A Problem of/for Tough Movement

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OCTOBER 2013

Abstract

This paper aims to further our understanding of complements to *tough movement* predicates like *tough, easy* and *pleasant*. It is argued that, because these adjectives head phrases that are complete propositions semantically, they should constitute *phases*, a syntactic domain that is transferred for phonological processing and unavailable to subsequent syntactic operations. Corroboration for this claim is gleaned from the contrasting interaction of *tough movement* with *of* and *for* phrases.

1 Introduction

Tough movement occupies a special place in motivating the desirability of minimalist syntactic theories. A central claim of the minimalist program Chomsky (1993) is that all syntactic restrictions are interface conditions, either at Phonological Form or at Logical Form. Other putative syntactic levels, such as s-structure and d-structure in Government and Binding theory Chomsky (1981) are claimed to be unnecessary empirically and, for that reason, should be unavailable in principle within the best theoretical models. In this regard *tough movement* structures are of special interest because they provide the only argument against the level of d-structure. In Chomsky (1981) d-structure is the privileged level of lexical insertion, which also conforms to the θ Criterion (i.e. the requirement that there be a one-to-one corespondance between NPs and θ roles). The challenge that *tough movement* structures presents is that their subjects seem to alternate between expletive *it* and a lexical NP, as illustrated by the comparison between 1-3, on the one hand, and 5-8 on the other. This means that either 1 or 5 violates the θ Criterion, if there is a level at which lexical insertion is performed in a single step of the derivation of a sentence.

(1) It is easy to do linguistics.

(2) It is hard to do linguistics.

(3) It is tough to do linguistics.

(4) It is fun to do linguistics.

(5) Linguistics is easy to do.

(6) Linguistics is hard to do.

(7) Linguistics is tough to do.

(8) Linguistics is fun to do.

(9) NP is easy [PRO to do linguistics]

(10) Linguistics is easy [PRO to do [e]]

(11) Linguistics is easy [CP wh [PRO to do [e]]

A number of researchers proceed from the intuition that the problem that *tough*-movement poses for Chomsky (1981) persists even after d-structure as a level of syntactic representation is abandoned in minimalist analyses. The construction seems to combine properties of A-movement (movement to specifier of TP) and $\bar{A}$-movement (movement to specifier of CP) despite the fact that movement to these two positions are typically analyzed as being distinct. Specifically the movements appear to diverge with respect to two properties: (i) how local such movements are, and (ii) whether the need to assign (or check) Case features forces the movement. Chomsky (1977) points out the similarities that the *tough*-movement construction has with wh-movement in constituent questions and infinitival relatives, and in Chomsky (1981) the gap in 5 is treated as the result of a null (wh) operator that undergoes movement to the complementizer system and ultimately enters into an interpretative relation with the subject *linguistics*. The difficulty is that *linguistics* would need to have been merged in the higher subject position that is not assigned a θ-role. There have been innovative proposals to allow *linguistics* to be merged within the embedded clause and move through the CP system before it moves into the subject position of the higher clause (c.f. Hornstein (2001), Hicks (2009)). Other innovations have attempted to model the duality of the construction by generating *linguistics* directly in the higher subject position as in Chomsky's proposal, but recognizing a novel, second type of movement that has the ability to leave a dedicated null pronoun in object position (c.f. Rezac (2006) and Fleisher (2013)).

All of these proposals appear specially designed for the vagaries of the *tough*-movement construction. They also abstract away from the ability of various prepositions to intervene between the adjective and its infinitival complement. This paper will offer an account of the construction that attempts to avoid these imperfections.

2   A Problem for Tough Movement

The *tough movement* adjectives can co-occur with *for* phrases as illustrated in 12-14. The structural position of such *for* phrases has been the source of debate (Bach (1977)). The *tough movement* adjectives can even co-occur with multiple *for* phrases. It has been a matter of debate whether the *for* phrase in simple cases controls an instance of PRO in the embedded infinitive, as in 19, or is the complementizer *for*, as in 20. *Tough*-movement has been reported to be possible when no more than one *for* phrase is present, as illustrated by the contrasted in 21 and 22. From the perspective of the wh-movement analysis of *tough* movement constructions, this fact appears curious because what principle is responsible for such judgments is unclear.[1]

(12) It is easy for you to do linguistics.

(13) It is hard for us to do linguistics

(14) It is tough for me to do linguistics.

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[1]One might try to claim that the Minimal Distance Condition in 23 is implicated because the phrase *for the rich* provides a nearer controller for the null wh operator within the embedded infinitive.

(15) It is easy for the rich for the poor to do the hard work.

(16) Linguistics is easy for you to do.

(17) Linguistics is hard for us to do.

(18) Linguistics is tough for me to do.

(19) It is easy for you [PRO to do linguistics]

(20) It is easy

(21) The hard work is easy for the poor to do.

(22) *The hard work is easy for the rich for the poor to do.

(23) Minimal Distance Condition: No A can move to a position C if there is an element B that c-commands A such that B could also move to C.

The analytic problem posed by the *for* phrase is sharpened if we consider phonologically overt formatives that are restricted to subject position. It is widely assumed that expletive *there* is restricted to subject position because it cannot be assigned a θ-role. If this is true then sentences like 28-29 become probative. Since the expletive *there* must be in subject position and cannot be assigned a θ-role, it is significant that sentences like 32 and 33 are unacceptable. These sentences have undergone *tough*-movement and are unacceptable because an overt subject is present in the infinitive rather than an instance of PRO. Superficially it seems that the overt subject in the infinitive is "in the way" somehow. Accounts that posit any type of wh or null operator movement within the embedded infinitive will be hard pressed to offer an explanation of such facts because of the standard assumption that movement to specifier of CP applies freely over overt subjects
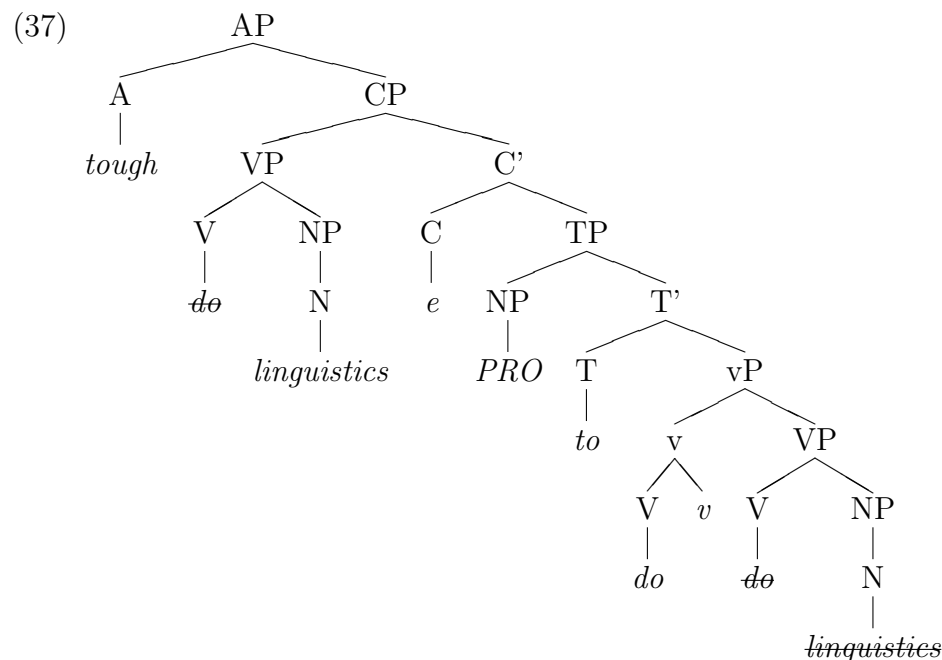
(24) Expletive *there* only occurs as subject of infinitives, presumably because it cannot saturate or be assigned a θ-role.

(25) There is a student waiting in the room for you.

(26) A student is waiting for there.

(27) A student is waiting in there.

(28) It is easy for there to be errors in complicated calculations.

(29) It is impossible for there to be rhubarb in this cake.

(30) It is easy to make errors.

(31) It is impossible to find rhubarb in this cake.

(32) *Errors are easy for there to be in complicated calculations.

(33) *Rhubarb is impossible for there to be in this cake.

(34) Errors are easy to make in complicated calculations.

(35) Rhubarb is impossible to find in this cake.

To take stock of our inquiry so far, we have found reason to believe that an overt subject blocks *tough*-movement. This finding is unexpected on the wh-movement accounts of *tough* movement. I show in the next section that there is a viable explanation for this descriptive generalization.
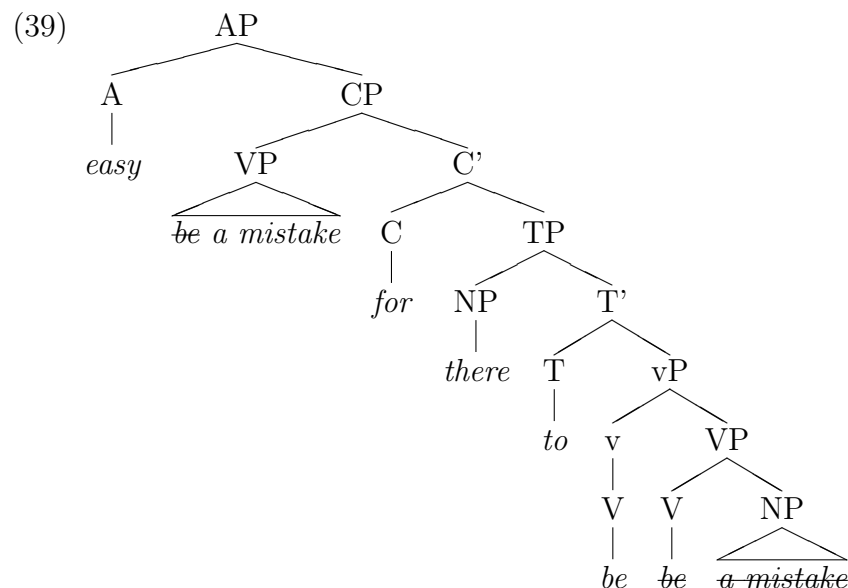
3 A Smuggling Solution

In the spirit of Collins (2005), let us hypothesize that under *tough-* movement adjectives the (smallest) VP raises to specifier of CP, over the subject. Such a movement is not specific to the *tough*-movement construction; it is used to explain properties of the French causative construction in Baker (1988). When the subject is phonologically overt (i.e., not PRO), as in 39, it requires the complementizer *for* to receive Case. The resulting structure in 39 is ill-formed because it is an instance of a doubly filled C effect, disallowed generally in English (cf Chomsky & Lasnik (1977). Since PRO does not receive Case from C, C can be empty in 37 and the doubly filled C effect does not kick in.

(36) It is tough to do linguistics.

(37)

```
                        AP
                _____|_____
               A                   CP
               |            _____|_____
             tough        VP              C'
                        __|__          ___|___
                       V    NP        C       TP
                       |     |        |     __|__
                      do     N        e    NP    T'
                             |             |    __|__
                         linguistics      PRO  T     vP
                                           |    |   __|__
                                          to    v      VP
                                              __|__   __|__
                                             V   v   V    NP
                                             |       |     |
                                            do      do     N
                                                           |
                                                       linguistics
```

(38) It is easy for there to be a mistake

(39)

```
                AP
         _____|_____
        A               CP
        |         _____|_____
      easy       VP           C'
               __|__        ___|___
            be a mistake    C      TP
                            |    __|__
                           for  NP    T'
                                 |   __|__
                               there T    vP
                                     |   __|__
                                    to   v    VP
                                         |  __|__
                                         V V    NP
                                         | |     |
                                        be be  a mistake
```

4

4 *OF* and *FOR*

The C *for* is not the only constituent to block *tough*-movement. An examination of sentences like 40 and 42 indicate that *pleasant* is a *tough*-movement adjective. It is possible to perform movement over the PP *for you* in examples 44-46 because we are not forced to analyze *for* in these examples as a C that would be incompatible with the smuggling approach to *tough movement* sketched in the preceding section. When there is an expletive constituent that must be a subject of the embedded infinitive, as in 54, the application of *tough*-movement produces an unacceptable result. What is especially worth noticing, however, is that the adjective *pleasant* can co-occur with a prepositional phrase headed by *of*, as in 48, and that this PP appears to block *tough*-movement too, as illustrated by the contrast in 48 and 51 The same pattern of judgments is reproduced with the adjective *nice*. Not all *tough movement* adjectives co-occur with such *of* phrases; *easy*, for example, does not, as shown by the unacceptability of 50.
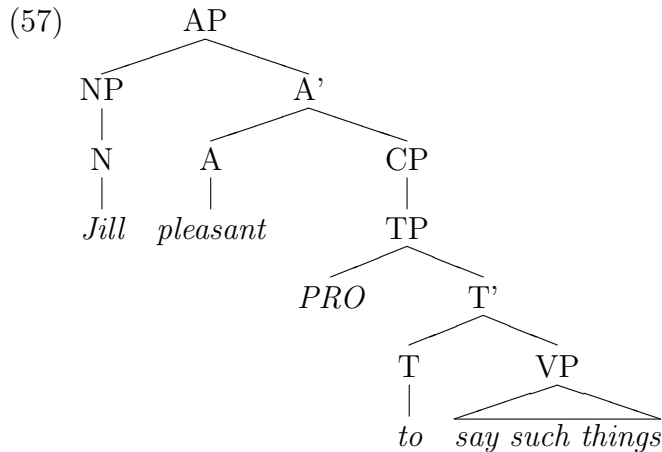
(40) It is pleasant to say such things.

(41) It was nice to help them.

(42) Such things are pleasant to say.

(43) They were nice to help.

(44) It is pleasant for you to say such things.

(45) It is nice for you to help them.

(46) Such things are pleasant for you to say.

(47) They were nice for you to help.

(48) It is pleasant of you to say such things.

(49) It was nice of you to help them.

(50) *It is easy of you to say such things.

(51) *Such things are pleasant of you to say.

(52) *They were nice of you to help.

(53) *It is pleasant of there to be lots of parties.

(54) It is pleasant for there to be lots of parties.

(55) *Lots of parties are pleasant for there to be.

The explanation that we offered in the preceding section for why the C *for* blocks *tough*-movement cannot be generalized to explain the unacceptability of 51. It is unavailable because *of* is not a C licensing a phonologically overt subject of an infinitive. Confidence in this assumption is bolstered by the inability of *of* to co-occur with expletive subjects as in 53. It thus appears that *of* phrases block *tough* movement but that a Minimal Distance explanation of the blocking effect is not available.

5 The Difference Between *OF* and *FOR*

We can begin to understand the effect of the *of* phrase on *tough movement* structures if we observe that both *of* and *for* phrases cannot co-occur as in 56. This fact will follow if we assume that *Jill* is the subject specifier of the adjective and that adjectives co-occurring with *of* are control predicates.[2]

(56) *It is pleasant of you for Jill to say such things.

(57)

```
                  AP
         ┌─────────┴─────────┐
        NP                   A'
         │            ┌──────┴──────┐
         N            A             CP
         │            │             │
       Jill        pleasant         TP
                              ┌──────┴──────┐
                             PRO            T'
                                      ┌─────┴─────┐
                                      T           VP
                                      │        ╱─────╲
                                      to    say such things
```

(58) Jill is pleasant to say such things.

(59) *of* is inserted to provide structural Case.

(60) She has enough money to buy a car.

(61) She has money enough to buy a car.

(62) He is tall enough to play basketball.

(63) *He is enough tall to play basketball.

(64) It is pleasant of Jill to say such things.

(65) *Such things are pleasant of Jill to say.

On this account the adjective *pleasant* must move to the left of its specifier in 64, and the preposition *of* is inserted to provide the specifier, *Jill* with Case. The leftward movement of the adjective is not an ad hoc stipulation, but appears more generally in English. We observe it moving over *enough* in examples like 62. More typically *enough* appears in a specifier like position, as suggested by its distribution with nouns in 60. While the noun can move to the left over *enough* optionally in 61, it moves obligatorily with an adjacent adjective. My contention is that this same leftward movement of an adjective is operative in 64.
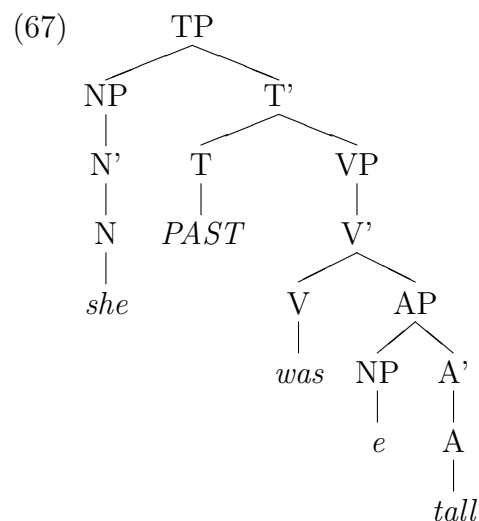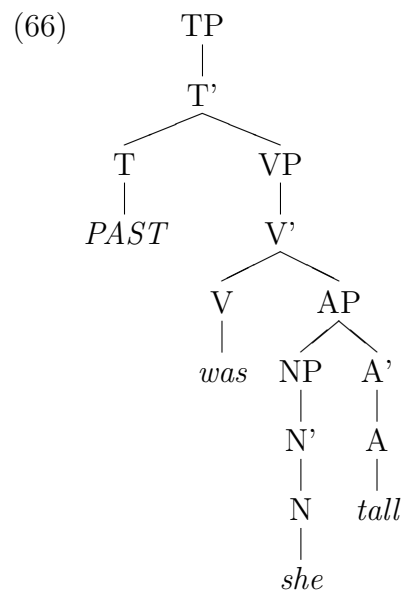
The AP in 58 is a complete semantic proposition. As such it should be a phase. When *Jill* is on the left edge of the AP, as in 57, it can raise to subject position to produce 58. However, when *pleasant* moves to the left edge of the AP, triggering the insertion of *of* to provide *Jill* with Case, as in 64, the AP functions as a phase for the material to its left and becomes syntactically impenetrable. *Tough*-movement of the the object of the infinitive is no longer available.

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[2]I represent control relations with PRO in the text as a simplifying assumption, recognizing that a movement account might ultimately be more desirable for obligatory control.

In contrast to 65, *tough*-movement is possible in 37, even though the moved NP *linguistics* is escaping from an AP. We attribute this greater freedom to the absence of a specifier in the AP. Perhaps the presence of an open specifier position in the AP provides a position for *linguistics* to transit through. Alternatively the absent specifier could be preventing the AP from being a semantic complete and from being a phase. The facts at hand do not force us to choose one of these alternatives, and we leave the issue unsettled.

6   The AP Phase

If the account of the incompatibility of *tough movement* with *of* phrases just sketched is on the right track, it predicts that *of* phrases should be incompatible with other syntactic movements. This prediction seems to be broadly confirmed. While it is possible to raise the specifier of the adjective to produce 67 from 66, it is not possible to move the object of *of* by raising to subject, wh-movement or relativization, as illustrated in 68-70.

(66)

```
            TP
            |
            T'
          /    \
         T       VP
         |       |
       PAST      V'
               /    \
              V      AP
              |     /  \
            was   NP    A'
                  |     |
                  N'    A
                  |     |
                  N    tall
                  |
                 she
```

(67)

```
            TP
          /    \
        NP       T'
        |      /    \
        N'    T      VP
        |     |      |
        N   PAST     V'
        |          /    \
       she        V      AP
                  |     /  \
                was   NP    A'
                      |     |
                      e     A
                            |
                           tall
```

(68) *Jill it is pleasant of to wash the dishes.

(69) *Who is it pleasant of to wash the dishes?

(70) *He is the guy who/that it was pleasant of to was the dishes.

(71) *What was it pleasant of Jill to wash?

Phase theory in conjunction with our analysis of the internal structure of these adjective phrases also leads to the prediction that we should not be able to dislocate the object of the infinitive by wh-movement when an *of* phrase is present in the AP. This prediction seems to be corroborated in 71.

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