"So Easy to Look At, So Hard to Define:" *Tough* Constructions and their Derivation

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October 2004

Abstract

This article addresses the syntax of the notorious *tough*(-movement) construction (TC) in English. TCs exhibit a range of apparently contradictory empirical properties suggesting that their derivation involves the application of both A-movement and A′-movement operations. Given that within previous Principles and Parameters models TCs have remained "unexplained and in principle unexplainable" (Holmberg 2000: 839) due to incompatibility with Case theory, θ-theory, and locality constraints, this article argues that the phase-based implementation of the Minimalist program (Chomsky 2000, 2001, 2004) permits a reanalysis of null *wh*-operators capable of circumventing the previous theoretical difficulties and explaining TCs' shared A-movement and A′-movement properties.

1 Introduction

Since the dawn of generative syntactic theory (e.g. Chomsky 1964, Miller and Chomsky 1963, Lees 1960), *tough* constructions[1] (henceforth TCs) have proved to be an intriguing phenomenon. Despite the immeasurable advances that the field has seen in nearly 50 years, the syntactic analysis of seemingly innocuous sentences such as (1a) still poses considerable theoretical difficulty.

[1]Also commonly termed *tough*-movement constructions, or *easy to please* constructions.

(1) a. John is tough to please.
b. Mary is pretty to look at.

The TC configuration is characterized by an apparently "missing" object in the embedded infinitival clause, obligatorily interpreted as coreferent with the matrix subject. The particular difficulty encountered with *tough*-movement (TM) is highlighted by a comparison with the superficially similar *pretty* construction in (1b). Despite the appearance of both *tough*-predicates and *pretty*-predicates in complement object deletion (COD) configurations as in (1), sentences of the type in (2) and (3)—which I term *non-TCs*—are commonly adduced in support of the view that *tough*-class predicates exhibit different thematic behavior from other predicates triggering COD.

(2) a. It is tough to please John.
b. * It is pretty to look at Mary.

(3) a. To please John is tough.
b. * To look at Mary is pretty.

The conclusion traditionally drawn is that *tough*-predicates assign no "external" θ-role, the TC subject's θ-role being assigned by the embedded infinitival verb. This intuition underlies Rosenbaum's (1967) seminal analysis of TM as a rule of object-to-subject raising, essentially an A-movement operation. However, Chomsky (1977) provides convincing empirical support for an account of TM based instead on A′-movement of a phonologically null *wh*-operator, as in (4).

(4) John_i is tough $[_{\text{CP}}\ \text{Op}_i\ [_{\text{TP}}\ \text{PRO to please}\ \text{t}_i]]$

Although the evidence for A′-movement appears compelling (based on sensitivity to island effects and the licensing of parasitic gaps, for example), the approach whereby the TC subject (*John*) is base-generated in situ apparently leaves it without a θ-role, in violation of canonical approaches to θ-theory. In light of various empirical and theoretical inadequacies of both A-movement-only and A′-movement-only analyses of TM, a common intuition of P&P approaches is that TM must incorporate both A-movement and A′-movement operations.

This article asserts that the major P&P approaches instantiating this intuition are all irreconcilable with the most fundamental assumptions concerning at least

one of the core theoretical concepts of Case, locality constraints, and θ-theory. An innovative analysis of the syntax of TCs is proposed, broadly within the Minimalist framework developed in Chomsky 1993, 1995, adopting the more recent extensions of the framework advanced in Chomsky 2000, 2001, 2004. I explore how recent theoretical developments concerning phase-based derivation, standardized 'probe-goal' feature-checking configurations, and the formalization of the relationship between Case-assignment and ϕ-feature agreement present fresh possibilities for analyzing TCs. The article is organized as follows. Section 2 confirms the traditional intuition that *tough*-predicates do not assign an external θ-role, unlike *pretty*-predicates. Section 3 briefly outlines and evaluates previous analyses of TCs, highlighting the incompatibility of each one with core theoretical assumptions. Section 4 lays out the crucial aspects of the syntactic framework adopted. Section 5 develops a reanalysis of the null *wh*-operator, and examines how its feature specification and internal structure permit a reasonably straightforward and unproblematic derivation of TCs, consistent with Minimalist treatments of Case and locality. Section 6 outlines an intriguing extension of this analysis in order to provide an account for *pretty* constructions (e.g. (1b)), which, in turn, is argued to offer new insight into the syntactic function of null operators.

2 *Tough*-Predicates and their Arguments

Predicates that enter into TC configurations are typically adjectival (*tough*, *simple*, *impossible*, *hard*), but also nominal (*a bitch*, and *a cinch*).[2] As first noticed by Lees (1960), and discussed further by Akatsuka (1979), Chung and Gamon (1996), Nanni (1978), there exists a sub-class of *tough*-predicates that cannot be placed on the *easy/difficult* scale but which may nevertheless be considered *tough*-predicates due to their appearance in the same range of syntactic environments as *tough*, *easy*, and so on:

[2]Dalrymple and Holloway King (2000) and Flickinger (1995) suggest that verbs such as *take* (*six months*) and *cost* (*five pounds*) may be considered *tough*-class verbs as they exhibit properties quite similar to other *tough*-predicates and also occur in constructions apparently equivalent to non-TCs. Pesetsky (1987) also suggests that Psych-verbs may be classed as *tough*-predicates yet as Pesetsky concedes, informants typically judge the relevant sentences as rather marginal:

(i) War$_i$ frightens me$_j$ [PRO$_j$ to think about e_i]

(Pesetsky 1987)

The reader is referred to Akatsuka 1979, Chung and Gamon 1996, Flickinger and Nerbonne 1992, who provide more exhaustive lists of *tough*-predicates.

(5) a. To watch Lloyd-Webber's hit musicals is annoying/unpleasant/fun.
b. It is annoying/unpleasant/fun to watch Lloyd-Webber's hit musicals.
c. Lloyd-Webber's hit musicals are annoying/unpleasant/fun to watch.

While this sub-class of *tough*-predicates undoubtedly merits further discussion, I do not pursue further the particular semantic characteristics of *tough*-predicates here. Crucially, following Chomsky (1981), Mulder and den Dikken (1992), among others, I do not classify predicates such as *pretty* and *handsome* as *tough*-predicates (despite their appearance in COD configurations) precisely because they cannot occur in non-TC environments (see (2b), (3b)).

This approach clearly envisages a single lexical argument structure of *tough*-predicates in order to account for both TC and non-TC configurations. This should perhaps be the null hypothesis on theoretical grounds: as Aniya (1998) observes, an advantage of canonical P&P accounts of TM over lexically-based analyses is that they permit a simplification of the lexicon. This view, however, is widely contested; evidence against a single lexical argument structure for *tough*-predicates has typically been sought in the literature from two perspectives, discussed below.

2.1 Infinitival Omission

If the TC subject relies on the infinitival verb to assign its θ-role then this verb must always be structurally present. It is well documented that the infinitival clause may often in fact be omitted in TCs:

(6) a. This problem is difficult.
b. This problem is difficult to solve.

Such sentences lead Hornstein (2001), Kim (1995), Wilder (1991), and Williams (1983, 2003) to assume that in the absence of any predicate in an embedded clause that could assign the TC subject's θ-role, it must be assigned by the *tough*-predicate. Such an approach requires that whenever the infinitival clause in TCs does appear, it must be an adjunct, since it can be freely omitted without inducing a grammaticality violation.

It is often overlooked that across a wider range of TCs, infinitival omission is not consistently applicable. The examples in which the infinitival is not phono-

logically present are in fact restricted to cases where the linguistic context (as in (7)) or extralinguistic context (as in (6a),(8)) is rich enough for the meaning of the omitted clause to be retrieved.

(7) This article will be easy for Rachel to translate into Welsh but difficult for Gareth (to translate into Welsh).

(8) Today's opposition will be difficult (to beat).

Following observations of Comrie and Matthews (1990), wherever the meaning of the omitted infinitival clause cannot be retrieved from the preceding discourse, the acceptability of the TC relies on some salient typical characteristic of the entity denoted by the TC subject. Accordingly, (6a) can freely paraphrase (6b) but not (9), since problems are typically something that one tries to solve, not (necessarily or automatically) to understand the significance of.

(9) This problem is difficult to get any idea of the true significance of.

It follows that in the absence of appropriate preceding linguistic context, a TC subject whose referent possesses no such salient typical characteristic will not permit omission of the infinitival, as Comrie and Matthews observe:

(10) a. *? The hat-trick he scored on the last day of the season is easy.
b. The hat-trick he scored on the last day of the season is easy to forget the importance of.

(11) a. *? That the election was a sham would be difficult.
b. That the election was a sham would be difficult for anyone to deny.

It appears, then, that the possible omission of the infinitival depends on its contextual recoverability, more reminiscent of argument omission than that of an adjunct.

Standard entailment tests can be used to identify the argument status of the infinitival clause. Dowty (1982) demonstrates that the truth of a proposition containing an adjunct always entails the truth of the equivalent proposition with the adjunct omitted. Thus, (12a) is predicted to entail (12b) under the adjunct analysis of the infinitival, yet it clearly does not.

(12) a. Today's opposition will be easy to underestimate.

b. Today's opposition will be easy.

Dowty also points out that if a syntactic argument is unrealized, then its meaning will remain implicit in the sentence. Indeed, Akatsuka (1979:6) argues that easiness and difficulty (etc.) obligatorily involve "agentive experiences," which correspond to the content of the infinitival clause, whether overtly realized or not. Returning to (6a), a problem cannot be inherently difficult; it can only be understood as difficult with reference to the conditions of its resolution, for example.

2.2 Semantic Differences between TCs and non-TCs

The second variety of evidence adduced against a single lexical argument structure for *tough*-predicates is that systematic semantic differences appear to obtain between TCs and non-TCs. Bayer (1990), Grover (1995), Kim (1995) and Schachter (1981) report that TCs give rise to a salient reading whereby some property of the TC subject is interpreted as being responsible for the difficulty or easiness. Thus it is suggested that in (13a) but not (13b) the most salient ("responsibility" or "causativity") reading attributes the difficulty experienced to some property of the mountain, such as the terrain or gradient:

(13) a. This mountain is difficult to walk up.
b. It is difficult to walk up this mountain.

As causativity is commonly considered to be syntactically encoded, Kim (1995) claims that *tough*-predicates differ in TC and non-TC sentences with respect to which constituents are assigned which θ-roles. Under her analysis, in non-TCs a cause θ-role is assigned to the infinitival clause. In TC configurations, however, the cause θ-role is assigned not to the infinitival clause, but to the TC subject.[3]

Goh (2000b), however, provides detailed empirical evidence that this responsibility reading cannot be attributed to a difference in θ-role assignment in TCs and non-TCs. Goh demonstrates that the causativity reading in TCs is restricted and weak: it can be very easily cancelled by additional contextual information. In (14), for example, the responsibility for the difficulty is ascribed not to the mountain but to the stilettos, inside the adjunct *while*-clause:

[3]As noted above, the infinitival clause is not assigned a θ-role in the TC configuration, and thus has adjunct status under this analysis.

(14) Even the smallest mountain is difficult to walk up while wearing size 14 stilettos.

Furthermore, as Goh shows, in many contexts the TC configuration is unable to give rise to a causative interpretation. Where the TC subject is propositional, for example, as in (15a), there can be no conceivable interpretive difference from the equivalent non-TC (15b).

(15) a. That Gareth never visited in 7 years is difficult to believe.
b. It is difficult to believe that Gareth never visited in 7 years.

Similarly, Goh (2000a) highlights that although idiom chunks such as *the hatchet* in (16) cannot by their very nature be ascribed responsibility, they may appear as TC subjects.

(16) The hatchet is hard to bury after long years of war.

(Berman 1973)

Goh's (2000a, 2000b) conclusion, which I find persuasive, is that the interpretive differences between TCs and non-TCs are best attributed to pragmatic rather than thematic differences.[4]

Evidence from the optionality of the infinitival in fact indicates that omission of this clause bears closer similarity to argument omission than to adjunct omission. As the infinitival uncontroversially has argument status in non-TCs, we find no reason to suggest that it should not also be an argument of the *tough*-predicate in TCs. The empirical evidence outlined above does not lead us to reject the null hypothesis of a single lexical argument structure for *tough*-predicates, and I henceforth assume (with Chomsky (1981), Browning (1987), Pesetsky (1987), Comrie and Matthews (1990), Brody (1993), and others) that *tough*-predicates do not assign a θ-role to the TC subject. It follows that *tough*-predicates assign a θ-role to a clausal argument.[5]

[4]This coincides with Pulman's (1993) suggestion that TM is associated with a focussing effect, and Soames and Perlmutter's (1979:501) claim that the difference between TCs and non-TCs is simply one of "focus and emphasis."

[5]I follow Pesetsky's (1987) conclusion that TCs with omitted infinitival clauses simply involve phonological deletion of a clausal argument that is syntactically present, and whose main verb can therefore assign a θ-role to the TC subject.

Before concluding this section, it should be noted that *tough*-predicates also assign a θ-role to an apparently optional experiencer within a *for*-phrase:

(17) a. John is difficult (for Mary) to please.
b. It is difficult (for Mary) to please John.
c. To please John is difficult (for Mary).

It seems reasonable to suppose that when no *for*-phrase occurs overtly the experiencer is structurally present and interpreted as arbitrary or implicit, as suggested by Berman and Szamosi (1972) and Epstein (1984).

3 Previous Approaches to *Tough*-Movement

The independently-motivated assumptions concerning the lexical argument structure of *tough*-predicates reduces the range of syntactic analyses available for TCs. In this section I discuss the most successful of the previous approaches. The classical debate on *tough*-movement in the generative literature cannot be treated exhaustively within the scope of this paper; I aim to provide an outline of the debate below, identifying the pitfalls of previous approaches and indicating the direction that prevailing intuition has taken in the generative literature.

3.1 A-Movement

A transformational rule of *tough*–movement was first devised by Rosenbaum (1967) (and elaborated by Postal (1971)) in order to derive TCs and non-TCs from a single Deep-Structure representation, such as (18a).

(18) a. [to believe him] is difficult
b. it is difficult [to believe him]
c. he$_i$ is difficult [to believe t$_i$]

Extraposition applies to (18a), resulting in the insertion of *it* into matrix subject position, yielding (18b); *tough*-movement then applies to (18b), raising the object of the embedded clause into matrix subject position, replacing the expletive *it*.

Though generative syntax has long since dispensed with such construction-specific transformational rules, it is not difficult to envisage an updated raising-based analysis whereby the TC subject receives its θ-role in the usual vP-internal configuration within the embedded clause and raises into matrix subject position.

Bayer (1990), working within the Categorial Grammar framework, argues for a variety of raising analysis on the grounds of various empirical commonalities between *tough*-predicates and raising predicates (such as *seem*, *likely*). He shows that *tough*-predicates place no selectional or categorial requirements on their subjects; the only requirements match those imposed by the embedded verb on its object. Take, for example, the interaction of idiomatic expressions and TM. Berman (1973) notes that the acceptability of certain idiom chunks as TC subjects is dependent on the presence of the appropriate matching verb in the embedded clause, and not on the matrix predicate;[6] compare the acceptability of (16) (repeated here as (19a)) and (19b) on the idiomatic reading.

(19) a. The hatchet is hard to bury after long years of war.
(Berman 1973)

b. ?? The hatchet is hard to put under the ground after long years of war.

The same holds of raising constructions (again, the grammaticality judgments relate to the idiomatic reading):

(20) a. The hatchet is not likely to be buried for many more years to come.

b. ?? The hatchet is not likely to be put under the ground for many more years to come.

Patterns of nominalization might provide further empirical evidence for treating TM as raising. It has been well known, at least since the observations of Miller and Chomsky (1963) (but with more explicit comparisons made in Chomsky 1970), that the unacceptable nominalization of *tough*-predicates mirrors that of raising predicates:

(21) a. * John's easiness/difficulty to please.

[6] Although Lasnik and Fiengo (1974) claim that such *tough*-moved idiom chunks are ungrammatical. Pulman (1993), and others, observe that the cases of acceptable idiom chunks as *tough* subjects are fairly restricted.

b. * John's certainty/liklihood to win the prize.

c. John's eagerness to please.

(Chomsky 1970)

However, it is perhaps premature to draw the conclusion that this similarity is somehow related to the application of raising. Note that nominalizations of *pretty*-predicates are also unacceptable, yet unlike *tough*-predicates, *pretty*-predicates clearly must assign an external θ-role:

(22) * Mary's prettiness/beauty to look at.

From a theoretical perspective too, TM cannot be reduced to an application of A-movement alone. First, this analysis incorrectly predicts the case morphology of the TC subject; note the alternation between accusative *him* in (18a,b) and nominative *he* in (18c) above. If TM involves movement from the embedded object position, then it remains unclear how the embedded object could escape accusative case-assignment in order that it can instead receive nominative case later in the derivation. Furthermore, the A-movement into matrix subject position must be exceptional in being able to cross a subject position. It seems, then, that while the A-movement analysis of TM appears consistent with the thematic properties of *tough*-predicates, it is fundamentally incompatible with two core assumptions of P&P models, namely Case theory and locality constraints on A-movement.

3.2 Base-Generation Approaches

3.2.1 *Tough* Deletion

An analysis of TCs advocated by Akmajian (1972) and Ross (1967), and more explicitly formalized by Lasnik and Fiengo (1974) improves in some respects on the raising analysis in that the Case mismatch is explained. Lasnik and Fiengo claim that the object gap in TCs (and other COD constructions) is simply the result of phonological deletion of the object, under identity with the TC subject:

(23) John$_i$ is difficult to believe ~~John$_i$~~

Since the phonologically realized occurrence of *John* is base-generated in the TC subject position, its nominative case morphology follows. Also, as the two occurrences of *John* are not related by movement, no locality violation is predicted.[7]

3.2.2 A′-Movement Involving a Null Operator

Lasnik and Fiengo's base-generation approach to TC subjects is refined by Chomsky (1977), who proposes the analysis in (24).

(24) John$_i$ is easy [$_{\text{CP}}$ Op$_i$ [$_{\text{TP}}$ PRO to please t$_i$]

The object of the verb in the embedded infinitival clause is a null *wh*-operator, which, like overt *wh*-phrases, is required to undergo successive-cyclic movement to a [Spec, CP] position. The evidence for identifying the embedded object as a *wh*-phrase and not an identical occurrence of the TC subject is based on the appearance of the type of locality effects typically observed in overt *wh*-movement environments:

(25) a. ?? What sonatas is this violin easy to play on?

b. ?? [$_{\text{CP}}$ what sonatas$_i$ is [$_{\text{TP}}$ this violin$_j$ [$_{\text{AP}}$ easy [$_{\text{CP}}$ Op$_j$ [$_{\text{TP}}$ PRO to play t$_i$ on t$_j$]]]]]

(based on Chomsky 1977)

[7] An interesting empirical fact in French TCs is explained under a deletion account, rather than the raising analysis (which is generally assumed for Romance TCs, see Kayne 1975, Rizzi 1982, Canac Marquis 1996.) Miller and Sag (1997) note that in French, if the TC subject is considered to be raised from the embedded object position, then in sentences with perfect tense in the embedded clause as in (ii), it is mysterious why there can be no overt morphological agreement for feminine and/or plural on the participle (*commis*), as is generally the case in French sentences where a direct object moves to a position higher than the perfect participle:

(ii) Ce sont des fautes dangereu-ses à avoir commis/*commis-es
These are some mistakes dangerous-FEM.PL to have committed/*committed-FEM.PL
dans sa jeunesse.
in one's youth
'These are mistakes dangerous to have committed in one's youth.'

(Miller and Sag 1997)

If *des fautes* is in fact base-generated as the subject of the matrix *tough* predicate rather than the object of the embedded predicate, the lack of participial agreement is explained.

The weak ungrammaticality in the TC (25)—typical of Subjacency violations—is predicted, since the [Spec, CP] position in the embedded infinitival clause is filled by the moved null operator, and hence cannot be targeted by the overt *wh*-phrase en route to matrix [Spec, CP]. Moreover, as (26a) shows, TCs permit long-distance dependencies across multiple clauses, provided that no intervening category occupies an intermediate [Spec, CP] position, as *why* is assumed to in (26b).

(26) a. A guy like John is hard to imagine any woman believing she could marry.

b. ?? A guy like John is hard to imagine any woman wondering why she would agree to marry.

Finally, TCs license parasitic gaps (Chomsky 1982, Montalbetti et al. 1982), another diagnostic for A′-movement constructions. Only if TCs involve application of some variety of *wh*-movement is the asymmetry between the grammaticality of parasitic gaps in TCs and in raising constructions explained:

(27) (?) Lloyd-Webber musicals$_i$ are easy [Op$_i$ to condemn t$_i$ [without even watching e_i]]

(28) * Lloyd-Webber musicals$_i$ are likely [to be condemned t$_i$ [without anyone even watching e_i]]

Although the evidence for some variety of *wh*-movement is compelling, indeed overwhelming, other diagnostics provide results inconsistent with an A′-movement approach.

(29) a. John$_i$ should be easy for [his$_i$ wife] [Op$_i$ [PRO to love t$_i$]]
(Lasnik and Stowell 1991)

b. John$_i$ seems to [his$_i$ mother] [t$_i$ to lack discipline]

While an A-movement analysis of TM seems prima facie to provide a better account for the absence of Weak Crossover (WCO) effects in TCs (on the evidence that both (29a) and (29b) are perfectly grammatical), Lasnik and Stowell (1991) demonstrate that a lack of sensitivity to Weak Crossover is in fact exhibited in other COD constructions assumed to involve null operators:

(30) John$_i$ isn't old enough for us [Op$_i$ [PRO to ask [his$_i$ wife] to give up t$_i$]]

(Lasnik and Stowell 1991)

For this construction (see also section 6)—just as for the *pretty* construction—an A-movement analysis is entirely implausible, since the matrix subject is clearly an argument of the matrix predicate *old (enough)*. It is reasonable, then, to follow Lasnik and Stowell in concluding that whatever accounts for the immunity to WCO in (30) also accounts for the same characteristic in TCs.

Also slightly mysterious under the *wh*-movement account is why TCs do not give rise to Binding Condition C violations. If a *wh*-trace (or copy) of A′-movement is considered to be an R-expression, it is subject to the Condition C requirement that it must be A-free. However, the trace in the embedded clause in (29a) is A-bound by the coreferent matrix subject, *John*. This sort of evidence leads Chomsky (1986:98) to revise the formulation of Condition C, claiming that the requirement that an R-expression be A-free holds only "in the domain of the head of its maximal chain.

While certain empirical issues remain, then, the most serious objection to the Chomsky (1977) approach is purely theoretical: the standard null operator account and its predecessor, *tough*-deletion, violate all standard versions of the θ-criterion within P&P models. As observed by Brody (1993) and Wilder (1991), an analysis whereby the TC subject does not receive a θ-role from the *tough*-predicate must explain how a single θ-role assigned by the embedded verb is apparently 'shared' between two arguments: the null operator in the infinitival and the TC subject.

3.2.3 The Reanalysis Solution

Chomsky's (1981) analysis is a notable improvement on Chomsky 1977, apparently resolving the incompatibility with the θ-criterion. Chomsky (1981) assumes that in order to satisfy the θ-criterion, the TC subject must be licensed in matrix subject position by being the recipient of a θ-role, even though the *tough*-predicate has no available θ-role to assign to it. Identifying the null operator as PRO, Chomsky proposes the following derivation of TCs as a way of transmitting a single θ-role from the null operator to the TC subject.

(31) a. $[_{\text{TP}}$ PRO to please $\text{PRO}_i]$

b. $[_{\text{CP}}$ PRO_i $[_{\text{TP}}$ PRO to please $\text{t}_i]]$

c. $[_{AP}$ easy $[_{CP}$ PRO$_i$ $[_{TP}$ PRO to please t$_i$]]]

d. $[_{AP}$ $[_{A}$ easy PRO to please] t$_i$]

e. $[_{TP}$ John$_i$ is $[_{AP}$ $[_{A}$ easy PRO to please] t$_i$]]

The null operator PRO, merged as the embedded object, receives a θ-role from *please* and undergoes A′-movement to [Spec, CP], leaving a trace, as in (31b). After *easy* is merged with this complement clause, at (31d) structural reanalysis occurs, 'flattening out' a portion of the AP's hierarchical structure along with that of its complement, effectively creating a configuration in which *easy to please* is a lexical item with no internal structure. Crucially, the trace of A′-movement remains outside the portion of structure reanalyzed as a lexical item. As in the previous approach, the TC subject is inserted directly into [Spec, TP], but here receives a θ-role by virtue of chain formation with the trace outside the reanalyzed portion. Reanalysis makes this possible, since in the Government and Binding framework (GB), whether the antecedent occupies an A- or A′-position is crucial in determining the trace's properties. Before reanalysis, when A′-bound by the null operator in [Spec, CP], the trace has the status of a variable. However, after reanalysis, the trace is not A′-bound, but A-bound by the TC subject, thereby assigning anaphor status to the trace; crucially, GB assumes that this configuration permits θ-role transmission from trace to antecedent. Thus, Chomsky claims that the θ-role of the trace in embedded object position is transmitted to the TC subject, circumventing the apparent θ-criterion violation.

To my knowledge, it is Nanni (1978, 1980) who is responsible for first claiming that *easy to please* (etc.) should be treated as a complex adjective without internal structure. However, as Levine (1984a,b) argues, strings such as *easy to please* cannot reanalyzed as a single lexical item in light of several environments in which the components of the putative lexical item are not string-adjacent. Assuming that movement into and out of lexical items is banned, *easy to please* cannot simply be an adjective with no internal structure at the stage of the derivation where *wh*-movement and right-node raising operations apply:

(32) How easy is John to please?

(33) Mary is much more difficult than Sandy to please.

(Levine 1984a)

Chomsky's (1981) revision of the *wh*-movement analysis suffers from further theoretical and conceptual difficulties, particularly in light of advances made in the field since the classical GB era. First, the base-generation of the TC subject in [Spec, TP] is incompatible with current assumptions concerning ϕ-feature agreement and Case in the Minimalist framework of Chomsky (2000, 2001). Crucially, if matrix T bears a set of uninterpretable ϕ-features checked by agreement with the matrix subject (resulting in nominative Case assignment), then the merger of the subject in [Spec, TP] will not provide an appropriate feature-checking configuration, since [Spec, TP] is not within T's c-command domain.[8]

Furthermore, the reanalysis approach relies heavily on the embedded object θ-position being occupied by a movement trace (whose anaphor/variable status changes during the derivation). In Minimalist theory, however, the trace theory of movement is standardly replaced by copy theory. If a phonologically unrealized copy of the null operator occupies the embedded object position, the analysis becomes untenable: the identity of the movement copy as that of the null operator will be unaffected by the reanalysis operation. Finally, though the status of the reanalysis operation is unclear, it seems that on conceptual grounds it is irreconcilable with the aims underlying the Minimalist program, as reanalysis has rather limited empirical use and clearly cannot be derived as a composite of the core narrow-syntactic operations of Agree, Merge and Pied-Pipe. The trigger for the operation is also unclear.

From an empirical perspective, reconstruction possibilities indicate that any approach whereby the TC subject is base-generated in matrix [Spec, TP] cannot be correct. The binding behavior of the TC subject seems to indicate that at some stage of the derivation, it must occupy a position within the embedded infinitival clause.

(34) Pictures of himself$_i$ are tough for John$_i$ to ignore.

[8]This particular problem does not arise under the analysis proposed by Mulder and den Dikken (1992), whereby the TC subject does not enter the derivation in [Spec, TP] but as the subject of a small clause constituent. In their analysis, the null operator (EO) moves through [Spec, CP] of the embedded clause into the Specifier of a Mood and Modality Phrase:

(iii) John$_i$ is [$_{\text{SC}}$ t$_i$ [$_{\text{M\&MP}}$ EO$_j$ ... easy [$_{\text{CP}}$ t$_j$ PRO to please t$_j$]]$_i$]

(Mulder and den Dikken 1992)

However, the evidence from connectivity effects provided in section 3.2.3 shows that the TC subject must reconstruct to a position much lower than the small clause subject position.

Assuming, following Belletti and Rizzi (1988), that anaphors must be bound at some level of representation,[9] the TC subject must be c-commanded by *John* before movement into matrix [Spec, TP].[10] It appears that the TC subject must have moved from a position at least as low as the embedded [Spec, CP] in order for it to be bound by the experiencer.[11] Sportiche (2002) also offers an argument from variable binding that the TC subject must reconstruct below the experiencer:

(35) Pictures of his$_i$ friends are hard for every photographer$_i$ to sell.

(Sportiche 2002)

A potential counter-argument is that the TC subject does not scopally reconstruct, as observed by Postal (1974). In the non-TC (36a), *few girls* may take either wide or narrow scope, while in the TC (36b), only the surface scope (wide scope) reading is available.

(36) a. It would be difficult for Jim to talk to few girls.

b. Few girls would be difficult for Jim to talk to.

(Postal 1974)

However, while A-movement does give rise to reconstructed interpretations for the purposes of the binding theory, it typically does not for the purposes of scope. Postal (1974) notes that the pattern of scope alternation exhibited in (36) is also exhibited in raising constructions. In the raising construction (37), for example, the raised matrix subject *nobody* can only take wide scope.

(37) Nobody is certain to pass the test.

(Postal 1974)

It appears, then, that the evidence from scope reconstruction is in fact consistent with an analysis whereby the TC subject raises from a position in the embedded

[9] In Hicks (2004) I derive Minimalist explanation for Belletti and Rizzi's observation based on a feature-checking requirement of anaphors.

[10] The presence of *for* is assumed not interfere with the binding possibilities of the experiencer, since there is overwhelming evidence that PP experiencers c-command into complement clauses. In (iv), for example, the Condition C effect is only predicted if *him* c-commands *John*.

(iv) It seems to him$_{*i}$ that John$_i$ is invincible.

[11] This relies on assumptions about the internal structure of APs outlined in section 3.

infinitival.[12] The natural way to capture the reconstruction behavior of TC subject with respect to both scope and binding is if it undergoes A-movement into [Spec, TP], rendering the reanalysis solution to the θ-theory problem untenable.

3.3 A-A′-A-Movement

More recently, alternative approaches have grown out of Chomsky's intuition that TM is effectively a composite operation of A-movement and A′-movement. Revisiting the proposals of Postal (1971), Postal and Ross (1971), Rosenbaum (1967) that TM involves raising of the embedded object into matrix subject position, Brody (1993) and Hornstein (2001) suggest that TCs are derived by an initial application of A′-movement, followed by A-movement of the same category. Brody proposes that the category that is to become the TC subject enters the derivation in the embedded object position, and at a later stage of derivation, moves to [Spec, CP] of the embedded clause. Finally, in the matrix clause, the displaced embedded object is moved again from the embedded [Spec, CP] to matrix [Spec, TP]:[13]

(38) John$_i$ is easy [$_{\text{CP}}$ t_i [$_{\text{TP}}$ PRO to please t_i]]

There remain, however, serious theoretical objections. The Case mismatch encountered by the A-movement analysis is unresolved, since the TC subject must escape accusative case-assignment in its base position in order that it can be assigned nominative case in the matrix clause; it is unclear how this could be plausibly explained. Moreover, just as for the A-movement analysis, locality constraints on movement appear to be violated: movement into an A′-position followed by subsequent A-movement is typically banned as an Improper Movement configuration.[14] Brody (1993:9) argues for a reformulation of the principle of Improper Movement in order to permit this variety of movement in cases where "the lower A-position [embedded object position] is potentially an R-expression and the $\bar{\text{A}}$-position [[Spec,

[12] I assume, following Boeckx (2001), that the interpreted scope position of an A-moved element is fixed upon its Case-assignment.

[13] Hornstein's (2001) analysis is essentially similar, but relies on the addition to the syntactic framework of sideward movement (see also Hornstein 1999, Nunes 2001), from the embedded [Spec, CP] into a θ-position inside the matrix AP. Regardless of whether sideward movement should be permitted—my view is that it should not—in section 2 I argued that the TC subject cannot be the recipient of a θ-role from the *tough*-predicate. I therefore consider Hornstein's modifications to Brody's (1993) analysis unnecessary for my purposes here.

[14] The reader is referred to Bruening (2001) and Svenonius (2004) for theories that capture Improper Movement effects within the Minimalist framework of Chomsky (2000, 2001).

CP] of the infinitival clause] is licensed to contain an operator." This permits A′-A movement just in the case of TCs, yet appears to represent a rather ad hoc solution to the Improper Movement problem.

This has, up to now, been the end of the road for *tough*-movement in the P&P model. This situation is clearly unsatisfactory. The analysis proposed below offers a direct solution to three fundamental problems observed in this section. First, the evidence from θ-role assignment to the TC subject suggests an application of A-movement, yet an A-movement analysis alone is untenable due to well-known locality constraints. Second, the apparent A-movement exhibits empirical characteristics more consistent with an A′-movement analysis. Third, the putatively raised embedded object receives nominative case within the matrix clause and so apparently must escape Case-assignment by the embedded verb. Before tackling these problems, I make my theoretical assumptions explicit.

4 Minimalist Assumptions

I adopt broadly the set of theoretical assumptions concerning the syntactic computation and the architecture of core grammar advanced in recent revisions of the Minimalist framework (Chomsky 2000, 2001, 2004). Two crucial departures from previous P&P approaches concern the status of agreement and locality. The grammar provides an Agree operation in order to eliminate from the derivation syntactic features that are uninterpretable at LF interface. Any feature that lacks a value (prefixed u, e.g. $[u\phi]$) is uninterpretable at LF, and so must be erased from the derivation before the portion of the derivation containing it is sent by the Transfer operation to the semantic interpretive component.[15] An uninterpretable feature acts as a "probe," seeking a matching valued interpretable feature (a "goal") within a local c-command domain. Only an interpretable feature (prefixed i) constitutes a potential goal. Feature-matching results in the application of Agree between the two categories that bear these features, serving to value the uninterpretable feature.

The syntactic computation proceeds incrementally in "phases." Upon completion of each phase, commonly—yet not uncontroversially—assumed to equate

[15]Unvalued features are also uninterpretable at the PF interface. However, features which enter the derivation unvalued survive at PF, by virtue of receiving a value by the application of Agree during the computational component. While uninterpretable features which receive a value during the computation are interpreted at PF, then, they are not at LF.

to every CP and transitive vP, the syntactic material within the phase is rendered inactive to any further narrow-syntactic operations. The exception is the syntactic material at the edge of each phase, that is, the phase head (C, v) and its Specifiers ([Spec, CP], [Spec, vP]). These positions remain accessible to the immediately higher phase. This is formalized by Chomsky (2000, 2001) as the *Phase Impenetrability Condition* (PIC):

(39) [α [H β]]

(40) *Phase Impenetrability Condition* (*PIC*)
"In phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge [its Specifier(s)] are accessible to such operations."
(Chomsky 2000:108)

Phase-based computation and the PIC together ensure that any category whose uninterpretable feature can only be checked by Agree with an element in a higher phase must target each intermediate phase-edge 'escape hatch' position between its base position and the category that checks its uninterpretable feature. Upon completion of any given phase, then, all categories bearing an uninterpretable feature must either have entered into an Agree operation capable of checking that feature, or must occupy a phase-edge position, which remains (at least potentially) accessible to a probe in the immediately higher phase.

One special instance of an uninterpretable feature is that of Case. DPs are assumed to enter the derivation bearing an uninterpretable Case feature [uCase] that is unvalued, e.g. for nominative, accusative etc. D's [uCase] does not probe for a matching interpretable feature, but rather serves to specify D's ϕ-feature set [$i\phi$] as "active" to a higher probe. [uCase] on D is checked (independently of movement) as a reflex of ϕ-feature agreement, when the [uCase]-bearing DP's own [$i\phi$] acts as a goal for a probing Case-assigning head, such as v and T. If the DP bears no other uninterpretable features, the elimination of [uCase] on a DP results in its [$i\phi$] becoming inactive, and hence unable to enter into further operations. Accordingly, the syntactic configuration required for Agree requires not only feature-matching within a local domain, but also that the goal's interpretable feature be active at the relevant stage of the derivation in order for it to be visible to the probe.

Following Chomsky's (2000:107) suggestion that *wh*-features are "analogous to structural Case for nouns," we may assume that *wh*-feature checking works in a

similar way. A fully-fledged proposal for a system of *wh*-feature checking is beyond the scope of this article, yet for concreteness it is necessary to make some working assumptions explicit. Essentially, [*u*WH] on a *wh*-phrase is not a probing feature, since no category bears [*i*WH]; it is checked therefore as a reflex of another operation. C is assumed to bear a probing uninterpretable feature, [*u*Q], which is checked in the probe-goal configuration with a matching [*i*Q] on a *wh*-phrase. This operation serves to check the *wh*-phrase's [*u*WH]. I assume that a null operator bearing the [*i*Q,*u*WH] set is required in order to account for TCs' properties of A′-movement in the absence of any overt *wh*-phrase.[16]

Since only Agree, and not Move, may check uninterpretable features, movement into Specifier positions is triggered by an independent requirement, namely the presence of an EPP-feature [*u*EPP] on functional heads. This uninterpretable feature is only eliminated by movement of some category into its Specifier. Agree alone, then, is insufficient to satisfy [*u*EPP], while any movement to a Specifier position must be triggered by [*u*EPP] on the relevant functional head.[17]

The analysis to follow also requires the statement of certain assumptions about θ-positions within the lexical clause. I follow Hale and Keyser's (1993) configurational version of θ-theory, adopted by Chomsky in subsequent revisions of the Minimalist framework:

(41) *The θ-theoretic principle*
"Pure merge in θ position is required of (and restricted to) arguments."[18]
(Chomsky 2000:102)

θ-positions in verbal predicates may either be in VP or vP, a projection headed by a preverb associated with certain functional properties. The lexical verb obligatorily moves to v. If we assume (e.g. following Adger 2003, Carstens 2000, 2001, Svenonius 2004) that the presence of a light functional head above the corresponding lexical head extends to NPs (which are therefore merged with n), then it is natural to assume that a functional head a merges with AP (see also Bennis 2004). Just as

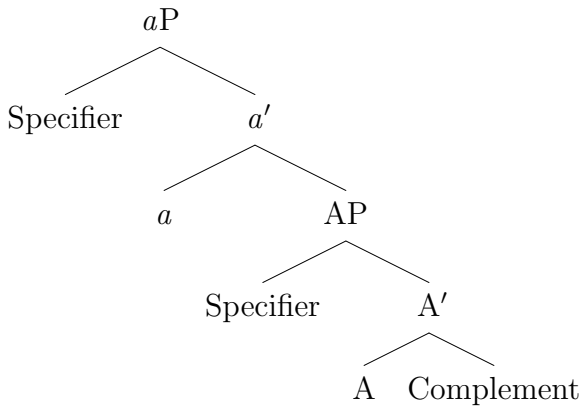
[16]Nothing in the following analysis hinges on this particular feature specification, and most approaches to *wh*-features within the same framework will do equally well.

[17]Pesetsky and Torrego (2000, 2003) claim that EPP should instead be considered a property (or "subfeature") of uninterpretable features, rather than a distinct feature. The distinction is not crucial for what follows.

[18]*Pure merge* is understood as merger which does not involve movement.

for verbs, I assume that the adjectival head obligatorily moves to *a*. Potentially, then, the adjectival phrase provides three θ-positions in which to merge arguments:

(42)



We have seen that *tough*-predicates appear similar to raising predicates in assigning θ-roles to an (infinitival) clausal argument, an apparently optional experiencer argument, but no "external" argument. For *tough*-predicates, I assume the equivalent predicate-internal configuration to that adopted by Anagnostopoulou (2003) and Holmberg and Hróarsdóttir (2002) for raising verbs, where the PP experiencer is merged in [Spec, VP] and the clausal argument merged with V. This predicts the correct surface order; the adjective, head-adjoined to *a* after movement, always occurs to the left of a PP experiencer, which itself always occurs to the left of the infinitival clause.[19]

5 Rethinking Null Operators

Let us now return to the central problems facing TM. First, given that the thematic structure of *tough*-predicates leads us towards a raising-based explanation, we must explain why [*u*Case] on the embedded object (to become the TC subject) is not checked in situ (since it receives nominative case, checked by matrix T). Yet even if

[19]This configuration has interesting consequences for the derivation of the variety of non-TC with an expletive *it* subject, as in (2a), repeated below as (v).

(v) It is tough to please John.

Early accounts for the TC/non-TC alternation (Rosenbaum 1967, Postal 1971, Higgins 1976) assumed the embedded infinitival clause to be the external argument of a *tough*-predicate, and hence that (v) involves obligatory extraposition of the infinitival clause. Under the assumptions about predicate-internal positions above, no extraposition is required in order to predict the surface order, simply the merger of an expletive in matrix subject position.

a solution to this problem can be found, given the phase-based architecture of the computational system, we require an explanation for why the unchecked [*u*Case] feature on the TC subject does not crash the derivation at any of the intermediate phase levels between the embedded object position and matrix [Spec, TP]. The only explanation available is that it is due to successive edge-to-edge movement between the embedded object and matrix subject positions that the TC subject's unchecked [*u*Case] escapes Spell-out at each phase. Since only A′-movement (and not A-movement) can target successive phase-edges, this assumption now allows us to envisage an explanation for the observed properties for A′-movement in TCs. While this lays the foundations for an analysis of TM, the motivation for the embedded object's A′-movement is still thus far unexplained, as is the requirement that its [*u*Case] not be checked in situ. I propose a single explanation for these two problems, namely the internal syntax of null operators.

The null operator structure I propose is inspired by—but in fact, entirely independent of—Kayne's (2002) derivational account of binding theory. Kayne, broadly adopting the assumptions of the Minimalist framework as outlined in Chomsky 1995, 2000, 2001, yet building on the view of movement and control developed in Hornstein 1999, 2001, argues that a pronoun or anaphor enters the derivation embedded within the same 'complex' DP as its antecedent, as in (43).

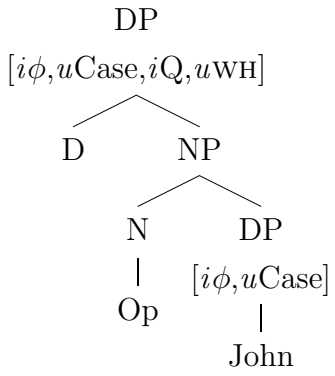
(43) $[_{DP}\ [_{DP}\ \text{John}]\ [_{D}\ \text{him(self)}]]$

This complex DP consisting of an antecedent and its pronominal 'double' is assigned a single θ-role upon merger with a predicate, yet at a later stage in the derivation the two components of this complex DP separate: the antecedent component (*John*) sideward-moves to another θ-position and is assigned a separate θ-role accordingly. Kayne is tentative concerning the internal structure of the antecedent-pronoun complex and the syntactic mechanisms that operate therein, and concedes that such an analysis is entirely dependent on permitting movement into θ-positions. While I do not adopt Kayne's proposal for pronouns and their antecedents, nor his theoretical assumptions, certain aspects of Kayne's account are adaptable to an analysis of the null operator in TCs.

I suggest that a null operator is to be identified as a *wh*-phrase with a more complex internal structure than is typically assumed. The D head bears *wh*-features, but the null nominal component of the DP can be considered to be a predicate requiring a single argument. Selection therefore motivates the merger of

a DP with the null nominal, as in (44).[20, 21]

(44)



As no functional head is capable of checking the Case feature of the complement of the noun, the DP argument of the null operator cannot be assigned a case value internally to the DP, so its [*u*Case] remains unchecked upon completion of the complex DP.

This internal structure of the complex null operator is claimed to overcome all of the fundamental problems associated with previous analyses of TM. To illustrate this, I outline the derivation of a simple TC such as (45).

(45) John is easy for us to please.

At the start of the derivation, once the complex null operator is derived (as in (44)), it merges with V as the object of *please*. The patient/theme θ-role from *please* is assigned to the whole complex DP. The VP now derived is merged with v, and the complex null operator enters into ϕ-feature agreement with v, $[u\phi]$ on v being the relevant probe.

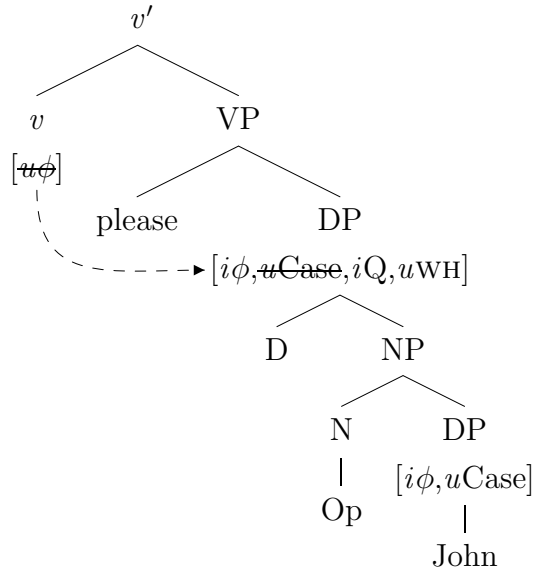
[20] Additional movements within the complex DP are of course possible, depending on theory-internal requirements.

[21] It is also possible to envisage an analysis of null operators closer to Kayne's antecedent-pronoun complex in (43):

(vi) $[_{DP}\ [_{DP}$ John$]\ [_{D}$ Op$]]$

However, difficult theory-internal questions arise, such as the motivation for the merger of *John* in (vi). Moreover, if *John* does not receive a θ-role within the operator DP, the classic problem of the θ-Criterion violation remains, since *John* must eventually target matrix subject position yet cannot collect a θ-role during the course of the derivation.

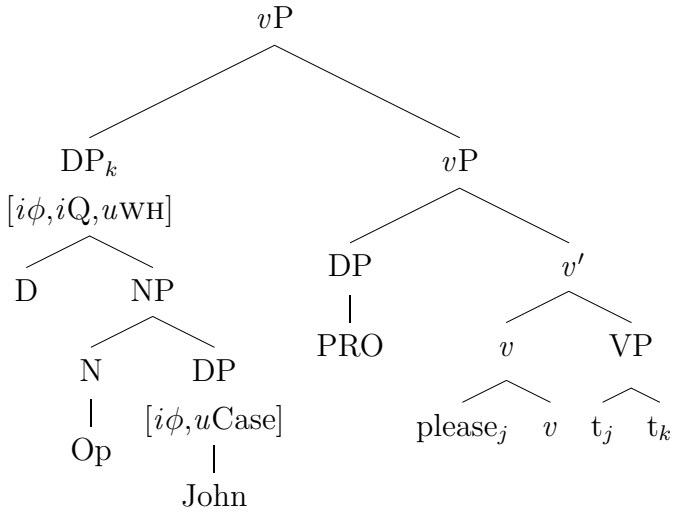
(46)



As a reflex of ϕ-feature agreement, the Case-assigning head v checks [uCase] on the complex null operator. However, the complex null operator's [uWH] remains unchecked. The survival of this remaining uninterpretable feature has the consequence that [iQ] on the null operator remains active. It is also important that [uCase] on *John* remains unchecked, as *John* has not yet undergone ϕ-feature agreement with a Case-assigning head. Recall that [uCase] is an illegal object at the interfaces, and must therefore either be checked within the current vP phase or reach the phase-edge ([Spec, vP]) where it can escape Transfer to the interfaces.

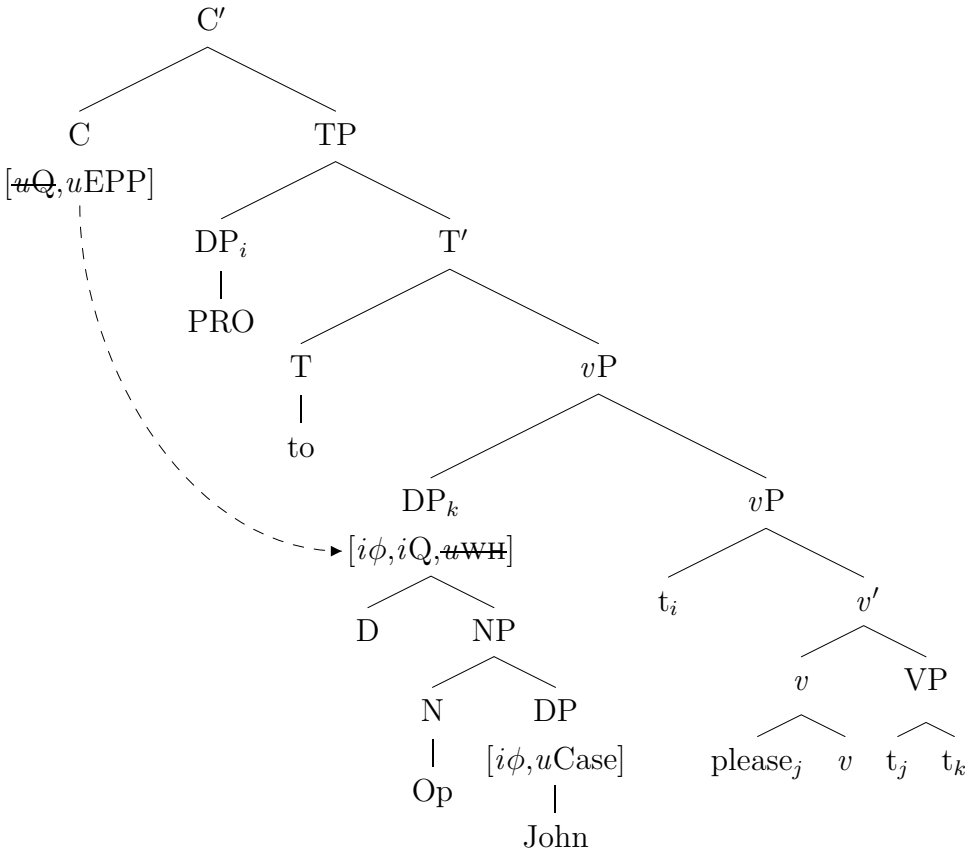
After the usual V-to-v movement, the external argument of *please*, PRO, merges in [Spec, vP]. The phase is not yet complete, however, since *wh*-elements bearing the [iQ,uWH] feature set are typically required to move in English, as [uWH] cannot be checked in situ. As required by the PIC, movement must be successive-cyclic through each phase-edge, and is permitted to target the outer [Spec, vP] position by virtue of an optional [uEPP] on v. Crucially, this movement of the complex operator, with *John* pied-piped, also has the consequence of allowing [uCase] on *John* to escape being transfer to the interfaces with the rest of the phase. The null operator therefore serves to give *John*, embedded within it, a "free ride" to the phase-edge:

(47)



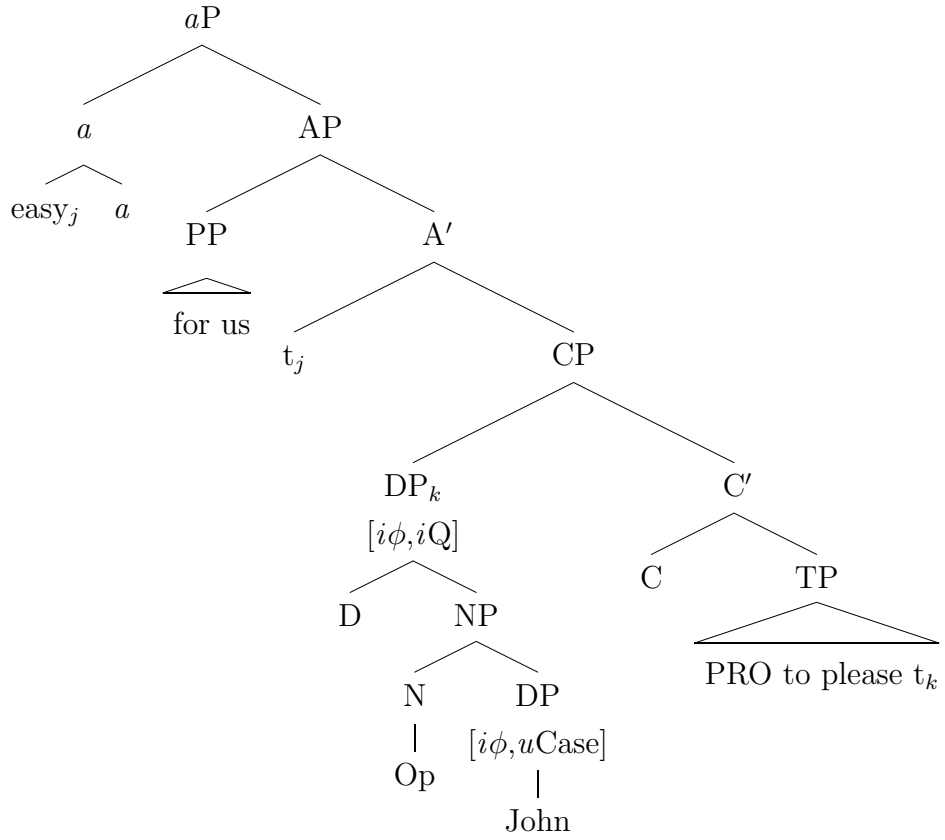
The vP phase terminates upon *wh*-movement of the null operator into the outer [Spec, vP]. All of the remaining uninterpretable features in vP are in the phase-edge, as required since the domain of the vP phase (VP) is now inaccessible to further operations by the PIC. The derivation proceeds as in (48). PRO moves into [Spec, TP] of the infinitival clause, and C merges with TP. It is assumed that this C bears [uQ], which is checked in the probe-goal agreement configuration with [iQ] on the complex null operator in the left-edge of the vP phase. [uWH] on the complex null operator is checked as a reflex of this operation, rendering the remaining interpretable features on the null operator inactive:

(48)



[uEPP] on C then drives movement of the complex null operator into the phase-edge position [Spec, CP], as is usual for *wh*-movement in English. Although all of the features on the operator head are checked (and its interpretable features therefore inactivated), the movement of the complex operator into the CP-edge again allows the unchecked [uCase] on *John* to escape being transferred to the interfaces at the CP phase, at which point it would otherwise crash the derivation. The CP phase complete, the derivation proceeds into the matrix clause. Following the proposals for aP-internal structure outlined in section 3, we arrive at the following stage of the derivation:

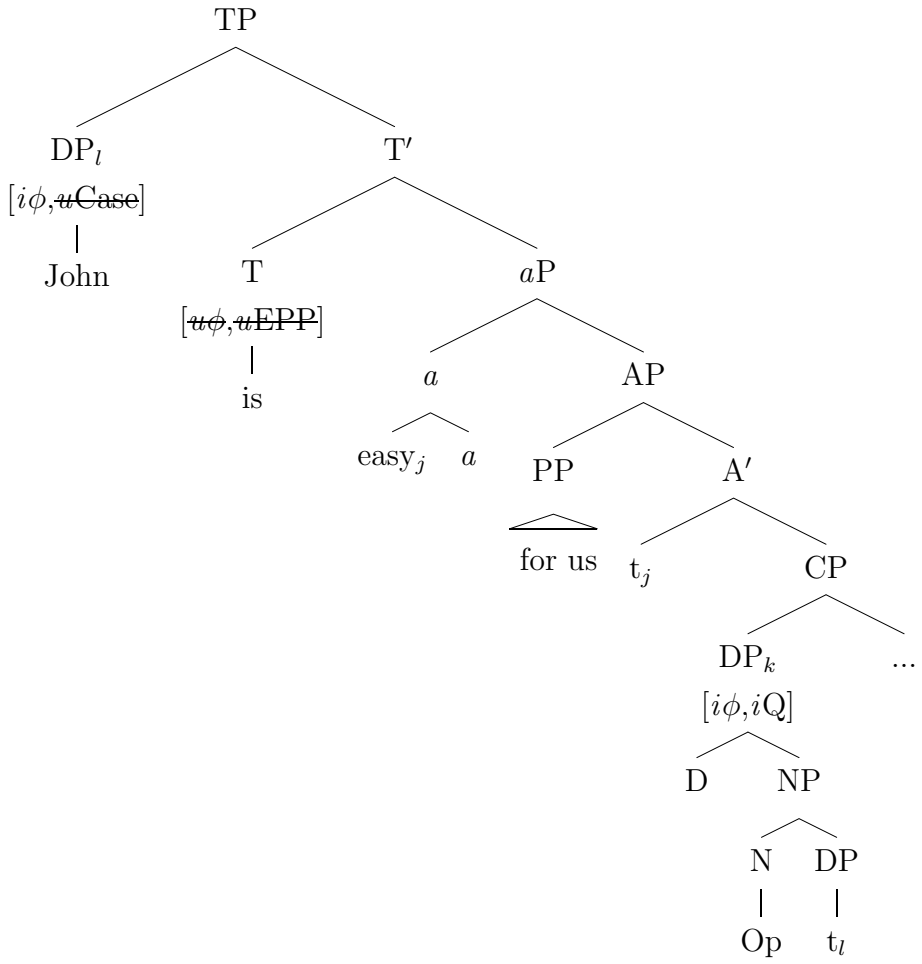
(49)



T now merges with aP, and bearing [$u\phi$], probes for [$i\phi$]. As a reflex of ϕ-agreement, nominative case must be assigned to the goal, which must also move to [Spec, TP] to satisfy [uEPP]. The only [$i\phi$] set remaining active in the derivation is that on *John* inside the complex null operator. Provided that locality conditions are satisfied by Agree between T and *John*, [$u\phi$] and [uEPP] on T are checked, as is [uCase] on *John*. Assuming that aP is not a phasal projection, CP is the closest phase boundary to T. Consequently, by the PIC, the DP *John* in the CP-edge is within the probing domain of T, and subsequently is sufficiently close to enter into agreement.[22] Thus, as is required, all of the uninterpretable features remaining in the derivation are checked at the TP projection, and the terminal phase of the derivation converges:

[22]Though the absolute locality requirement of the PIC is met, it is unclear whether relativized locality requirements (e.g. the Minimal Link Condition) are met. I address this matter in 5.1.

(50)



5.1 Theoretical Concerns

This analysis accounts for the intuition that the TC subject appears to have undergone both A′-movement and A-movement, yet crucially, without violating Improper Movement, which is inescapable in the analyses of Brody (1993) and Hornstein (2001). The complex null operator containing the DP that becomes the TC subject undergoes movement to an A′-position, while the TC subject itself moves independently of the null operator into an A-position later in the derivation. The Improper Movement violation is circumvented by proposing that separate DPs (one merged within the other) undergo A- and A′-movements. Note also that section 3.2.3 concluded—on the basis of the behavior of the TC subject under reconstruction—that the TC subject A-moves into [Spec, TP] from a position c-commanded by the experiencer. This is entirely compatible with the derivation outlined above. Yet while this approach appears to be more theoretically water-tight than any previous P&P approaches with respect to Case, movement, and θ-theoretic concerns, certain issues remain.

The θ-Criterion violation of analyses based on Lasnik and Fiengo 1974 and Chomsky 1977 is resolved by the TC subject being the recipient of a θ-role not from the *tough*-predicate, nor from the embedded clause predicate, but from the null operator itself. This immediately raises questions about the internal syntax and semantics of the null operator. The analysis is informed by Brody's (1993) intuition that the θ-role assigned by the embedded verb (*please*) seems to be shared between the null operator and the TC subject, with both therefore apparently entering the derivation as the embedded verb's object. Since the embedded clause predicate assigns a patient/theme θ-role to the complex null operator DP, the DP embedded within (in the sample derivation above, *John*) must be assigned a θ-role independently. Intuitively, the null operator serves to transfer its own θ-role to its argument. An alternative approach is to view the null operator as a DP that can only be interpreted as referential when supplied with a referential DP argument. The operator then inherits the reference of its argument. One possible parallel in English could be the internal syntax of reflexives, for example. If the structure of reflexives is morphologically analyzable and *self* can be assumed to be a noun (as first argued by Postal (1966) and assumed in much subsequent research), it is possible to consider reflexives as complex DPs. *Self* could be considered a predicate which can only create a referential DP (a reflexive) if supplied with a referential argument, in the same configuration as the complex null operator:

(51) $[_{\mathrm{NP}}[_{\mathrm{N}}\ \mathrm{self}]\ [_{\mathrm{DP}}\ \mathrm{my}]]$

Given this structure, we need assume only minimal differences in the feature specifications of reflexives and null operators, with very similar syntax and semantics. The proposed similarity is, of course, merely speculative, yet serves to highlight simply that the complex null operator may not after all seem so unusual.

A further possible objection to the proposed internal structure of the complex null operator is that it apparently violates the i-within-i condition, a filter designed by Chomsky (1981) in order predict the ungrammaticality of the following structural configuration:

(52) *The i-within-i condition*
"*$[\gamma \ldots \delta \ldots]$, where γ and δ bear the same index."
(Chomsky 1981:212)

This rules out structures where a DP occurs within a DP with which it is coref-

erent, which is precisely the case for the proposed complex null operator. The Minimalist framework has no place for representational filters such as (52), and its scope, formulation, and status have in fact always been rather unclear (see, e.g., Chomsky 1981:229, note 63). The seriousness of this objection to the complex null operator ultimately depends on the explanation the current framework has for the ungrammaticality if the sentences previously ruled out by the condition:

(53) $[_{\text{DP}}$ The owner$_i$ of $[_{\text{DP}}$ his$_i$ boat$]]$

To my knowledge, there is no prevailing Minimalist treatment of these cases, so this objection is left open for now.[23]

The proposed account of null operators in TCs raises further challenging questions for the system of agreement (feeding movement) proposed by Chomsky (2000, 2001). This primarily concerns the relevance of any inactive interpretable matching features intervening between the probe and goal. As demonstrated in (54), at the stage where matrix T probes $[i\phi]$ on *John* inside the complex null operator, two sets of inactive ϕ-features are present in positions between T and *John*.

(54) $[_{\text{TP}}\ \text{T}_{[u\phi,u\text{EPP}]}\ [_{a\text{P}}$ easy for us$_{[i\phi]}[_{\text{CP}}\ [_{\text{DP}}\ \text{D}_{[i\phi]}[_{\text{NP}}\ \text{Op}\ [_{\text{DP}}\ \text{John}_{[i\phi,u\text{Case}]}]]]...]]]]$

The relevant question is clearly whether ϕ-agreement of T with *John* is predicted to be blocked as a minimality violation by intervening ϕ-features. Though Chomsky (2001) assumes that inactivated matching features between a probe and goal do indeed induce a minimality violation, the precise role of inactive features in intervention is not entirely clear under the current framework. The absence of any intervention effect caused by the intermediate ϕ-features on the experiencer argument is of course reminiscent of the 'experiencer paradox' in raising constructions in English, a long-standing problem for the Minimal Link Condition (see Boeckx 2001, Bošković 2002, Chomsky 1995, Torrego 2002). In (55), for example, ϕ-agreement is established between matrix T and *John* in the embedded clause across the experiencer, yet the resulting sentence is perfectly acceptable:

(55) $[_{\text{TP}}\ \text{T}_{[u\phi,u\text{EPP}]}$ seems to me$_{[i\phi]}\ [_{\text{TP}}\ \text{John}_{[i\phi,u\text{Case}]}$ to be perfect for the job$]]$

[23]Note, however, that the same objection might be raised of Kayne's (2002) antecedent-pronoun complex.

(56) John seems to me to be perfect for the job

Given the observed similarity between *tough*-predicates and raising predicates, we may assume that whatever explains the absence of intervention effects caused by the experiencer's ϕ-features in raising constructions also explains the same effect in TCs. However, the consequences of the inactive $[i\phi]$ on the complex operator DP are yet to be explored. Legate (2002) suggests two relevant possibilities: it may be that inactivated ϕ-features simply are invisible to the search algorithm. As it is only features, and not categories whose status is active or inactive, it does not seem inconceivable that these inactive features are simply ignored by the $[u\phi]$ probe, just as seems to be the case with the inactive ϕ-features on the PP experiencer. Alternatively, Legate suggests that ϕ-features on *wh*-phrases may simply be ignored by T, since an A′-moved element is unable to undergo A-movement.

Concluding this section, it seems that while certain theoretical technicalities remain to be fully addressed pending further development of the framework, these issues are not on the same scale as the problems encountered in previous frameworks, in which Holmberg (2000:839) claims TCs were "unexplained and in principle unexplainable."

6 Extension to other COD Constructions

I turn now to other COD constructions, which are well known to share empirical properties with TM. Such constructions include *pretty* constructions, Degree Specifier Clause (DSC) constructions involving *too*/*enough*, purpose clauses, and infinitival relatives:[24]

(57) a. John$_i$ is handsome [Op$_i$ PRO to look at t$_i$]

b. John$_i$ is too weasel-faced [Op$_i$ PRO to find t$_i$ attractive]

c. I bought this book$_i$ [Op$_i$ PRO to read t$_i$ on the train]

d. Mary bought [some music$_i$ [Op$_i$ PRO to dance to t$_i$]]

[24]I follow Stowell (1986) in not including finite relatives in this class of NOCs, as they exhibit empirical properties more consistent with overt *wh*-movement constructions. Presumably the same should apply to clefts, for example. Parasitic gap constructions (PGCs) are also omitted from Stowell's analysis of NOCs; see Contreras 1993 for ways in which PGCs differ from other NOCs.

The widely accepted analysis of these null operator constructions (NOCs) is due to Chomsky (1977), which we saw was unavailable for TCs in light of θ-theory. TCs and the other NOCs form a natural class in that they all exhibit common empirical characteristics, some of which are not attested in overt *wh*-movement constructions. Stowell (1986) notes that unlike overt *wh*-movement constructions, null operators cannot originate in any position in a finite clause[25] or in subject and adjunct positions in infinitival clauses. As noted above, NOCs also differ from overt *wh*-movement constructions in not exhibiting sensitivity to WCO violations:

(58) Gareth$_i$ is too noisy [$_{\text{CP}}$ Op$_i$ for his$_i$ neighbours to put up with t$_i$]

The reader is referred to Lasnik and Fiengo 1974, Cinque 1990 and Grover 1995 for further empirical characteristics common to the various NOCs.

The question remains why TCs should in many ways act like the other NOCs in (57), while also being exceptional in being the only construction to bear any similarity to A-movement constructions. It is typically assumed that the derivation of TCs should involve the sort of null operator found in other NOCs, coupled with some sort of exceptional operations. Section 3 showed that this could not be achieved, due to the high theoretical cost of the required additional operations. I have claimed that TM motivates a conception of null operators fundamentally different from the standard one, without which TCs cannot receive a theoretically plausible explanation. Once we have motivated the complex null operator structure, it is no more theoretically costly to extend this analysis to the constructions in (57). Such an approach also affords us an intriguing insight into the motivation for null operators. Under the analysis outlined in section 5, the presence of the null operator in TCs essentially permits a DP thematically related to the em-

[25]Contra Stowell, I suggest that this requirement appears to constrain not the original position of the null operator, but rather the finiteness of the highest embedded clause (of which the null operator is assumed to move to [Spec, CP]), as (vii) appears to be acceptable, despite the null operator entering the derivation in an embedded finite clause.

(vii) Mary is tough for me to believe that John would ever marry.

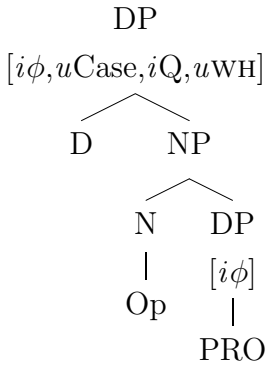
(Kaplan and Bresnan 1982)

As Nanni (1978) notes, speakers vary in their degrees of acceptance of the sort of sentence in (vii); Grover (1995) reports that grammaticality judgments for these sentences also vary greatly in the literature. I tend to agree with Kaplan and Bresnan's (1982) grammaticality judgment above, consistent with Calcagno's (1999) claim that there are at least some sentences of this type that are clearly acceptable. Furthermore, if some speakers find these sentences mildly ungrammatical, we might reasonably invoke Jacobson's (1992) observation that the acceptability of movement from more deeply embedded clauses tails off more quickly with TM than with overt *wh*-movement.

bedded predicate (albeit perhaps indirectly) to move close enough to the matrix clause to allow it to enter into agreement with matrix T. We can thus view TM as an operation permitting—in effect—long-distance A-movement of an object, made possible by the initial A′-movement. I suggest that in the other NOCs something rather similar motivates the requirement for null operator movement. Rather than long-distance raising, in these cases it is long-distance control (by a category in the matrix clause) that null operator movement permits: in (57a-d), for example, the closest c-commanding DP controls the null operator, similarly to the subject PRO-control configuration.

Given the analysis of TCs already presented, I suggest that in the constructions in (57), the argument selected by the null operator is simply PRO:[26]

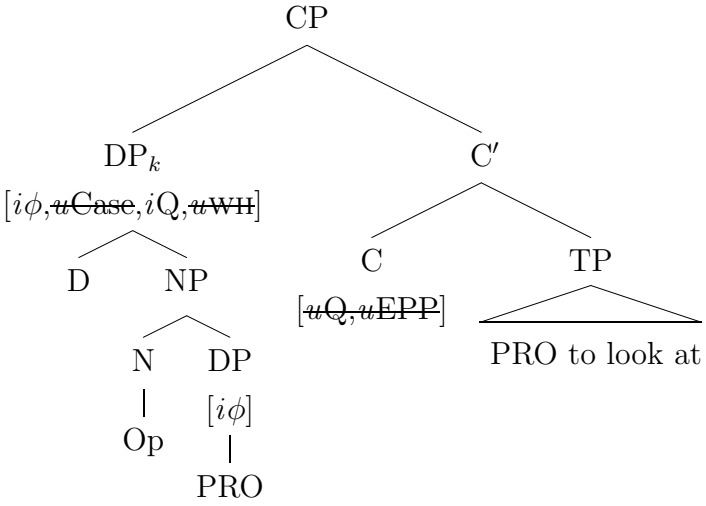
(59)



Essentially, the derivation of the constructions in (57) is now argued to involve the movement of the complex null operator (59) into [Spec, CP] of the highest embedded clause:

[26]As suggested in note 20, for theory-internal reasons it might be assumed that PRO must move internally to the complex null operator; this is not crucial for my purposes here.

(60)



At this stage, all of the uninterpretable features of the complex null operator are checked, so no further agreement (or movement) of either (59) or the PRO embedded within it is required.[27] Movement of the complex null operator into [Spec, CP] serves to pied-pipe PRO into a position sufficiently local to a DP in the matrix clause to be controlled by it.

Section 3 demonstrated that extending a plausible analysis of other NOCs to TCs has ultimately proved rather fruitless, primarily due to incompatibility with θ-theory. This article has argued that the methodology must be turned on its head: extending a plausible analysis of TCs to the other NOCs proves to be rather enlightening, allowing a fairly elegant conception of null operators to emerge. Effectively, null operators represent a strategy for establishing the control and raising dependencies—familiarly associated with embedded subjects—with embedded objects: constituents that locality conditions would otherwise render unable to enter into any sort of syntactic relationship with the matrix clause. Null operators simply represent a strategy for establishing control and raising dependencies in environments when they would otherwise be nonlocal, and hence impossible. Essentially, an A′-movement—which typically can circumvent locality constraints imposed by phases—is employed in order to mediate an A-type operation at long-distance. As Svenonius (2004:260) notes, "languages employ different strategies to get features and constituents over the edge."

[27] An obvious theoretical concern in (59) is the Case of PRO. Either PRO must in fact bear no Case feature (as in GB), or, following Chomsky and Lasnik's (1993) account for the distribution of PRO, PRO's Case feature must be assigned a null value internally to the complex null operator. Pending a fully satisfactory account for the feature specification of PRO, I do not deal with this matter here.

7 Conclusions

Based on an independently motivated lexical argument structure for *tough*-predicates, the proposed analysis of TCs is argued to be compatible with the full set of core theoretical conditions concerning Case, θ-theory, and movement. The theoretical mysteries surrounding TM are reduced to a single factor: the internal structure of null operators. A null operator is a nominal predicate, introduced by a *wh*-marked null D, taking an argument whose Case feature cannot be checked internally to the DP (at least in TCs; see note 27). Successive-cyclic A′-movement of this complex null operator through each intermediate phase-edge position (driven ultimately by its uninterpretable *wh*-feature) avoids the illegal transfer to the interfaces of the embedded DP's remaining unchecked [*u*Case]. Once the *wh*-movement of the complex null operator phrase terminates, the embedded DP occupies a position probed by the uninterpretable ϕ-features on the matrix T, and is subsequently raised into the TC subject position. In this way, TM's unusual properties of both A-movement and A′-movement receive a natural explanation.

In addition to the proposed analysis for TCs, the complex null operator is shown to offer an analysis for other NOCs, if PRO is assumed to be the argument of the null operator in these constructions. Subsequently, the extension in order to accommodate other NOCs is instructive in working towards a deeper understanding of null operators and their function. TCs and other NOCs reduce to raising and control constructions respectively, the difference being that the initial A′-movement of the complex null operator pied-pipes a DP that is subsequently either raised or controlled. The general motivation for null operators is thus understood: absolute locality conditions cannot be satisfied in an agreement operation between an object DP in an embedded clause and the relevant category in the matrix clause unless this DP receives a free-ride through successive phase-edges by pied-piping inside a complex null operator. This extension of the complex null operator implicitly challenges the common intuition that the status of TM in the syntactic framework is in some sense "exceptional." However theoretically enigmatic TCs prove to be, their regular production in spontaneous speech indicates that TCs cannot be considered marginal constructions. If, as it appears, the operations involved in *tough*-movement need no longer be considered in any way anomalous, syntactic theory at last has a place for the *tough*-construction.

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