Illicit Remnant Movement:
An Argument for Feature-Driven Movement

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This article discusses previously unnoticed empirical effects of the operation Attract/Move F. Certain illicit cases of so-called remnant movement are accounted for if the primitive operation inducing movement is feature movement and all category movement is feature-driven, as is claimed by the Attract/Move F hypothesis. Since the relevant cases of illicit remnant movement remain unaccounted for under the traditional Move α hypothesis, which claims that the primitive operation is category movement, the present discussion lends new empirical support to the feature-driven view of movement.

Keywords: Attract/Move F, bare phrase structure theory, category movement, feature movement, head movement, remnant movement

Chomsky (1995:chap. 4) proposes to reformulate the traditional notion of Move α in terms of movement of formal features. In the Minimalist Program one major force that triggers movement of α is the need to check some formal feature of α. Assuming this general view of movement, Chomsky claims that the most primitive form of movement should be movement of formal features rather than categories and that movement of a category takes place as a ''last resort'' forced by conditions in the phonological component, when some formal feature of the category needs to enter into checking overtly (i.e., before Spell-Out). In this sense all category movement is ''feature-driven.'' Chomsky refers to the primitive operation inducing movement of formal features as *Attract/Move F*.[1]

This view of movement contrasts with the traditional view, where movement of the category α was assumed to be primitive, in the sense that α moved because of the need to move α itself (accordingly, the primitive operation inducing movement was assumed to be Move α). Although Chomsky's arguments for the Attract/Move F view of movement are conceptual, guided by minimalist assumptions, it will be desirable to tease out its empirical effects.

In what follows I discuss a restriction on so-called remnant movement and show that this phenomenon reveals empirical effects of the feature-driven nature of movement that the

[1] Strictly speaking, Attract F and Move F are different operations. In the case of Attract F, what triggers feature movement is a property of the head to which features move; in the case of Move F, the triggering force is a property of the features that move. See Chomsky 1995:chap. 4 for relevant discussion. As the distinction between the two is not relevant to the present discussion, I use the cover term *Attract/Move F* to refer to the operation that affects and moves formal features of a category.

Attract/Move F hypothesis argues for. Specifically, I show that the relevant restriction on remnant movement can be accounted for if we assume that movement of a category is contingent on an operation applying to the formal features of the head of that category, but is left unaccounted for under the traditional Move α hypothesis. To the extent that the proposed account is tenable, the hypothesis that all category movement is feature-driven receives empirical support.[2]

1 Remnant Movement

Remnant movement affects an element that contains a trace of another element that has moved out of that element. Well-known examples of remnant movement are found in German, (1a), and Dutch, (1b).

(1) a. Gelesen hat das Buch keiner.
       read   has the book no one
       'No one has read the book.' (Müller 1996)
    b. Het boek gegeven heeft Jan waarschijnlijk aan Marie.
       the book given   has Jan probably   to Marie
       'Jan has probably given the book to Marie.'

Thiersch (1985) and Den Besten and Webelhuth (1987, 1990) propose to analyze the fronted element in (1a) as VP containing a trace of the object, as shown in (2).

(2) [$_{VP}$ t_i Gelesen]$_j$ hat [$_{TP}$ das Buch$_i$ [$_{TP}$ keiner t_j]].

To derive the structure in (2), the object *das Buch* 'the book' first moves out of VP and VP then moves to the front, carrying along the trace of the object. The derivation thus involves remnant movement of VP. In (1b) the PP complement moves out of VP before VP undergoes remnant movement.

  Although English does not allow equivalents of (1) (because English does not allow scrambling, which is necessary to create the configuration where VP contains a trace of a complement of the verb), it allows remnant movement in cases like the following:

(3) a. [How likely to win] is John?
    b. [Fired by the company], John indeed was.
    c. [Pass the exam], John indeed did.

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[2] See Takahashi 1997 and Roberts 1998 for earlier attempts to find empirical effects of Attract/Move F. Takahashi argues that certain restrictions on the distribution of null operators can be accounted for if we assume that so-called null operator movement in fact involves movement of formal features alone. Roberts shows that the phenomenon of *have/be* raising in English originally discussed by Emonds (1978) falls into place if auxiliaries are made up only of formal features associated with phonological features and so-called covert movement is in fact overt movement of formal features alone. The two proposals thus specifically argue that formal features undergo movement. Although I adopt Attract/Move F here, the proposal I develop later argues only that category movement is feature-driven; it is neutral regarding whether or not feature movement exists. Thus, my proposal is compatible with Chomsky's (to appear) position that category movement is feature-driven but that there is no feature movement.

θ-theoretic considerations lead us to conclude that the bracketed parts in (3a–b) contain traces of *John.*

(4) a. [How likely t_i to win]$_j$ is John$_i$ t_j?
    b. [Fired t_i by the company]$_j$, John$_i$ indeed was t_j.

Under the so-called Internal Subject Hypothesis (see, e.g., Fukui 1986, Fukui and Speas 1986, Kitagawa 1986, Koopman and Sportiche 1991, Kuroda 1988), predicate fronting as in (3c) also contains a trace of the subject (see Huang 1993 and Takano 1995 for empirical arguments for this position).

(5) [t_i Pass the exam]$_j$, John$_i$ indeed did t_j.

Then, the bracketed parts in (3) have all undergone remnant movement.[3]

As the examples in (1) and (3) show, one major characteristic of remnant movement is that the element that undergoes remnant movement contains a trace and that the trace is unbound after remnant movement takes place.

2 Illicit Remnant Movement

Remnant movement is not always allowed, however. Consider the following examples:

(6) a. [t_i Zu lesen]$_j$ hat keiner das Buch$_i$ t_j versucht.
        to read   has no one the book   tried
      'No one has tried to read the book.'
    b. *daß [t_i zu lesen]$_j$ keiner das Buch$_i$ t_j versucht hat
      'that no one has tried to read the book'
      (Müller 1996; see also Grewendorf and Sabel 1994)

(7) a. *[Which picture of t_i]$_j$ do you wonder who$_i$ John likes t_j?
    b. *[Bill-ga t_i sundeiru to]$_j$ sono mura-ni$_i$ John-ga t_j omotteiru.
       Bill-NOM   live   that that village-in John-NOM   think
      'John thinks that Bill lives in that village.' (Saito 1989)

The German example in (6b), the English example in (7a), and the Japanese example in (7b) all involve remnant movement of the bracketed part, but they are ungrammatical. These are cases of illicit remnant movement. It is obvious that we cannot invoke the Proper Binding Condition (which requires that traces be bound) to account for these cases of illicit remnant movement, given that the examples in (1), (3), and (6a) are all grammatical even though they also have unbound traces due to remnant movement.

Fukui (1997), Kitahara (1994, 1997), Müller (1996), and I (Takano 1994) have independently proposed to account for the difference between the licit and illicit cases of remnant movement

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[3] Given the Internal Subject Hypothesis, the fronted VP of the examples in (1) in fact contains two traces: traces of the complement and of the subject.

by paying attention to the types of movement that effect remnant movement. The basic intuition that we attempt to capture is this:

(8) In a derivation yielding the configuration ... $[_\alpha \ldots t_i \ldots]_j \ldots \beta_i \ldots t_j \ldots$, movement of β and movement of α may not be of the same type.[4]

Kitahara tries to derive this effect from Chomsky's (1995:chap. 4) version of the Minimal Link Condition, which is incorporated into the definition of the operation Attract F, whereas Fukui accounts for it in terms of the new A-over-A Principle that he proposes in place of the Minimal Link Condition. In a similar spirit, I pursue an account in terms of (global) economy conditions. On the other hand, Müller proposes, from a rather different perspective, a principle that regulates the distribution of traces.

    The generalization in (8) correctly captures the distinction between the licit and illicit cases of remnant movement observed so far. In (1) and (6a) the object (and the PP complement in the case of (1b)) undergoes scrambling, whereas the fronted element undergoes topicalization, which is assumed to be a different type of movement from scrambling. In all cases in (3) the subject undergoes NP-movement, whereas the bracketed part is fronted by either *wh*-movement or an operation equivalent to topicalization. So the derivations in all these cases obey the generalization in (8). On the other hand, (6b) and (7b) both involve two instances of scrambling, and (7a) involves two instances of *wh*-movement. Thus, they all violate the generalization.[5]

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[4] Throughout this article I assume that only derivations that satisfy Chomsky's (1995:chap. 3) Extension Condition are allowed. Thus, in (8) β moves before α does.

[5] The other patterns that are not discussed here but are relevant to (8) are the following:

(i)   *Movement of α (remnant movement)*   *Movement of β (prior movement)*
    a. NP-movement   scrambling
    b. NP-movement   *wh*-movement
    c. scrambling   NP-movement
    d. scrambling   *wh*-movement
    e. NP-movement   NP-movement

The generalization in (8) predicts that the patterns in (ia–d) will be licit and the one in (ie) will be illicit. As one reviewer points out, (ib) and (id) are probably ruled out independently, given that NP-movement usually may not cross a CP boundary (ib) and that long-distance scrambling across a full CP is impossible in German (id). Pattern (ic) can be found in German.

(ii) ??daß [sich so richtig t_i dumm vorgekommen]$_j$ der Fritz$_i$ t_j noch nicht ist
        that REFL so really   stupid struck-as   the Fritz   not   yet   is
        'that Fritz has not yet struck himself as really stupid' (Muller 1996)

Muller (1996) observes that the marginality here has to do with the difficulty associated with predicate scrambling in general and hence has nothing to do with remnant movement. Pattern (ia) seems more difficult to check. It seems that there is a subtle contrast in (iii) (Gereon Muller, personal communication).

(iii) a. ?daß [ein Buch t_i]$_j$ niemandem [uber die Liebe]$_i$ t_j gegeben worden ist
            that a book   no one   about the love   given been is
            'that a book about love has been given no one'
      b. ?*daß [ein Buch t_i]$_j$ niemand dem Fritz [uber die Liebe]$_i$ t_j gegeben hat
            that a book   no one the Fritz about the love   given has
            'that no one has given Fritz a book about love'

If the contrast is real, it goes in the direction predicted by (8): (iiia) exemplifies pattern (ia) ((iiib) involves two instances of scrambling, which is predicted by (8) to be ungrammatical). Finally, as Muller (1996) points out, pattern (ie) does not exist, as predicted by (8), but the reason for this may be that it involves a superraising configuration and is thus excluded independently of (8).

However, there is another class of cases of illicit remnant movement that cannot be accounted for in the same way. Observe the cases in (9).

(9) a. *[Ihr ein Buch t_i]$_j$ gab$_i$ Hans t_j.
    her a book   gave Hans
    'Hans gave her a book.' (Haider 1990; see also Sabel 1996)
b. *[Het boek aan Marie t_i]$_j$ gaf$_i$ Jan (waarschijnlijk) t_j.
    the book to Marie   gave Jan probably
    'Jan (probably) gave the book to Marie.'
c. *It's [a book t_i to Mary]$_j$ that John gave$_i$ t_j.

The German example in (9a) and the Dutch example in (9b) are derived by remnant movement of VP containing a trace of the finite verb, which has undergone verb-second movement. The English example in (9c) also involves remnant movement of VP containing a trace of the verb, on the assumption that the verb raises out of the lower VP in a VP shell structure (Larson 1988, Chomsky 1995:chap. 4). Note that these cases obey the generalization in (8), since head movement and topicalization/focus movement are of different types, as evidenced by the grammaticality of the Italian example in (10a) and the German example in (10b) (cf. (6b)).[6]

(10) a. [Dato t_i a Gianni]$_j$, non l$_i$'ho   ancora t_j.
    given to Gianni not it.(I).have yet
    'Given it to Gianni, I have not yet.' (Longobardi 1985, Rizzi 1990)
b. ?daß [t_i zu lesen]$_j$ es$_i$ keiner t_j versucht hat
    that to read it no one tried has
    'that no one has tried to read it' (Müller 1996)

Thus, the illicit remnant movement in (9) is left unaccounted for.

All the problematic cases in (9) involve verb movement. But the same problem arises with movement of an adjective. Consider (11).

(11) Mary is grateful to every boy$_i$ for his$_i$ help.

In (11) the adjective *grateful* takes two PP complements; moreover, the first complement is structurally higher than the second, as shown by the availability of pronominal variable binding. Thus, (11) is parallel to (12), where the verb *sent* takes two complements.

(12) Mary sent every book$_i$ to its$_i$ author.

To capture the parallelism, we might assign (11) a Larsonian shell structure in which the adjectival head moves out of the lower AP.

(13) [$_{AP}$ grateful$_i$ [$_{AP}$ to every boy [$_{A'}$ t_i for his help]]]

Now let us try to apply remnant movement to the lower AP.

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[6] Following Muller (1996), I assume that the German pronominal clitic undergoes head movement.

(14) a. Mary is grateful to John for his help.
     b. *It's [to John for his help] that Mary is grateful.

As (14b) shows, the remnant movement results in ungrammaticality. Thus, we conclude that a certain kind of head movement somehow blocks application of remnant movement.

3 Attract/Move F and Category Movement

Note that all the illicit cases in (9) and (14b) share one property: when remnant movement takes place, the head of the remnant has moved out. We can thus state the following generalization:

(15) Remnant movement of α is impossible if the head of α has moved out of α.

Under the traditional view of movement, where the primitive operation inducing movement is considered to be Move α, which applies to the category α, it is not clear why remnant movement of α is blocked by prior movement of the head of α. In particular, it is not clear what the difference is between the licit cases of remnant movement of α, where an element that is not the head of α has moved out of α, and the illicit cases, where the head of α has moved out of α.

On the other hand, the difference follows under the Attract/Move F hypothesis advanced by Chomsky (1995:chap. 4). On the basis of minimalist considerations of movement operations, Chomsky claims that movement for the purpose of feature checking should take the form of feature movement. According to Chomsky's claim, if movement is necessary to check some formal feature of α against some head H, then it should be the formal features of α that move to H, not any larger element.[7] Thus, on this view, the primitive operation inducing movement is Attract/Move F and hence formal features alone move if Attract/Move F applies after Spell-Out, whereas category movement takes place, as a ''last resort'' forced by conditions in the phonological component, if Attract/Move F applies before Spell-Out. The important point here is that all category movement is ''feature-driven.''[8]

Furthermore, given bare phrase structure theory, Attract/Move F always applies to formal features *of a head.* This is because under bare phrase structure theory, all nonhead categories are considered projections of their heads. To see this point clearly, let us consider (16), which is a formal representation in bare phrase structure theory of a structure formed by applying Merge to the two elements α and β.

(16) $\{\{\alpha, \beta\}, \gamma\}$

In this representation, γ, the *label* of the structure, is the head of the projecting element (see Chomsky 1995:chap. 4 for details). Thus, in the case of VP consisting of V and its complement α, the representation is as in (17).

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[7] Here, I assume with Chomsky (1995:chap. 4) that when some formal feature of α needs to move to H, what actually moves is the set of all formal features of α, as a result of automatic pied-piping at a feature level.

[8] I leave open the status of scrambling, which has sometimes been claimed to be optional and hence not feature-driven (see, e.g., Fukui 1993, Saito and Fukui 1998, Takano 1998).

(17) $\{\{\alpha, V\}, V\}$

Since the whole structure is a projection of V, the label here is V. Note that in this representation there is no entity corresponding to the VP node in the traditional tree representation, given in (18).

(18)
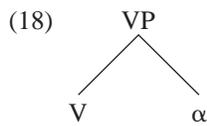
Suppose that VP has β as a specifier, in addition to the complement α. Then, its representation is (19).

(19) $\{\{\beta, \{\{\alpha, V\}, V\}\}, V\}$

Again, the label of the whole structure is V, since the whole structure is a projection of $\{\{\alpha, V\}, V\}$ and V is the head of $\{\{\alpha, V\}, V\}$. In (19), too, there is no element corresponding to a VP node or a V′ node. Instead, what is always present in the representations is the head V, in the form of the label of each structure formed by Merge. This shows that when Attract/Move F applies to VP, it only ''sees'' the formal features of the head of VP. In effect, Attract/Move F always applies to the formal features of a head.

These considerations lead us to the following conclusion about category movement:

(20) Movement of the category α is contingent on Attract/Move F applying overtly to the formal features of the head of α.

In other words, the category α undergoes movement only if Attract/Move F applies to the formal features of its head before Spell-Out.[9]

Bearing (20) in mind, let us consider (2), repeated here as (21).

(21) $[_{VP}$ t$_i$ Gelesen$]_j$ hat $[_{TP}$ das Buch$_i$ $[_{TP}$ keiner t$_j]]$.

Assuming that topicalization/focus movement of the category α takes place when the formal features of the head of α enter into a checking relation with C, we see that remnant movement

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[9] As one reviewer points out, on this view of category movement, we must say that in cases of traditional pied-piping like (i), the head of the moved category has the *wh*-feature that is attracted by $[+Q]$ C.

(i) a. $[_{DP}$ Whose mother] did you see?
    b. $[_{PP}$ In which garden] did you find the flower?

Thus, in (i) the heads D and P of the fronted DP and PP, respectively, have the *wh*-feature. We can ensure this if we assume with Chomsky (1998) that all feature checking, overt or covert, involves movement of the formal features to the attracting head. Thus, in the case of (ia) the formal features of *whose* move to D for Case checking (the category DP also moves to [Spec, D] in this case for reasons that do not concern us here; see Chomsky 1998 for relevant discussion). As a result of this, the *wh*-feature of *whose* becomes part of the formal features of D. The same reasoning carries over to (ib) if we further assume that Case checking between P and its complement takes place overtly in the form of pure feature movement (without category movement, that is), so that in (ib) the formal features of *which* move to P overtly and hence the *wh*-feature of *which* becomes part of the formal features of P.

of VP in (21) correctly results from the overt application of Attract/Move F to the formal features of the head of VP, namely, *gelesen,* in accordance with (20).

Next, let us consider (9c), repeated as (22).

(22) *It's [$_{VP}$ a book t$_i$ to Mary]$_j$ that John gave$_i$ t$_j$.

Note that in this case, at the point of the derivation where remnant movement applies to VP, the head of VP, *gave,* has already moved out of VP. In order for VP to undergo focus movement, Attract/Move F must apply overtly to the formal features of the head of VP, but the head of VP in (22) is a trace. On independent grounds, Chomsky (1995:304) proposes the following condition:

(23) Only the head of a chain CH enters into the operation Attract/Move.

According to this condition, Attract/Move F cannot apply to traces. Then, the head of VP being a trace, Attract/Move F cannot apply to VP in (22). Therefore, remnant movement of VP cannot occur in (22).[10] The impossibility of remnant movement of AP in (14b), repeated in (24), follows in the same way.

(24) *It's [$_{AP}$ to John t$_i$ for his help] that Mary is grateful$_i$.

Exactly the same account carries over to (9a–b), repeated in (25a–b), if the fronted phrase there is a VP consisting of two complements of the verb plus a trace of the verb.

(25) a. *[Ihr ein Buch t$_i$]$_j$ gab$_i$ Hans t$_j$.
           her a book   gave Hans
           'Hans gave her a book.'
      b. *[Het boek aan Marie t$_i$]$_j$ gaf$_i$ Jan (waarschijnlijk) t$_j$.
           the book to Marie   gave Jan probably
           'Jan (probably) gave the book to Marie.'

However, given that the finite verb moves to the domain of C in German and Dutch, yielding verb-second effects, it is possible that the fronted phrase in (25) is a larger element than VP. Moreover, recall that in connection with the English example in (3c), repeated in (26a), we saw that the fronted phrase contains a trace of the subject, having the structure in (5), repeated in (26b).

(26) a. [Pass the exam], John indeed did.
      b. [t$_i$ Pass the exam]$_j$, John$_i$ indeed did t$_j$.

This should hold for (25) as well. Then, the fronted phrase in (25) and (26) must be *v*P in

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[10] The question arises how the Case and φ-features of the object DP are checked in examples such as (i).
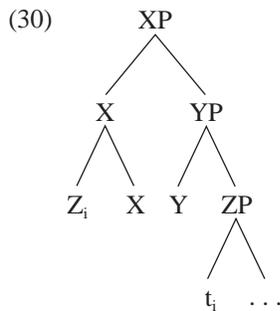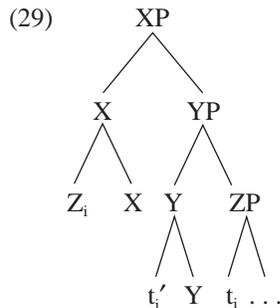
(i) Who$_i$ did you see t$_i$?

In one analysis Attract/Move F applies to the trace of *who* after Spell-Out. If all traces are invisible to Attract/Move F, that should be impossible. Thus, it must be the case that in examples like (i) Case/φ-feature checking for the object occurs before the object moves to [Spec, C]. Or, if we are to maintain covert Case/φ-feature checking for the object, we might stipulate that unlike other traces, traces of Ā-movement are visible to Attract/Move F. I thank Phil Branigan for bringing this matter to my attention.

Chomsky's (1995:chap. 4) system of clausal structure.[11] The example in (25a), for instance, is thus analyzed as in (27).

(27) $[_{vP} t_k [_{VP}$ Ihr ein Buch $t_i]]_j$ gab$_i$ Hans$_k$ t$_j$.

Then, the question is why remnant movement of vP is blocked if V moves out of vP.

Let us adopt the traditional view of head movement, where movement of a head involves adjunction of the moving head to another head.[12] Adopting this view of head movement, Baker (1988) claims that head movement of the form shown in (28) is allowed but head movement of the forms shown in (29) and (30) is not.

(28)

XP
X   YP
Y$_j$ X   t$_j$ ZP
Z$_i$ Y   t$_i$ . . .

(29)

XP
X   YP
Z$_i$ X   Y   ZP
t$_i'$ Y   t$_i$ . . .

(30)

XP
X   YP
Z$_i$ X   Y   ZP
t$_i$ . . .

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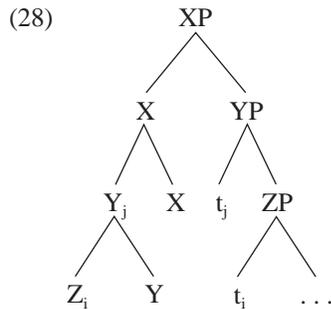
[11] vP appears as a complement of T, with its head v taking VP as its complement. v is assumed to be both lexical (assigning an external θ-role to its specifier) and functional (providing a domain for feature checking) in nature.
[12] See Fukui and Takano 1998 for a different view of head movement.

In (28) the head Z first adjoins to the next head up, Y, and then the resulting complex Z-Y adjoins to X. In (29) the second step is movement of Z alone, leaving a trace adjoined to Y. In (30) Z skips Y and directly adjoins to X. Baker argues that (29) is barred by a morphological constraint prohibiting a word from containing a trace and that (30) is excluded by Travis's (1984) Head Movement Constraint (Baker reduces it to the Empty Category Principle (ECP)).

On this view, then, a single head can move only to the next head up, and apparent long-distance movement of the head H results from short movement of H and subsequent short movement of a complex formed by adjunction of H to another head.[13] Adopting this view, let us go back to (27). Imagine that remnant movement applies to vP. At the relevant point of the derivation vP has the structure in (31).[14]

(31)
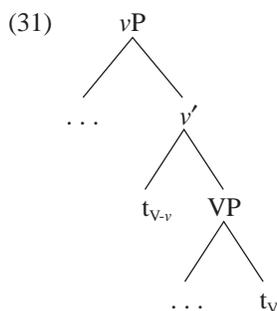
It is obvious that remnant movement cannot apply to vP here: Attract/Move F must apply to the formal features of the head of vP but the head of vP is a trace left by movement of the complex V–v.

Note that this conclusion does not affect the analysis of cases like (21), where the object has moved out of vP: remnant movement of vP is possible there since v stays in place.
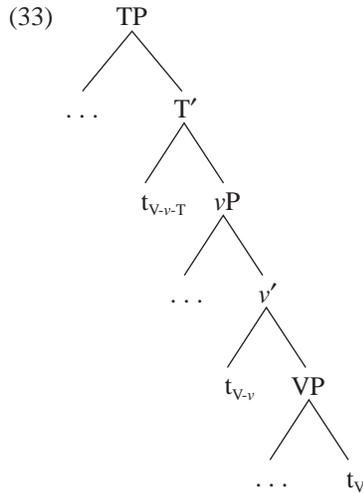
This approach predicts that remnant movement of TP will also be impossible if the verb moves out of TP. The ungrammaticality of the Dutch example in (32) shows that the prediction is correct.

(32) *[$_{TP}$ Jan het boek t_i]$_j$ kocht$_i$ (waarschijnlijk) t_j.
           Jan the book   bought probably
      'Jan (probably) bought the book.'

Given that head movement always takes the form of adjunction to the next head up, movement of V out of TP implies that the head of TP is a trace left by the complex V-v-T, as shown in (33).

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[13] Roberts (1991) argues that verb raising, in contrast to genuine morphological processes like noun incorporation and affixation, can create the structure in (29) (he calls the process excorporation). The position taken here is thus incompatible with Roberts's claim.
[14] I continue to use the traditional tree notations, with the reservation that this is for expository purposes only.

(33)   TP

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          /\
        /    \
      ...     T′
            /   \
          /      \
      t_{V-v-T}   vP
                /  \
              /     \
            ...      v′
                   /   \
                 /      \
              t_{V-v}    VP
                        /  \
                      /     \
                    ...      t_V
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When Attract/Move F applies to TP, the head of TP is a trace and hence remnant movement of TP is disallowed.

Recall that remnant movement is possible in (10), repeated in (34).

(34) a.   [Dato t_i a Gianni]$_j$, non l$_i$'ho   ancora t$_j$.
           given   to Gianni   not it.(I).have yet
           'Given it to Gianni, I have not yet.'

     b.   ?daß [t_i zu lesen]$_j$ es$_i$ keiner t$_j$ versucht hat
           that   to read   it no one   tried   has
           'that no one has tried to read it'

The clitic has moved out of *v*P in (34a) and an infinitival clause (TP or CP) in (34b). These cases are grammatical even though a head has moved out of the phrase that undergoes remnant movement. The crucial difference between these cases and the illicit cases that we have just explained is that the head of the remnant is in place in the licit cases. As stated in the generalization in (15), repeated here, it is not head movement out of the remnant but movement of the head of the remnant that blocks the remnant from moving up later.

(15) Remnant movement of α is impossible if the head of α has moved out of α.

The proposed account can correctly rule in the cases in (34), given that the clitic does not carry along the intermediate heads on the way to its final landing site (the clitic invokes excorporation in the sense of Roberts (1991); see footnote 13). Attract/Move F can thus apply to the formal features of the head of the remnant in (34).

In this way, we can derive the generalization in (15), distinguishing the licit and illicit cases of remnant movement, if we adopt the hypothesis that movement is feature-driven. On the other hand, the distinction remains mysterious under the hypothesis that movement is category-driven

since a category should be able to move when the head of the category has moved out of it. This result shows that Attract/Move F is empirically preferable to Move α.[15]

4 Extensions of the Proposed Account

Next let us consider the following contrast found in French:[16]

(35) a. [La première partie t$_i$]$_j$ en$_i$ a   été   publiée   t$_j$ en 1985.
          the first   part   of.it has been published   in 1985
          'The first part of it was published in 1985.'
     b. *[Trois t$_i$]$_j$ en$_i$ ont été   publiés   t$_j$ en 1985.
          three   of.them have been published   in 1985
          'Three of them were published in 1985.' (Rizzi 1990)

When the French clitic *en* is associated with a direct object noun phrase, it can function as a complement of N, as in (36a), or as an N′ element if the noun phrase has an indefinite quantifier, as in (36b).

(36) a. On en$_i$ a   publié [la première partie t$_i$].
          they of.it have published the first   part
          'They published the first part of it.'
     b. On en$_i$ a   publié [trois t$_i$].
          they of.them have published three
          'They published three of them.'

The contrast in (35) shows that the noun phrase out of which *en* has moved cannot undergo remnant movement under passivization when *en* functions as an N′ element.

    The contrast follows under the present approach with one assumption: that the bracketed definite noun phrase in (35a) and (36a) is DP, whereas the bracketed indefinite noun phrase in (35b) and (36b) is NP. Given this assumption, remnant movement of NP is impossible in (35b) because the head of the remnant has moved out of the remnant. Since no formal features of the

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[15] A reviewer claims that the cases of illicit remnant movement under consideration do not bear directly on Attract/Move F but rather show that contra the usual version of Relativized Minimality, a head can block XP-movement as long as it is of the same category as the XP and hence that Chomsky's (1995:chap. 4) Minimal Link Condition is preferred over Relativized Minimality. There is a technical problem with this claim. Consider (i), where V has moved to *v*, as is usually the case in English.

(i) C . . . [$_{vP}$ V$_i$-*v* [$_{VP}$ . . . t$_i$ . . .]]

Imagine now that C is to attract VP. According to the suggested alternative, C necessarily attracts V because of the MLC. However, V and VP are equidistant from C because both V and VP are in the minimal domain of *v* (Chomsky 1995: chap. 4). Then, C should be able to attract VP without violating the MLC, contrary to fact. The suggested alternative also presupposes that a given functional head, when attracting some element, can freely choose between X^0 and XP as long as they are of the same category. This is not the case, however. For reasons that I do not understand, a head consistently chooses either X^0 or XP. Thus, it is always DP rather than D that is attracted for the purpose of checking Case and *wh*-features, even though D has the relevant features. On the other hand, *v* always attracts V and not VP to yield the effects of verb raising.

[16] I owe the basic ideas developed in this section to suggestions made by Akira Watanabe (personal communication).

head of NP are visible to Attract/Move F, remnant movement of NP is blocked in (35b). The same problem does not arise for (35a), given that the head of the remnant, D, stays in place and Attract/Move F applies to the formal features of D.

Like the other cases of illicit remnant movement falling under the generalization in (15), (35b) cannot be treated easily under the Move α hypothesis. The fact that it receives a straightforward account under the Attract/Move F hypothesis (given one assumption about the categorial status of the indefinite noun phrase) lends additional empirical support to the feature-driven view of movement over the category-driven view.

In discussing the contrast in (35), Rizzi (1990) proposes to account for the ungrammaticality of (35b) in terms of head government. Thus, Rizzi claims that in (35b) there is no head that properly governs the trace of *en* and hence the trace does not meet the requirement that all traces be properly head-governed, thereby violating the ECP.

One might be tempted to extend the same account to the other cases that fall under the generalization in (15), by saying that the trace of the head that has moved out of the fronted remnant lacks a proper head governor in all those cases. However, the status of head government is unclear in the Minimalist Program, especially given that head government is sometimes claimed to hold between a head H and the specifier of the complement of H (as in the case of licensing subject traces), a relation that is no longer available in the minimalist conception of syntactic relations (Chomsky 1995:chap. 3). Furthermore, the head government approach faces an empirical problem, given the analysis (due originally to Chomsky (1995:chap. 4)) of predicate fronting adopted here, illustrated in (37).

(37) $[_{vP} t_i [_{v'}$ Pass the exam$]]_j$, John$_i$ indeed did t_j.

In (37) the trace t_i of the subject lacks a proper head governor. Therefore, on this analysis of predicate fronting, the head government approach incorrectly rules out (37).

There is one empirical domain that suggests that the head government approach is necessary.

(38) a. It was $[_{CP}$ PRO$_i$ to be frank$]$ that John$_i$ tried.
  b. *It was $[_{TP} t_i$ to be frank$]$ that John$_i$ seemed. (Huang 1993)

The contrast in (38) follows rather straightforwardly if we assume that all traces must be properly head-governed. Note that (38b) exemplifies yet another type of illicit remnant movement. It is clear that (38b) does not fall under the generalization in (8) (movement of *John* is A-movement, whereas movement of TP is Ā-movement). It also appears that (38b) has nothing to do with the generalization in (15), given that t_i is not a trace of T. However, (38b) may be accommodated by the present approach if we make an additional assumption about elements in a feature-checking relation. The reasoning goes as follows. The trace t_i in (38b) occupies [Spec, T] and enters into a feature-checking relation with T. Suppose that in situations like this T acquires some of the syntactic properties of its specifier, including the property of being invisible to Attract/Move F (this is reminiscent of the traditional specifier-head agreement; see also footnote 9). Then, it follows that remnant movement of TP is impossible in (38b) since Attract/Move F cannot apply to the formal features of the head T of TP, T being invisible to the operation.

One interesting consequence of this approach is that unlike the head government approach, which incorrectly rules out (37), this approach can correctly distinguish (38b) from (37), since in (37) t_i does not enter into a feature-checking relation with v and hence v remains visible to Attract/Move F. Thus, if the reasoning given above is tenable, the contrast between (37) and (38b) lends further support to the present approach.

5 Concluding Remarks

I have discussed a restriction on remnant movement that is left unaccounted for under the view of movement that takes Move α to be the primitive operation. The problematic cases of illicit remnant movement involve movement of the head of the category undergoing remnant movement out of that category. I have argued that those cases fall into place if we adopt Attract/Move F, which forces all category movement to be feature-driven, and certain independently proposed conditions on head movement. The discussion thus reveals previously unnoticed empirical effects of the feature-driven nature of movement that enhance the plausibility of adopting this minimalist view of movement.[17]

If these conclusions are correct, questions arise about the analysis of certain phenomena discussed in the literature. First, consider the following example from Japanese (NM = nominalizer; TOP = topic marker; CL = classifier):

(39) Katta   no wa *John-ga   hon-o   nisatu* da.
     bought NM TOP John-NOM book-ACC two.CL is
     (Lit.) 'It is John two books that bought.'
     'John bought two books.'

(39) is a cleft construction in Japanese (the italicized part being the focus) and is known to involve syntactic movement of the focus element (Hoji 1987). At first sight (39) appears to show that the subject and the object somehow form a constituent in Japanese. However, Koizumi (1995) argues that examples like (39) involve remnant movement of TP containing a trace of the verb that has raised to C (see also Kuwabara 1996 for a similar idea).

(40) [$_{CP}$[$_{TP}$ John-ga hon-o nisatu t_j] katta$_j$-C]

If cleft movement applied to TP in (40), (39) would result. Although it provides a nice account of (39) without claiming that the subject and the object form a constituent in Japanese, this analysis is incompatible with the conclusions reached here. Notice that the supposed remnant movement of TP in (40) is exactly the same as the remnant movement of TP that is prohibited in Dutch (recall the discussion surrounding (32)). This suggests either that the Japanese cleft construction in question does not involve Attract/Move F (i.e., feature checking) or that an analysis different from Koizumi's is called for.[18]

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[17] Note that these conclusions follow only if head movement takes place in the core computation. Thus, the present proposal is incompatible with Chomsky's (to appear) suggestion that head movement may take place in the phonological component.

[18] See Takano 1999 for other problems associated with the remnant movement analysis of examples like (39) and an alternative analysis that appeals to neither verb raising nor remnant movement.

Similarly, one reviewer points out that Huang (1997) argues that certain action sentences in Chinese result from verb movement, creating a remnant, followed by movement (topicalization or A-movement) of that remnant (see Huang 1997 for details).[19] The remnant movement that Huang proposes thus looks like the pattern that is shown here to be impossible. Here too, it will have to be shown that the apparent incompatibility between the present proposal and Huang's can be resolved in some way.

I leave these matters open here, hoping that future research will give us further insight into the nature of feature-driven movement and remnant movement and their interactions.

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[19] The same reviewer observes that Kayne's (1998) theory has the same character, assuming fairly free application of head movement followed by A-movement or Ā-movement or scrambling of the remnant. See also Tang 1998 for the claim that in Chinese the TP remnant moves to [Spec, C] after T moves to C.

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