ON REDUCING CONTROL TO MOVEMENT[*]

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1. Introduction

Hornstein (1999, 2001)[1] proposes a particular version of the movement theory of control (MTC) in which movement is driven by the need of a DP to "receive" a θ-feature from the predicate it merges with. I argue here against the use of θ-features in syntax on various grounds, the most important of which is that, being fundamentally semantic in nature, they belong properly to the bare output conditions of the C-I interface. Assuming the most recent version of the minimalist program (Chomsky 2000, 2001a, 2001b), I propose instead a version of MTC closer in spirit to that of Bowers (1973[1986], 1981), based on the idea that Merge is driven by the need to satisfy interpretable or uninterpretable c-selection features.   I then show that given standard minimalist constraints on the operation of Agree, the MTC is not only possible but necessary. After discussing and refuting two important arguments that have been advanced against the possibility of movement to a θ-position, I conclude by showing that the proposed version of the MTC is only compatible with a purely derivational theory of syntax in which interpretation is immediate and there is no intermediate level of LF.

2. θ-Role Assignment as Feature Checking

H's proposal rests on the following assumptions:

(1)   a. θ-roles are features on verbs.

       b. Greed is Enlightened Self-Interest.

       c. A DP "receives" a θ-role by checking a θ-feature of a verbal/predicative

          phrase that it merges with.

       d. There is no upper bound on the number of θ-roles a chain can have.

Given these assumptions, he shows how a sentence such as (2) a. can be derived as

shown in (2) b.:

(2)   a. John hopes to leave.

       b. [$_{IP}$ John [$_{VP}$ <John> [hopes [$_{IP}$ <John> to [$_{VP}$ <John> leave]]]]]

The DP *John* merges first with *leave,* at the same time checking the verb's θ-feature. It

then moves to the embedded [Spec, IP] to check the EPP feature of I. Since I is non-

finite, this is not a Case-checking position, so *John* raises next to [Spec, V] of *hope,*

where it checks the verb's θ-feature, and subsequently to [Spec, IP] of the matrix, where

its nominative Case is checked and the EPP feature of I is satisfied.

       In order to forestall the objection that nouns are not inherently classified in terms

of θ-roles, H treats θ-roles as features of verbs rather than of nouns, arguing that

providing a verb with a set of θ-features is simply a way of representing its adicity. The

process of assigning a DP a θ-role must then involve the transfer of a θ-feature from a

verb to the DP it merges with. A potential problem with the mechanism of transferring a verbal θ-feature to a nominal expression is that it might be seen as a violation of *inclusiveness*, since a new feature, i.e. one not contained in any of the lexical items from which the nominal expression was constructed, has been added to it. It might be countered, however, that the θ-feature in question is not new because it is contained in the verb with which the nominal is merged. Unfortunately, the inclusiveness condition is somewhat vague on this point. Inclusiveness is certainly intended to prevent totally new features (i.e. ones not contained in *any* of the syntactic objects from which a new syntactic object is constructed) from being introduced in the course of a derivation. Whether or not inclusiveness should be strengthened to prohibit transferring features from one syntactic object to another at some point in a derivation is less clear, though it is a possibility worth considering. There is no doubt that it must be possible for one feature to be *valued* by another one, since that is needed for the Agree operation, but it might well be desirable to rule out moving a feature from one syntactic object to another. In that case, the only way for H to avoid a violation of inclusiveness would be to assume that *both* nouns and verbs have θ-features, treating θ-role assignment as, in effect, a kind of morphological agreement process similar to φ-feature agreement. However, this proposal again runs afoul of the fact that nouns are not inherently classified in terms of thematic roles.

Another potential problem with treating θ-roles as features, though not perhaps a fatal one, is that a θ-role, as Chomsky (1995) observes, is not a syntactic or morphological *category*, but a *relation* between two syntactic objects in a certain syntactic configuration. Basically, to say that a DP bears a θ-relation to some lexical

head is simply a way of stating that it is an *argument* of that head. The use of terms such as 'Agent', 'Patient/Theme', etc. to refer to various different θ-relations is nothing more than a convenient shorthand for differentiating arguments in terms of the various configurations in which argument DPs may occur, e.g. an argument in [Spec, *v*] is an Agent, an argument in [Spec, V] is a Patient/Theme, etc. But clearly the notion 'argument-of,' which underlies the notion 'θ-role' is inherently relational and therefore cannot be reduced to a simple morphological or syntactic feature of either predicates or nominals.[2]

However, the strongest objection, I believe, to treating θ-roles as syntactic features is that they are fundamentally semantic in nature and therefore properly belong to the C-I system external to C_{HL}. One of the strongest claims of the minimalist program is that the internal computations of C_{HL} are not "visible" to the interface systems, yet in H's theory movement is driven by the need to "check" (i.e. assign) θ-features, which arguably are properties of C-I. I will develop this idea further in the next section, showing ultimately that all of the results that H wishes to achieve by means of θ-checking can in fact be taken care of with far more restrictive means, given independently needed properties of C_{HL}, together with the bare output conditions of C-I.

Bowers (1973[1986]: 681-693, 1981: 170-184) avoids the conceptual problems inherent in a feature-based theory of θ-relations by adopting the following assumption:

(3)   θ/argument-relations are determined by the syntactic configuration that

exists *at the point in the derivation where a lexical category is inserted*.

According to this theory, then, the difference in interpretation between *John seems to like cheese* and *John tries to like cheese* arises from the fact that in the former lexical insertion of *seem* takes place *before* raising of the infinitival subject into the matrix clause, whereas in the latter lexical insertion of *try* takes place *after* raising:

(4)   a.   1. Insertion of *seem*: [$_{IP}$ Δ seem [$_{IP}$ John to like cheese]]

             2. Raising: [$_{IP}$ John seem [$_{IP}$ t to like cheese]]

    b.   1. Raising: [$_{IP}$ John Δ [$_{IP}$ t to like cheese]]

             2. Insertion of *try*: [$_{IP}$ John try [$_{IP}$ t to like cheese]]

By (3), the NP *John* is interpreted as an argument of the matrix verb just in case it is present in [Spec, IP] at the point of lexical insertion. Hence *John* will be interpreted as an argument of *try* in (4) b, but not as an argument of *seem* in (4) a. As I pointed out at the time, such derivations are incompatible with the existence of D-structure, because there is no well-defined level of syntactic structure at which θ-roles are unambiguously assigned. It is important to observe, however, that derivations of this sort *are also incompatible with the existence of a syntactic level of LF*, for though θ/argument-relations are determined configurationally, there is no well-defined level of syntactic structure that determines the interpretation of these sentences. Rather, the correct interpretation of raising and control sentences can only be determined by the structure that exists at the point in the derivation where lexical insertion actually takes place.[3]

H's theory appears to avoid the more radical conclusion that LF does not exist, i.e. that interpretation is derivational, because the mechanism of transferring θ-features from verbs to nominals in effect permits a record of the derivation to be left in LF representations. However, this is arguably a purely notational difference, for it is precisely the process of transferring a θ-feature from the verb to the nominal that determines the correct interpretation of a sentence. In a control sentence with a matrix verb such as *try*, a θ-feature is transferred to the raised DP, whereas in a raising sentence with a matrix verb such as *seem*, no θ-feature is transferred to the raised DP. Though the presence vs. absence of a θ-feature in the raised nominal is carried through the derivation, thereby enabling the appearance of a level of LF to be preserved, it is clearly the structure at the point where the feature is actually transferred that is crucial in determining the interpretation.

My original argument for MTC thus supports the claim that syntax is derivational rather than representational, since the correct interpretation of raising and control sentences is determined by the derivational operations themselves rather than by the properties of representational constructs such as chains. Accordingly, it will be of some interest to see whether a minimalist version of my proposal also leads to a purely derivational theory of interpretation.

3. θ-Roles in the Minimalist Program

The particular analysis of raising and OC sentences proposed in Bowers 1973[1986], 1981 and Bowers and Reichenbach 1979 depends crucially on the conception of lexical insertion as a local transformation, proposed originally in Chomsky 1965. The framework assumed in my work was essentially equivalent to that of Chomsky 1995, Chapter 3, in which movement transformations and lexical insertion transformations apply cyclically from the bottom up. Since the emergence of the minimalist program, however, there are no longer any such things as lexical insertion transformations and movement itself has been reduced to a special case of Merge. Merge is a binary recursive operation that combines two syntactic objects α and β to produce a new syntactic object $K(\alpha, \beta)$.[4] Syntactic objects are: (i) lexical items; (ii) $K = \{g, \{a, b\}\}$, where a, b are objects and g is the label of K. Furthermore Move has been reduced to Merge of an identical occurrence of a syntactic object previously introduced or produced in the course of the derivation

In a theory of this sort it is not immediately apparent whether movement to a θ-position is a valid operation or not. Chomsky (2000: 103) suggests that it is not, arguing that the following principle is "implicit in the conception of θ-roles as a relation between two syntactic objects, a configuration and an expression selected by its head:"

(5)   Pure Merge in θ-position is required of (and restricted to) arguments.

Complementary to (5) is the assumption that Move is only permitted to non-θ-positions. This is guaranteed in a somewhat indirect fashion by defining Move as a composite operation consisting of Agree and Merge. Agree consists of two parts: (i) an operation

Match which determines whether or not a probe P and the nearest goal G have the same set of φ-features, and (ii) an operation that assigns the uninterpretable φ-features of P the same value as the interpretable φ-features of G, at the same time valuing the uninterpretable Case feature of the Goal, and finally erasing all uninterpretable features. A copy or occurrence of a phrase P(G) determined by the Case feature of G then merges with P to satisfy its EPP feature. Thus Move is always contingent on an Agree relation, which in turn is contingent on the presence of an EPP feature. In this way, one of the most fundamental ideas of the Principles and Parameters approach, namely, that θ-positions and movement landing sites are in complementary distribution, is preserved in the form of a distinction between 'pure' Merge and Merge of a copy or occurrence, or, in the terminology of Chomsky 2001b, *external* Merge and *internal* Merge.

As H points out, however, it is not so clear, given the copy (or occurrence) theory of Movement, that there are principled grounds for distinguishing external and internal Merge in this fashion. In fact, as has been pointed out recently by Epstein and Seely (2006: 64-65), there is something quite odd about constraining syntactic derivations by means of condition (5), since what (5) amounts to is a statement of one half of the theta criterion. This means that examples such as the following (Epstein and Seely (2006)'s (29) and (30)) are also ruled out by (5):

(6)   a.   John seems that Bill sleeps.

       b.   I was in England last year the man.

As they observe, the problem with these sentences seems to be that they are uninterpretable. There is nothing syntactically or phonetically wrong with (6) a. It is simply that the cooccurrence of an argument *John* and a non-argument assigning verb such as *seem* yields an uninterpretable sentence. The natural way of explaining this is in terms of Bare Output Conditions of the C-I system, specifically, by means of the theta criterion, together with independently necessary semantic properties of lexical items, rather than by a constraint on the operation of Merge. Likewise, the theta criterion is sufficient to explain why a sentence with the meaning "I was in England last year" can't be expressed in the form (6) b., disregarding the DP *the man* (though it should be noted that (6) b. might be syntactically ill-formed as well).

Pursuing this line of thought further, consider examples such as the following:

(7)   a.   There kissed Mary.

         b.   There tried to be an argument.

In (7) a. the expletive *there* has been internally merged in an argument position, yielding a sentence that is syntactically and phonetically well-formed but uninterpretable, because the expletive *there* simply does not meet the semantic conditions for being an argument of *kiss*. Similarly, regardless of whether *there* is externally or internally merged in the argument position required by *try*, (7) b. is uninterpretable for exactly the same reason. Hence formulating the theta criterion as a bare output condition at C-I is sufficient to explain the uninterpretability of the examples in (7) as well.

To be more explicit, let us assume (as tentatively suggested in Chomsky 2000: 134, 135 and developed in more detail in Collins 2003 and Bowers 2000, 2001b, 2002) that Merge is driven by the need to satisfy c-selection features (or subcategorization features, as they were termed in Chomsky 1965). This would seem to be the bare minimum necessary to drive the Merge operation. Suppose, in addition, that c-selection features, just like other features, can be either interpretable or uninterpretable ([+interpretable] or [-interpretable]). Then the so-called 'EPP feature' can be regarded as nothing more than a [-interpretable] c-selection feature, while external Merge of a verb and an argument DP will obviously be driven by a [+interpretable] c-selection feature.[5]

Spelling out the proposal in more detail, suppose that a syntactic object 'a' of category X merges with a syntactic object 'b' of category Y to form a new syntactic object K={X, {a, b}}, satisfying the [+interpretable] c-selection feature [__Y]. Then (the interpretation of) 'b' is interpreted as an argument of (the interpretation of) 'a' at C-I. Suppose, on the other hand, that the c-selection feature [__Y] is [-interpretable]. Then it will be eliminated as soon as Merge forms K and will therefore contribute nothing to the interpretation. In particular, (the interpretation of) 'b' will *not* be interpreted as an argument of (the interpretation of) 'a'. Note that the only *syntactic* condition that must be met by the Merge operation, regardless of whether it is [+interpretable] or [-interpretable], is that the second term of the resulting syntactic object K belong to the syntactic category required by the c-selection feature of the first term. It follows that examples (6) a. and (7) a.-b. will be syntactically well-formed but uninterpretable. Merge of an expletive to satisfy a [-interpretable] c-selection feature, in contrast, will never lead to uninterpretability, regardless of whether external or internal Merge is involved (e.g.

there are books on the table and *there seem to be books on the table*, respectively. Likewise, Merge of a DP that has already been assigned a θ-role earlier in the derivation in order to satisfy an uninterpretable c-selection feature will never lead to uninterpretability, as is the case in raising constructions. The only remaining question, then, is this: can a [+interpretable] c-selection feature be satisfied by internal merge? I show in the next section that under minimalist assumptions not only is this possible but it is in fact required.

Notice, incidentally, that implicit in this proposal is a rejection of the assumption that the EPP feature is invariably associated with Agree. It is already clear that EPP and Agree need not be satisfied by the same constituent: the EPP feature of T, for instance, can be satisfied by merging expletive *there* with T, independently of the Agree relation between T and its associate.[6] Furthermore, Collins 1997 and Bowers 2002 argue that constituents other than expletives and the DP that is involved in the Agree relation can satisfy the EPP feature. Finally, Bowers 2002 argues that the EPP feature occurs independent of any accompanying Agree relation at all in the category Pr, a generalization of *v* (Bowers 1993, 2001a). Once separated from Agree, it can be seen more clearly, as suggested above, that the EPP feature is simply a special case of c-selection.

4. The Derivation of Control Constructions

With this apparatus in hand, let us now consider the derivation of a sentence such as *John persuaded Bill to eat* at the stage where *persuade* has merged with a TP *Bill to eat* (the DP *Bill* having been previously externally merged in [Spec, *v*], followed by internal merge in [Spec, T]):[7]

(8)   [$_{VP}$ persuade [$_{TP}$ Bill to [$_{vP}$ <Bill> eat-*v* t$_V$]]]

By hypothesis, the verb *persuade* has a [+interpretable] c-selection feature [__D] that has not yet been satisfied. In the absence of a stipulated extra principle such as (5), what would prevent internal merge from applying to *Bill* in (8), satisfying the remaining c-selection feature of *persuade*? The result of such an operation would be as follows:
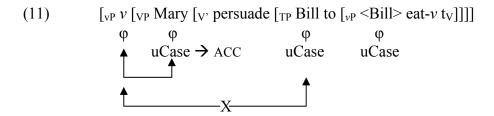
(9)   [$_{VP}$ Bill [$_{V'}$ persuade [$_{TP}$ <Bill> to [$_{vP}$ <Bill> eat-*v* t$_V$]]]]

The answer is that nothing prevents such a derivation. Hence the MTC is certainly possible. Furthermore, in order to justify any additional constraint on the operation of Merge such as (5), it would have to be shown that such a departure from the null hypothesis is principled, that is to say, based on conditions of computational efficiency and the interface condition or on general properties of organic systems.[8] Not only are there no principled reasons of this sort for assuming (5), but in fact the effects of (5), as argued in the previous section, are better stated as bare output conditions of C-I. Hence the MTC derivation (9) is not only possible but necessary, on minimalist grounds.

Let's consider next what happens if there is an independent D such as *Mary* in the array which can undergo external Merge with (8). Again, nothing prevents this operation, resulting in (10):

(10)   [$_{VP}$ Mary [$_{V'}$ persuade [$_{TP}$ Bill to [$_{vP}$ <Bill> eat-*v* t$_V$]]]]

This syntactic object must now merge with a category containing a probe with φ-features. I will assume, following Chomsky (2000), that *v* contains a probe with uninterpretable φ-features. This probe must find the nearest goal with matching interpretable φ-features and value the Case feature of the Goal ACC. Utilizing the technology of Chomsky 2001b, I assume that the difference between interpretable and uninterpretable Agreement features is that the latter are unvalued in the lexicon. Unvalued features are valued by the Agree operation and immediately (or almost immediately, see below) removed by the operation TRANSFER, which in the case of transfer to the phonological component Φ is termed Spell-Out (S-O). Thus when the probe in *v* finds a goal with matching features, its φ-features are valued by the φ-features of the goal and transferred by S-O to the phonological component Φ, which then maps them onto phonetic representation PHON. The same thing happens to the Case feature of the goal. The result of merging *v* with (10) is therefore as follows:[9]

(11)   [$_{vP}$ *v* [$_{VP}$ Mary [$_{V'}$ persuade [$_{TP}$ Bill to [$_{vP}$ <Bill> eat-*v* t$_V$]]]]]
              φ   φ   φ   φ
                  uCase → ACC   uCase   uCase

As indicated by the double-headed arrows in (11), the nearest matching goal is contained in the DP *Mary*. Hence the Case feature of *Mary* is valued ACC and immediately transferred to Φ, along with the uninterpretable φ-features of *v*. The problem is that this leaves no way for the unvalued Case features of either occurrence of *Bill* in the embedded TP to be valued and transferred. Hence the derivation crashes at PHON, explaining why sentences such as *we persuaded Mary Bill to eat* are ungrammatical.[10] Note that such examples, though syntactically ill-formed, are not uninterpretable, as shown by the fact that there is no problem at all in interpreting a sentence such as *we persuaded Mary that Bill should eat*.

Consider, in contrast, what happens if (9) merges with *v*:

(12)   [$_{vP}$ *v* [$_{VP}$ Bill [$_{V'}$ persuade [$_{TP}$ <Bill> to [$_{vP}$ <Bill> eat-*v* t$_V$]]]]
                    φ   φ   φ   φ
                       uCase → ACC   uCase → ACC uCase → ACC

As in the previous derivation, the nearest goal that matches the probe in *v* is the DP *Bill* in [Spec, VP]. Hence its Case feature is valued ACC and immediately transferred to Φ. However, in this instance the unvalued Case features of the other occurrences of *Bill* in [Spec, TP] and [Spec, *v*] of the complement clause are automatically valued and transferred at the same time, since they are identical to the occurrence of *Bill* in [Spec, VP]. Hence all uninterpretable Case features are removed and the derivation converges.

Thus, given the general principle that when a feature is valued and transferred by S-O to Φ, the corresponding feature in all of its occurrences is valued and transferred at

the same time (the null hypothesis for the occurrence theory of movement), we are driven

once again to the conclusion that in the case of object control constructions not only is the

MTC *possible*, but it is in fact *required*. Conversely, external Merge in this position is

prohibited. Notice that no assumptions, apart from those that are necessary in any case to

characterize the operations of Merge and Agree, are needed to account for control

constructions in terms of movement. In order to achieve the same result, Control theory

must not only assume the existence of a special LI PRO but also a special 'null Case,'

whose only motivation is to ensure that PRO occurs nowhere but in Spec of non-finite T,

as well as special rules of construal for PRO that duplicate precisely general conditions

on movement.[11]

Consider next the derivation of an ECM sentence such as *we expect Bill to eat* at

the stage where *expect* has merged with the IP *Bill to eat*:

(13)   [$_{VP}$ expect [$_{TP}$ Bill to [$_{vP}$ <Bill> eat-v t$_V$]]]

The verb *expect* differs from *persuade* precisely in *not* having an additional

[+interpretable] c-selection feature that needs to be satisfied. Hence internal Merge of the

subject of the complement TP *cannot* take place at this point.[12] Instead, the next

operation is merge of the VP in (13) with *v*:

(14)   [$_{vP}$ v [$_{VP}$ expect [$_{TP}$ Bill   to [$_{vP}$ <Bill> eat-v t$_V$]]]]
                 φ   φ   φ
                           uCase → ACC uCase → ACC

At this point, Agree is established between the probe in *v* and the nearest goal with matching features, namely, *Bill* in [Spec, TP]. At the same time, the φ-features of *v* and the Case feature of *Bill* are valued and transferred to Φ, along with the Case feature of the occurrence of *Bill* in the lower [Spec, *v*P] position. Hence all unvalued Case features are valued and transferred to Φ and the derivation converges. Once again, no assumptions, other than those needed independently, are necessary to derive the correct result.

The derivation of sentences with intransitive control verbs such as *try* and intransitive raising predicates such as *seem* is completely analogous. In the case of *try* the subject of the infinitive complement raises directly to the θ-position in [Spec, *v*] (followed immediately of course by movement to the non-θ-position in [Spec, T]), while in the case of *seem* the subject of the infinitive complement raises directly to [Spec, T]:

(15) a. [$_{TP}$ John Tns [$_{vP}$ <John> try+*v* [$_{VP}$ <try> [$_{TP}$ <John> to like Mary]]]]

 b. [$_{TP}$ John Tns [$_{vP}$ seem+*v* [$_{VP}$ <seem> [$_{TP}$ <John> to like Mary]]]]

Again, it is their respective derivations that determine the difference in interpretation between *John tries to like Mary* and *John seems to like Mary*. After *v* merges with VP, *v-try* still has a [+interpretable] c-selection feature that needs to be satisfied, whereas *v-seem* does not. Hence the subject of the infinitive complement in (15) a. *must* undergo internal merge in [Spec, *v*P], whereas in (15) b. it may not.[13] In the latter case, *v*P must instead merge directly with T, followed by valuation and removal of the Case feature of *John* through the Agree relation, after which *John* undergoes internal merge with T to satisfy its [-interpretable] c-selection feature (i.e. its 'EPP-feature').

Suppose that an independent DP *Bill* undergoes external merge with matrix *v* in the case of *try*. There is no problem with interpreting *Bill* as an argument of *try*, but the resulting sentence **Bill tried John to like Mary* is syntactically ill-formed because there is no way for the Case features of the embedded complement subject to be valued.

Suppose next that an independent DP *Bill* undergoes external Merge with matrix *v* in the case of *seem*. Then there is no way for *Bill* to be interpreted as an argument, since *seem* does not require a second argument. Hence the structure is uninterpretable. In addition, however, the Case feature of *John* in embedded [Spec, TP] remains unvalued, since it is ruled out as a possible goal for the probe in T by the MLC. Hence sentences of the form **it seems Bill John to like Mary* or **Bill seems John to like Mary* are both syntactically ill-formed and uninterpretable.

Finally, suppose that an independent DP *Bill* undergoes external Merge directly with T in (15) b. Though there is nothing to prevent such an operation, since *Bill* satisfies the [-interpretable] c-selection feature of T, the resulting sentence **Bill seems John to like Mary* is syntactically ill-formed, since the Case feature of *Bill* remains unvalued, as well as being uninterpretable, since *Bill* cannot be assigned a θ-role. Suppose we try to circumvent the problem by embedding a structure of this sort as a complement to a verb such as *want*, subsequently raising *Bill* to the argument position in VP of the matrix clause: [$_{vP}$ Bill want-*v* [$_{VP}$ <want> [$_{TP}$ <Bill> to [$_{vP}$ seem [$_{TP}$ John to like Mary]]]]]. The problem now is that the Case feature of *John* has no way of getting valued, since non-finite T has no Agreement probe. Hence **Bill wants to seem John to like Mary* is ruled out as syntactically ill-formed.

It appears, then, that under minimalist assumptions, all the basic syntactic and semantic properties of raising and obligatory control constructions follow from the hypothesis that derivations are driven by c-selection features of the standard sort, together with the theta criterion, stated as a bare output condition of C-I. Thus it is unnecessary to make use of θ-features, a highly desirable result, since 'θ-role' is a purely semantic notion that should not be allowed to enter into the computational operations of C_{HL}.

5. Two Arguments against MTC

Before concluding, I discuss briefly two empirical arguments that have been claimed in the literature to demonstrate the impossibility of MTC. The first argument is that given standard assumptions regarding Case theory, certain types of verbs that should exist under MTC in fact do not. The second has to do with the phenomenon of "partial control", which, if it existed, would be incompatible with a movement account of obligatory control.[14]

5.1. Absence of the Hypothetical Verbs HIT and BELIEVE

Chomsky (1995: 313) argues that MTC seems to predict (incorrectly) the existence of hypothetical verbs such as HIT and BELIEVE with exactly the same θ-structure as *hit* and *believe,* but lacking ACC Case features, so that *Bill* in both (16) a. and b. could raise

to [Spec, V] to pick up the θ-role assigned there and then move on to [Spec, T] to check

NOM Case and agreement features:

(16)   a.   [$_{TP}$ Bill [$_{VP}$ Bill [HIT Bill]]]

       b.   [$_{TP}$ Bill [$_{VP}$ Bill [BELIEVE [$_{TP}$ Bill to be smart]]]]

(16) a. would thus have the phonetic form *Bill hit* with the interpretation "Bill hit

himself." Similarly, (16) b. would have the phonetic form *Bill believes to be smart,* but

would mean roughly "Bill believes himself to be smart."

      Notice, however, that under the Probe-Goal theory such hypothetical derivations

are ruled out, because the Case of a DP is no longer checked by greedy movement to a

Case-checking position. Instead, the Case feature of an object DP is valued in situ by the

probe in *v*. Thus consider the stage at which *hit Bill* and *believe Bill to be smart* have

merged with *v*:

(17)   a.   [$_{vP}$ *v* [$_{VP}$ hit Bill]]

              φ   φ

                     uCase → acc

       b.   [$_{vP}$ *v* [$_{VP}$ believe [$_{TP}$ Bill to be smart]]]

              φ   φ

                     uCase → acc

In both (17) a. and b., the probe in *v* finds the nearest matching goal in the DP *Bill*. The

Case feature of *Bill* is therefore valued and transferred to Φ in both instances. At this

point *Bill* is inert, hence cannot enter another Probe-Goal relation. Thus if *Bill* were to merge with *v* to satisfy its [+interpretable] c-selection condition, the derivation would crash, since there would be no way for the uninterpretable φ-features of T to be valued. It follows that the only way to satisfy the [+interpretable] c-selection feature of *v* is to merge an already formed DP such as *John* in [Spec, *v*], producing sentences such as *John hit Bill* and *John believes Bill to be smart*. Thus it is impossible to produce hypothetical sentences such as *John HIT* and *John BELIEVES to be smart*, with the interpretations 'John hit himself' and 'John believes himself to be smart', respectively.

Notice, however, that nothing rules out the possibility of there being a verb just like *believe* except that it is *intransitive*, meaning that it has no φ-features in *v* (or in Tr in the theory of Bowers 2002). Kayne 1984 notes that French appears to have constructions of exactly this form, e.g. *Pierre croit avoir convaincu son auditoire* 'Pierre believes that he has convinced his audience'; *je crois rêver* 'I believe that I am dreaming'; etc. (See Bošković 1987: 63-71, for discussion.) To account for such constructions, we need only assume that *croire* in French is intransitive. Since there is no probe in *v*, the subject of the infinitive can raise to [Spec, *v*], where it is interpreted as an argument of *croire*. Its Case feature is then valued by the probe in T and it undergoes internal Merge to [Spec, T] to satisfy the EPP feature of T. In English, on the other hand, verbs such as *believe* are invariably transitive, hence derived as discussed above.[15]

5.2. Partial Control

Consider next the phenomenon of 'partial control' (PC), first pointed by Williams (1980) and discussed extensively in Landau (1999, 2003). PC can be brought out by considering the following examples:

(18) a. *John met at 6:00.

     b. *The chair gathered during the strike.

     c. *Mary applied together for the grant.

(19) a. John and Mary/they met at 6:00.

     b. The students/the committee gathered during the strike.

     c. We/John and Mary/??the committee applied together for the grant.

(20) a. $John_1$ wanted [PRO_{1+} to meet at 6:00].

     b. The $chair_1$ was afraid [PRO_{1+} to gather during the strike].

     c. $Mary_1$ wondered whether [PRO_{1+} to apply together for the grant].

The examples in (18) and (19) show that the intransitive forms of verbs such as *meet* and *gather* normally require a subject that is either syntactically plural or syntactically singular but collective in meaning. Yet in the examples in (20) the PRO subject of the complement is apparently able to occur with verbs such as *meet* and *gather*, despite the fact that it is controlled by a singular DP. Landau uses the term *partial control* to refer to "constructions where the reference of PRO includes but need not be identical to the reference of the controller."[16] He makes the further claim that the class of obligatory

control (OC) verbs divides into those that permit PC and those that don't. The verbs that don't permit PC require that the reference of PRO be exhausted by the reference of the controller. This he terms 'exhaustive control' (EC).

The potential significance of PC, if this characterization of the phenomenon is correct, is immediately apparent. As Landau (1999: 40-43) points out, it would rule out any analysis of control that reduces the control relation to predication or variable binding, as well as ruling out any syntactic analysis that either dispenses with PRO altogether or that permits no control relation other than identity. In particular, it would rule out the movement analysis of control, which obviously limits the control relation to identity. It is therefore important to examine PC with some care, in order to determine whether Landau's description of the phenomenon is correct. I shall argue that it is not.

One immediate problem lies in L's division of OC verbs into EC and PC subclasses. He claims that there is a clear distinction between the two types and, more specifically, that verbs that are semantically Implicative, Aspectual and Modal belong to the EC class, whereas verbs that are Factive, Presuppositional, Desiderative and Interrogative belong to the PC class. The empirical claim therefore is that verbs of the former classes do not permit PC, whereas verbs of the latter classes do. I give below examples of each class:

(21)   EC:

      a. *Implicative*: dare, manage, bother, remember, condescend, force, compel.

      b. *Aspectual*: begin, start, continue, finish, resume.

      c. *Modal*: have, need, is able.

(22)   PC:

   a. *Factive*: glad, sad, dislike, hate, like, sorry.

   b. *Propositional*: believe, think, suppose, imagine, say, claim, declare, deny.

   c. *Desiderative*: want, prefer, arrange, hope, plan, demand, promise, intend.

   d. *Interrogative*: wonder, ask, inquire, guess, understand, know.

Thus it is claimed that the following examples, in contrast to those in (20), do not permit a PC interpretation:

(23)   a.   The chair managed to meet at 6:00.

        b.   The union organizer didn't dare to gather during the strike.

        c.   The chair forgot to meet this week.

        d.   The chair has begun/is continuing to meet on alternate Mondays.

        e.   Mary forced the chair to meet very early in the morning.

My intuition, confirmed by an informal survey of other speakers, is that there is no clear and reliable contrast between the examples in (19) and those in (23). But even if some speakers do find contrasts between EC and PC verbs when presented with such examples out of the blue, it is easy to construct sentences with a bit more context in which EC predicates are perfectly acceptable:

(24)   a.   The chair didn't want to meet so early, but Mary forced him to.

b.   The chair was eager to meet as soon as possible and, despite opposition,

he managed to meet exactly when he wanted to.

c.   The rank and file were eager to gather during the strike, but the organizer

didn't dare to.

d.   I prefer to meet on Tuesdays, but for some reason the chair isn't able to.

I conclude tentatively that his proposed division of OC predicates into EC and PC is suspect.

A clear prediction of Landau's theory is that PC should be impossible in raising constructions. If true, this would constitute a strong argument against the movement analysis of OC, as he points out. Once again, however, I fail to find clear cut contrasts. All of the following sound perfectly acceptable to me:[17]

(25)   a.   This chair seems to meet whenever he feels like it.

b.   After considering a number of alternatives, John appears to be

convening at the regular time after all.

c.   That chair is not likely to meet more than once a week.

If, on the one hand, there is no clear division between OC predicates that permit PC and ones that don't, and if, on the other hand, there is no sharp contrast between raising and control predicates with respect to PC, then it would appear that the PC phenomenon, far from providing evidence *against* the reduction of OC control to movement, in fact provides strong evidence in *support* of it.

However, it is also possible that PC is simply irrelevant to the issue. That this might be so is strongly suggested by the observation that in the right contexts, singular nouns can in fact be predicated directly of collective verbs in main clauses:

(26) a.   This is ridiculous! The chair is meeting every day now.

      b.   It's weird—this minister gathers on Monday instead of Sunday!

      c.   This chair meets at the strangest times.

      d.   Supported by the rank and file, the organizer gathered every single day
            during thestrike.

I would like to suggest that PC is not actually a grammatical phenomenon at all. Rather, it is a very special instance of *metonymy*, a figure of speech in which the part is used to represent the whole. Expressions such as *the head*, *the chair*, *the White House*, etc. are all examples of metonymy. In the particular case where one individual is known, either conventionally or through context, to be the leader of some group, it is quite natural to use an expression referring to that individual to represent the group as a whole. It follows that a syntactically singular expression referring to the individual who represents the group can be used, through a rather natural extension of the underlying metonymy, as the subject of predicates such as *meet, gather*, etc. which grammatically require a collective (or plural) subject. Such an expression can in turn be raised (into either a θ− or a non-θ-position), producing the kinds of constructions that Landau analyzes as PC.

I conclude that there is no grammatical phenomenon of PC and it is therefore irrelevant to the correct analysis of OC. This is actually quite a welcome result, for

notice that if PC were in fact a special kind of control, it would violate the fundamental minimalist principle of inclusiveness, since the semantic feature of plurality, according to Landau's theory, is *added* to PRO in the course of the derivation. It must be added because it is a lexical property neither of the controller nor of PRO itself.

6. Conclusion

According to minimalist theory, the units of syntax are lexical items, each with its own syntactic, semantic and phonological properties. The computational mechanism of the syntax utilizes the basic operation Merge to combine these elements in accordance with specific properties of the lexical items themselves and in compliance with general economy conditions such as the MLC whose function is to minimize search. In a theory of this sort, the null hypothesis is that syntax is derivational rather than representational. Likewise, the null hypothesis regarding interpretation is that it too is derivational, as was in fact assumed in the earliest versions of transformational grammar (Chomsky 1955, 1957). Unless compelling evidence to the contrary is produced, there is no theoretical motivation for assuming additional levels of representation such as D-structure, S-structure and, most importantly, LF. The contrast between raising and control constructions constitutes a crucial test case for the null hypothesis, as I pointed out more than thirty years ago, since it is a clear case where a fundamental difference in interpretation correlates perfectly with a well-defined difference in derivation. The intensive investigation of the different properties of raising and control constructions that

has taken place over the last three decades has, despite a number of theoretical detours, only strengthened this conclusion. Viewed in the stark light of minimalism, it is evident that the "reduction" of control to movement is in fact the null hypothesis, only to be abandoned in the face of overwhelming evidence to the contrary. Likewise, the "radical" conclusion that there is no syntactic level of LF and that interpretation is derivational is in fact the most conservative hypothesis.

Notes

[*] My thanks to Chris Collins for helpful comments on an earlier version of this paper. Thanks also to the anonymous readers of *Syntax*. All errors that remain are my own.

 See also Boeckx and Hornstein (2004), for a reply to the criticisms in Landau (2003).

[2] Landau (2003) makes a similar point. In reply, Boeckx and Hornstein (2004) observe that agreement too is relational, yet few would argue that nouns do not have agreement features. However, agreement features such as person, number and gender are clearly inherent properties of nouns, whereas θ-features, as noted in the previous paragraph, are not.

[3] See Bowers and Reichenbach (1979: 216-218, 243-245), for an explicitly derivational account of the interpretation of raising and control constructions. More recently, Epstein (1994) and Epstein, Groat, Kawashima, and Kitihara (1998) have proposed a derivational approach to interpretation similar to mine, based on the interpretation of anaphoric relations. See also Lasnik (1999), for an interesting argument that A-Movement does not

leave a trace (copy), based on the absence of A-movement scope reconstruction. As

Lasnik points out, this would follow automatically in a theory, like the one proposed

here, in which θ/argument-relations are determined derivationally. Chomsky (2001b)

proposes a derivational theory of interpretation in which material in units called *phases*

(CP or *v*P) is mapped piece-by-piece in cyclical fashion onto PHON and SEM by the

phonological component Φ and the semantic component Σ, respectively. PHON is

accessed by the sensorimotor systems (SM) and SEM is accessed by the conceptual-

intentional systems (C-I). In this system, as Chomsky (2001b: 4) remarks, "there are…no

LF properties and no interpretation of LF, strictly speaking, though Σ and Φ interpret

units that are part of something like LF in a non-cyclic conception." I remain neutral in

this paper as to whether phases are necessary in either Φ or Σ. Presumably, the null

hypothesis is that both semantic interpretation (S-I) and Spell-Out (S-O) are simultaneous

with each syntactic operation (what might be termed 'Immediate S-I' and 'Immediate S-

O', respectively). Certainly Immediate S-I is sufficient to account for the interpretation

of control and raising verbs. For more recent arguments in support of a derivational

approach to both syntax and interpretation, see Epstein and Seely (2006).

[4] Chomsky (2000) assumes that K also has a label LB(K), which is either α or β, if the

relevant term is a lexical item, or the label of α or β, if the relevant term is itself a

derived object. Chomsky suggests additionally that the label is predictable. Though I

suspect that Collins (2003) may be correct in arguing that labels are unnecessary, I use

them throughout this paper as a notational convenience.

[5] Epstein and Seely (2006), following work of Martin (1999) and Bošković (2002), argue

for total elimination of the EPP, partly on the grounds of its "mysteriousness." I submit

that if, as proposed here, the EPP is nothing more than an uninterpretable c-selection feature, then much of EPP's alleged mysteriousness is removed. On the contrary, it is quite natural to find that c-selection features, which are needed in any case to drive external Merge, can be either interpretable or uninterpretable, just like other syntactic features. It is worth noting, by the way, that if the EPP is eliminated, leaving Case-checking under derivational c-command as the only force that drives derivations, as Epstein and Seely (2006:194-197) propose, then MTC is impossible, since the θ-positions to which DPs move in control constructions are never Case-checking positions.

[6] Bowers 2002 argues that in a theory incorporating the probe-goal approach to Agreement, expletives must actually be merged with v/Pr rather than with T.

[7] I assume that OC complements in English are bare TPs, not CPs. See Bowers (2002: 190), for evidence in support of this view.

[8] Chomsky (2001b) suggests that there is such justification for departing from the null hypothesis, namely, the expectation that the two kinds of semantic conditions at C-I (i.e. argument structure and "everything else") should correlate with the two kinds of Merge, external and internal. It is, however, an empirical question whether such a correlation is justified. I believe that the existence of internal Merge in non-argument positions, at least in the case of A-Movement, is in fact motivated by properties of SM rather than C-I. See Bowers 2001b, for arguments.

[9] The EPP feature of v is then satisfied (in a language like English) by internal Merge of the object in [Spec, v] with S-O of *Mary* occurring before Merge. It is argued in Bowers 2002, building on work by Koizumi (1993, 1995) and others, that the probe that assigns accusative Case is actually associated with a functional category Tr located between v/Pr

and V. After its Case feature is valued, object DPs then undergo internal Merge in [Spec, Tr] to satisfy the EPP feature of Tr, giving rise to "short object movement." However, the standard analysis is sufficient for my purposes here.

[10] Once the Case feature of a DP has been removed, it is 'inert' and cannot enter into a new Probe-Goal relation. (It can, however, disrupt a potential Probe-Goal relation, resulting in the 'Defective Intervention Constraint', cf. Chomsky 2001, for discussion.) Thus a sentence such as *we persuaded Mary that Bill should eat* is fine, but raising from the finite complement, e.g. **we persuaded Bill that t should eat*, is ruled out because the nominative Case feature of the DP *Bill* has been erased, rendering it inert.

[11] It might be argued that null Case is needed anyway for arbitrary PRO. However, if Landau (1999) is correct in arguing that arbitrary PRO only occurs in non-obligatory control (NOC) constructions, never in OC constructions, then arbitrary PRO is a null pronominal pro_{arb} and there is no element PRO_{arb}.

[12] In my original proposal I assumed that infinitival subjects raise to the same position in transitive control and raising structures (as, incidentally, does H). It would only be possible to replicate this analysis in the framework assumed here if lexical categories such as V could have uninterpretable c-selection features. Such an approach would be a mistake, in my view. In essence, it would amount to assuming a purely interpretive theory of grammatical relations, since the difference in interpretation between control and raising sentences would be determined not by their *structure* (at any stage of the derivation) but rather by whether or not the verb's c-selection feature was interpretable or not. I assume, on the contrary, that only functional categories can have uninterpretable c-selection features.

[13] If, as mentioned above, Bowers 2002 is correct in arguing that *v*/Pr, unlike V, may have an EPP feature, then this structure would in fact be an intermediate stage in the derivation of (15) b.

[14] Other empirical problems having to do with possible landing sites of the raised DP in obligatory control constructions (the position of the controller in theories based on the Control relation) I leave for discussion in a separate publication.

[15] Similarly, suppose there are verbs with two semantic arguments that are syntactically intransitive (no φ-features in *v* or Tr). Then nothing would prevent internal Merge of the internal argument into the argument position in [Spec, *v*]. Perhaps, as H suggests, the verb *wash* in English in a sentence such as *John washed*, which is interpreted as 'John washed himself', is an example of just this kind. Inherently reflexive verbs such as *se laver* in French might be treated in the same way.

[16] Landau also uses the adverb *together* as a diagnostic for PC. However, as indicated in (19) c., *together* differs from collective verbs in only permitting a syntactically plural subject. This makes it difficult to distinguish instances of PC from instances of split antecedents, e.g. *John persuaded Mary to go to the movies together/to kiss in the library*. For this reason I prefer not to use *together* as a diagnostic of PC.

[17] See also Boeckx and Hornstein 2004: 449.

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