives.[28]

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[28]There is a potential problem with double-objects passives. For lack of space, this problem will not be dealt with in this paper.
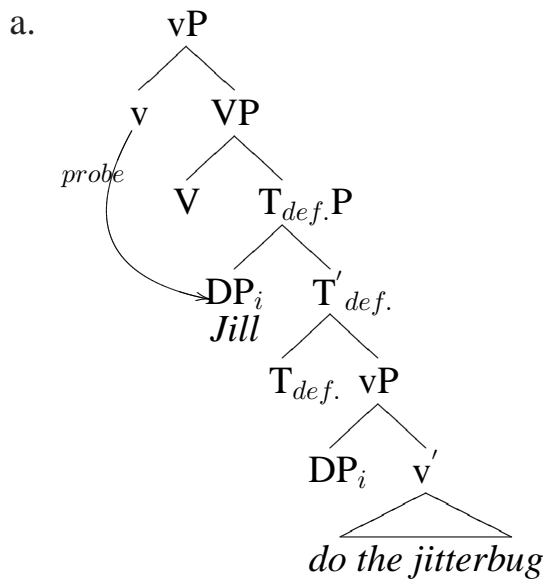
5.2.2 Raising

Another case with a defective probe is raising constructions. But again we will see that there is no instance where a goal, left with unvalued features, is probed by a phrase merged higher in the structure. Since non-finite T is not a case assigner, a subject in a non-finite clause does not get its case-feature valued (Chomsky, 2001, 2004) (25a). However, the defining characteristics of raising verbs is that they do not assign a θ-role to their subjects. Hence there is no argument merged in spec-v. Since there are no other phrases that c-command the subject, it will move up to finite T (25b).

(25)   Mary$_i$ seems [$_{TP}$ t$_i$ to [$_{vP}$ t$_i$ love everyone]].
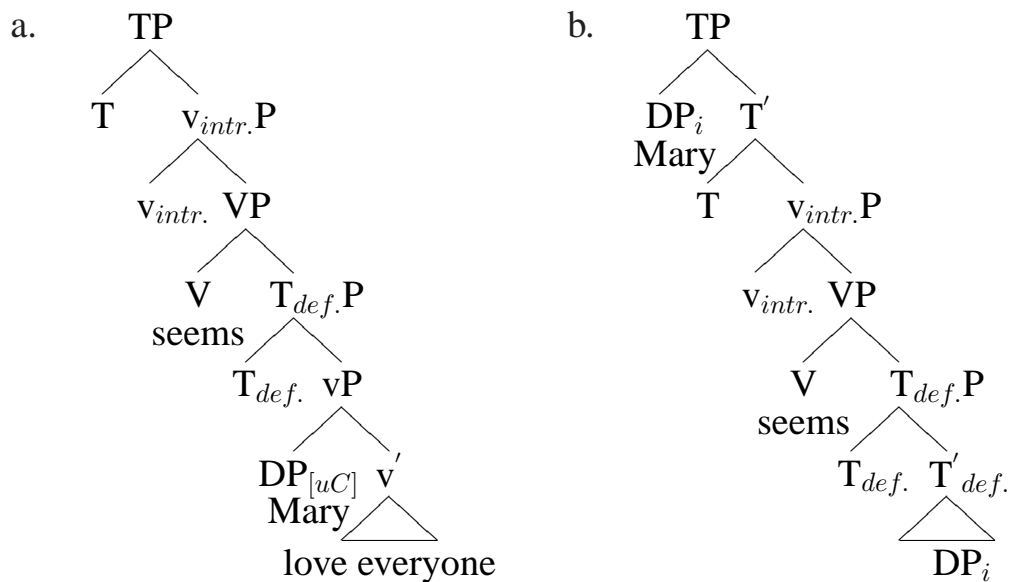
5.2.3 ECM

Another instance of not completely valued goals is ECM subjects. Crucially, T in the embedded clause does not assign case, i.e. it is not φ-complete. In addition the embedded clause lacks a CP (Chomsky, 2001, 9). This means that there is no phase between the subject in the matrix clause and the subject in the embedded clause and we would expect a relation between the two to be formed.

(26) Mary wants Jill to do the jitterbug.

a.

```
                    vP
                   /  \
                  v    VP
              probe   /  \
                     V   T_def.P
                        /    \
                     DP_i    T'_def.
                     Jill    /   \
                        T_def.    vP
                               /    \
                             DP_i    v'
                              /\
                       do the jitterbug
```

But as we can see in (26a) the ECM-subject has entered an Agree relation with v in the matrix clause. This way v gets its φ-features valued and the subject gets a value for its case feature, accusative in this case since it is valued by v, not T. This makes the ECM subject inactive and the subject in the matrix clause cannot enter an Agree-relation with it, even though there is no phase intervening.

Next section outlines some possible implementations that this approach to probing have for binding phenomena.

6 Consequences

In spite of what I have shown in the previous section, there seem to be a few cases where there is an Agree relation between DPs. One such case is the relation between certain pronouns and their antecedents. It is not the purpose of this paper to explore these cases in detail, but I will sketch briefly what may be a possible approach to binding in the minimalist program.[29] As we saw in the previous section an Agree-relation between phrases is usually blocked by either inactive goals or by the PIC (23). This raises two questions; first, are there phrases that lack values for other features than case and therefore are active even after Agreement and feature valuation with v or T? And if there are, are there instances where the PIC does not prevent Agreement between a phrase of this kind and a probing phrase merged higher in the structure. There seems to be at least two obvious candidates for phrases that lack an unvalued feature that is not case related; reflexive pronouns and PRO. According to Rheinhart and Reuland

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[29]For a more extensive elaboration of this approach see Heinat (2005).

(1993) reflexives lack a feature R, for referentiality. Suppose instead that this feature is not lacking from reflexives, but is simply unvalued. It is also reasonable to assume that this feature is unvalued on PRO, since neither reflexives nor PRO can have independent reference.[30][31] If the distinction between reflexives and PRO is a matter or case (Martin, 1996; Landau, 1999, among others), we expect reflexives to show up in case positions and PRO in non-case positions.[32] In the framework of distributed morphology (Halle and Marantz, 1993) or any other theory of post syntactic lexical insertion, the valuation of the R-feature and of case will give rise to different morphological forms on the pronouns (cf. Adger and Smith 2004 on dialect differences, see also Zwart 2002 for a post syntactic approach to binding).

There are several obstacles to implementing the Binding Principles from G&B-theory(Chomsky, 1981). The *Inclusiveness Condition* (Chomsky, 1995), bars the use of *indices*. *Government* is not a relation that has any status in the Minimalist Program, which renders the definition of*domain* void. In short, the definitions from G&B-theory are not applicable in the MP.

In this section we will see that the predictions of the binding principles from the Government and Binding framework can be captured in the MP, without the use of the notion government and the use of indices.

In transitive clauses the object will be valued for case by v, and get its value for R from the subject DP. Since this pronoun has case its spell-out form will be a reflexive, not PRO (27).

(27)   Mary excused herself.
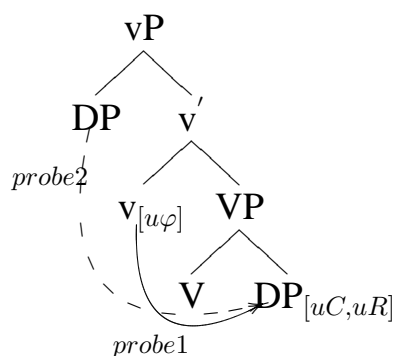
In the case of ECM constructions the ECM-subject will get its case from v in the main clause, and its R value from the first c-commanding DP, the subject in
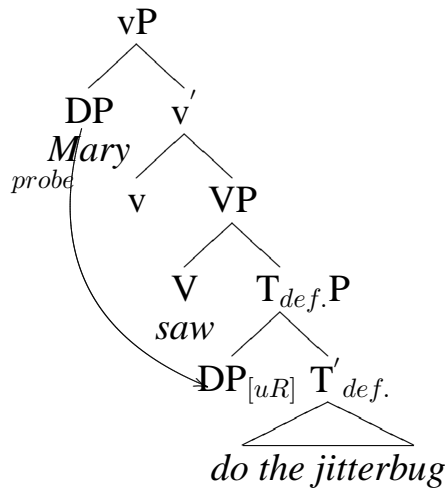
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[30]Rheinhart and Reuland (1993) do not analyze PRO.

[31]The analysis presented here does not apply to arbitrary PRO.

[32]This is a simplification. The difference between PRO and reflexives is not +/- case. In the works cited the difference is different kinds of case. There are approaches that assumes that PRO lacks case Sigurðsson (1989). It is not within the scope of this paper to explore control any deeper.

the matrix clause. When the matrix subject is merged in Spec-v it lacks a value for case and probes its domain. v has values for all its features and is therefore inactive. The ECM subject, on the other hand, has a value for its case feature but is still active because of the unvalued R-feature. The two DPs Agree and the R-feature of the ECM-subject gets a value. The spell-out form of the pronoun is a reflexive pronoun, since it has case (28).

(28)   Mary saw herself do the jitterbug.

```
                    vP
                   /  \
                 DP    v′
                Mary   / \
               probe  /   \
                     v     VP
                          /   \
                         V    T_{def.}P
                        saw   /   \
                          DP_{[uR]} T′_{def.}
                             /\
                            /  \
                      do the jitterbug
```
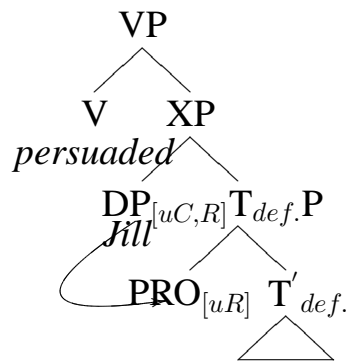
Turning to non-finite clauses where we do not have ECM, the spell-out form of the pronoun will be PRO. As pointed out before, non-finite clauses lack a CP (section 5.2.3). The missing CP phase makes it possible for a c-commanding DP in the matrix clause to find the subject in the embedded clause. The PIC is not applicable here. If the subject in the embedded non-finite clause lacks value for its R-feature it will enter a relation with the closest c-commanding DP, either the object[33] (29a) or the subject (29b). Since the embedded subject lacks case its spell-out form will be PRO.
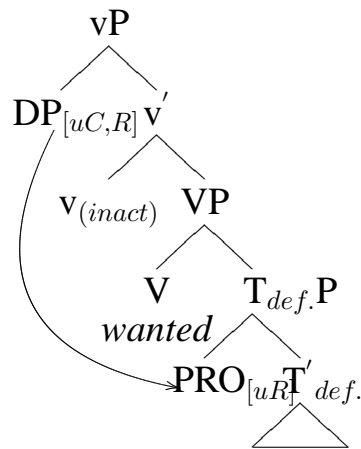
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[33]The structure of double object constructions is more complicated than I outline it here. That the direct object c-commands the embedded clause is pretty clear from Principle c violations (i).

(i) *John persuaded her$_i$ to kiss the girl$_i$.

(29) a. Mary persuaded Jill PRO to give Liza a kiss.

VP tree:

- VP
  - V *persuaded*
  - XP
    - DP$_{[uC,R]}$ *Jill*
    - T$_{def.}$P
      - PRO$_{[uR]}$
      - T$'_{def.}$ △

b. Mona wanted PRO to meet Liza.

vP tree:

- vP
  - DP$_{[uC,R]}$
  - v$'$
    - v$_{(inact)}$
    - VP
      - V *wanted*
      - T$_{def.}$P
        - PRO$_{[uR]}$
        - T$'_{def.}$ △

Note that the way probing works, i.e. the probe searches its c-command domain, makes it unnecessary to stipulate a c-command relation between the antecedent and the reflexive/PRO. Also, it is impossible to get an Agree relation between antecedent and pronoun if the antecedent is c-commanded by the pronoun. In all the cases where the c-command relation is reversed from the examples in (28) and (29) the antecedent will have all its features valued, including case, when the pronoun is merged in the structure. The consequence is that it will be inactive and not a possible goal for a pronoun that is an active probe because of its [uR], or any other unvalued feature, e.g. case.

This was a very short departure from the main topic of this paper, probing phrases. But at least it shows that this is a possible approach to formalize binding and control in minimalist terms with the tools already provided by the theoretical framework.

6.1   What is probing?

As we have seen in the previous chapters there is nothing that seems to give a principled explanation to probing. However, without the probe–head stipulation thereis one thing that probes, be they heads or phrases, have in common:

external Merge.

There are two kinds of merge in the Minimalist Program: internal Merge and external merge. The distinction between the two is that under external Merge, two objects that are merged are separate objects. External merge is connected to argument structure (base structure) and the interpretation at the Conceptual–Intensional interface (Chomsky, 2004, 110–111). Internal merge is when two objects have already formed a relation and one object is 'remerged' (derived structure) (ibid). Any merge that is from the lexical array is subsumed under external Merge. Also the merge of phrases into the construction is external Merge.

Since the valuation of features is what drives the syntactic derivation (see for example Frampton and Gutmann, 2000; Collins, 2002), this valuation cannot take place prior to the actual derivation. This means that we do not expect to see unvalued features getting valued in the lexicon or in the lexical array. Assuming that the lexical array consists of heads (or features as suggested by Matushansky 2002), the first possibility for a head H to get its unvalued feature(s) valued by another feature is when the head is externally merged with another syntactic object, be it a head or a phrase. A DP is formed in the working space. Here each head (and phrase) is a possible probe, depending on the valued of its features. When the DP is formed it is *externally merged* to V or v. Note that the DP must be built when DP and V/v merge. Any elements merged in the DP after it has merged with V/v is a violation of the extension condition. As we saw in the previous sections there is nothing that prevents that the unvalued case feature of DP makes DP a probe.

If we again turn to Chomsky's claim that a probe must be 'available without search' (1) Chomsky (2004, 113): "[f]or optimal computation one member of the pair must be *available with no search*. It must, therefore, be the head H of the construction α under consideration $\alpha= \{H\ XP\}$."(emphasis added) and "[s]uppose EXPL is a simple head not formed by Merge. In a label-free system [Collins 2002], EXPL is accessible *without search* as a probe and can match and Agree with the goal T." (emphasis added) it is clear that 'no search' must imply external Merge. If we take a closer look at Chomsky's arguments for probes we can first establish that being the head of the construction is *not* a defining property of 'available without search' since the expletive, which we established in section 4.1 does not head the 'construction under consideration', is available without search. A head not formed by merge, is supposedly taken directly from the lexical array and merged into the structure. This kind of merge was part of the definition for heads in X-bar theory. In the Minimalist Program, however, 'merge from the lexical array' is subsumed under external Merge.

If we want to tie probing to something in the syntactic derivation and possibly get one step in the direction of a deeper explanation of what it is, the obvious thing seems to be external Merge; when a phrase/head with unvalued features is externally merged, it probes. This explains why heads, externally merged from the lexical array, probe. It also explains why phrases probe. They are externally merged into their arguments positions from the working space.

7 Conclusion

I have shown in this paper that there is no need to stipulate that only heads are probes. Or rather, in the building of the syntactic structure there is no difference between heads and phrases. The consequence is that what we perceive as phrases are probes when they are externally merged to a construction.

Without inducing any extra theoretical machinery, I have shown that there are no empirical considerations indicating that getting rid of the head–probe stipulation would be a loss to the theory. On the contrary, if the approach to binding that was sketched in the previous section is on the right track, the theory actually gains in explanatory power without the head–probe stipulation. One problem, though, that needs to be further explored is case. Why, does not a DP get case from the DP it agrees with? One possible solution to this is Julien (2005) who claims that case is a feature on all heads in the DP, not only on D. There probably are other areas where we can expect phrases to probe. With this approach to probing the agreement of φ-features in the DP between for instance D, and A, with N, in (30) is a the reflex of a probe–goal relation. Obviously, this has to be investigate in more detail.

(30) a. en   stor   bil   (Swedish)
        a-NEUT. big-NEUT. car
        a big car

     b. ett   stort   hus
        a-NON-NEUT. big-NON-NEUT. house
        a big house

References

Adger, David, and Jennifer Smith. 2004. Variation in the Minimalist Program. Ms. Queen Mary, University of London and University of York.

Bejar, Susana. 2003. Phi syntax: a theory of agreement. Doctoral Dissertation, University of Toronto.

Carnie, Andrew. 2000. On the definition of X0 and XP. *Syntax* 3:59–106.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Studies in Generative Grammar 9. Dordrecht: Foris.

Chomsky, Noam. 1995. *The minimalist Program*. Linguistic Inquiry monogr. 6. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2000. Minimalist inquiries: the framework. In *Step by Step*, ed. R. Martin, D. Michaels, and J. Uriagereka, 89–155. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2001. *Derivation by Phase*, 1–52. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2004. *Beyond explanatory adequacy*, 104–131. Oxford: Oxford University Press.

Collins, Chris. 2002. Eliminating labels. In *Derivation and Explanation in the Minimalist Program*, ed. S. D. Epstein and T. D. Seely, Generative Syntax 6, 42–64. Oxford: Blackwell.

Epstein, Samuel, Erich M. Groat, Ruriko Kawashima, and Hisatsugu Kitahara. 1998. *A derivational approach to syntactic relations*. Oxford University Press.

Frampton, John, and Sam Gutmann. 1999. Cyclic computation, a computationally efficient minimalist syntax. *Syntax* 2:1–27.

Frampton, John, and Sam Gutmann. 2000. Agreement is feature sharing. Ms. Northeastern University, Boston.

Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The view from building 20*, ed. Samuel J. Keyser Kenneth Hale, 111–176. Cambridge, Mass.: MIT Press.

Hallman, P. 2004. Symmetry in structure building. *Syntax* 7:79–100.

Heinat, Fredrik. 2005. Reflexives in a phase based syntax. *Working Papers in Scandinavian Syntax* 75:37–54.

Holmberg, Anders, and Urpo Nikanne. 2002. Expletives, subjects, and topics in Finnish. In *Subjects, expletives and the EPP*, ed. Peter Svenonius, Oxford studies in comparative syntax, chapter 4, 71–105. New York: Oxford University Press.

Holmberg, Anders, and Christer Platzack. 1995. *The role of inflection in Scandinavian syntax*. Oxford studies in comparative syntax. New York: Oxford University Press.

Hornstein, Norbert. 2001. *Move! A minimalist theory of construal*. Generative Syntax: 5. Oxford: Blackwell.

Julien, Marit. 2002. *Syntactic heads and word formation*. Oxford Studies in Comparative Syntax. Oxford: Oxford University Press.

Julien, Marit. 2005. Nominal phrases from a scandinavian perspective. Ms. University of Tromsø.

Kayne, Richard S. 1994. *The antisymmetry of syntax*. Linguistic Inquiry Monograph 25. Cambridge, Mass.: MIT Press.

Landau, Idan. 1999. Elements of control. Doctoral Dissertation, MIT, Cambridge, Mass.

Legate, Julie Anne. 2003. Some interface properties of the phase. *Linguistic Inquiry* 34:506–516.

Longobardi, Giuseppe. 1994. Reference and proper names. *Linguistic Inquiry* 25:609–665.

Martin, Roger. 1996. A minimalist theory of PRO and control. Doctoral Dissertation, University of Connecticut, Storrs.

Matushansky, Ora. 2002. The status of head-movement in linguistic theory. Ms. CNRS/Université Paris VIII, Paris.

Pesetsky, David. 2000. *Phrasal movement and its kin*. Cambridge, Mass.: MIT Press.

Pesetsky, David, and Esther Torrego. 2001. T-C movement: Causes and consequences. In *Ken Hale: a life in language*, ed. Michael Kenstowicz, 355–426. Cambridge, Mass.: MIT Press.

Pesetsky, David, and Esther Torrego. 2004. The syntax of valuation and the interpretability of features. Ms. MIT, Cambridge, Mass.

Rezac, Milan. 2003. The fine structure of cyclic agree. *Syntax* 6:156–182.

Rheinhart, Tanya, and Eric Reuland. 1993. Reflexivity. *Linguistic Inquiry* 24:657–720.

Ritter, Elizabeth. 1995. On the syntactic category of pronouns and agreement. *Natural Language & Linguistic Theory* 13:405–443.

Sigurðsson, Halldór Ármann. 1989. Verbal syntax and case in Icelandic. Doctoral Dissertation, Lund University, Lund.

Starke, Michal. 2001. Move dissolves into merge: a theory of locality. Doctoral Dissertation, University of Geneva.

Travis, Lisa. 1984. Parameters and effects of word-order variation. Doctoral Dissertation, MIT, Cambridge, Mass.

Zwart, Jan-Wouter. 2002. Issues relating to a derivational theory of binding. In *Derivation and Explanation in the Minimalist Program*, ed. S. D. Epstein and T. D. Seely, Generative Syntax: 6, 269–302. Oxford: Blackwell.

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