

NP Movement: How to Merge and Move in *Tough*-Constructions^{*}

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1. Introduction

In a variety of talks and articles (see Sportiche, 2005), the following assumption explored and defended:

a. Reconstruction, that is the ability to interpret a moved phrase as if it had not moved, is a defining property of movement. In other words, if some item or phrase has moved, it must be able to reconstruct.¹

In particular, I have used the following corollary:

b. If a putatively moved item cannot reconstruct, it has in fact not moved.

I have used this corollary to argue that in a variety of cases in which we do know there is movement, standard assumptions have been mistaken regarding the identity of what has moved. For example, there is a series of well known paradoxes illustrated by the following example in which I informally note what is standardly taken to be the trace of the (raised) main clause subject:.

(1) No prime number has been proved [t to be the largest prime number]

Such a sentence cannot be interpreted to express the true proposition (the theorem) it would if this raised subject was reconstructed in the t position, namely:

^{*} This is a written version (and not a final draft – comments welcome) of ideas presented at the Tilt conference in Utrecht in 2002 as Sportiche (2002), as well as at UCLA. Many thanks to my UCLA students and colleagues and to the Tilt audience for their comments and suggestions and to David Embick.

¹ On possible general exception to this may be the case in which the function of movement is to assign an interpretation to the moved phrase in the moved position, i.e. that movement is interpretively motivated. It is not clear however that such movement exists (e.g. the standard conception of wh-movement), although I will not discuss this here.

- (2) has been proved [no prime number to be the largest prime number]
≡ it has been proved that there is no prime number which is the largest prime number.

Instead, it can only express the much weaker truth (true as a subcase of the previous theorem):

- (3) There is no prime number which has been proved to be the largest prime number.

I concluded from this:

- i. that the phrase *no prime number* has NOT been raised
but instead
- ii. Only the NP² part of this subject DP has raised, to form a constituent with the D *no*, which is merged in the main clause outside of the scope of the verb *prove* as illustrated below:

- (4) No [NP prime number] has been proved [t_{NP} to be the largest prime number]

2. Tough Reconstruction And Relatives Clauses

I now want to suggest that *tough*-movement constructions do involve movement to the “subject position” of *tough* clause albeit not of a DP, but rather of an NP (or any rate of a constituent smaller than a full DP) in a way similar to what happens in constructing the head of a relative clause in the raising analysis of relative clauses and paralleling what happens in the raising constructions discussed above.

The previous reasoning assumed the following premise “if movement then reconstruction”. Is the converse “if reconstruction then movement” true? The way we have defined reconstruction (in terms of movement) it (trivially) is. So let us instead ask a slightly different question: When a phrase can be (wholly) interpreted in a position that this phrase c-commands, has it been moved? In general, a positive answer is assumed, in part because if it a case of movement, this interpretive behavior – called radical reconstruction - is one we expect, and in part because there is no other known mechanism that has this (lowering) effect.

² Or the NumberP of this subject, a distinction not relevant here.

Applied to *tough*-constructions, this leads to a movement analysis as we now see.

The relevant facts (from French) are the following:

- (5) i. French relative clauses can be either in the indicative mood or in the subjunctive mood.
- ii. A subjunctive relative is only licensed in the scope of certain types of (basically, intensional) elements.³

This contrast is illustrated below:

- (6) * il est facile de lire/ de recopier/d'illustrer / de réinventer... une histoire qui soit intéressante
it is easy to read/ copy /illustrate /reinvent a story that BE interesting
- (7) il est facile de trouver/ d'inventer/d'imaginer une histoire qui soit intéressante
it is easy to find/ invent /imagine a story that BE interesting

The relevant observation is that this contrast is preserved under *tough*-movement:⁴

- (8) *une histoire qui soit intéressante est facile à lire/ à recopier/à illustrer / à réinventer...
a story that BE interesting is easy to read/ copy /illustrate /reinvent
- (9) une histoire qui soit intéressante est facile à trouver / à inventer/ à imaginer
a story that BE interesting is easy to find/ invent /imagine

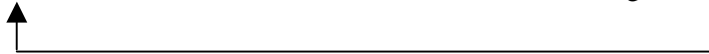
Given the generalization in (5ii) and the reasoning above, we are led to postulate that the relative clause has been raised to its surface position from a position in the scope of the licensing (intensional) verb in the infinitive clause:

³ For the discussion that follows it does not really matter which way this generalization should be stated (it could be that the right to think about it, as Philippe Schlenker suggests in another context, is that subjunctive is a default and the context for indicative should be specified.

⁴ Subjunctive relatives seem to me possible in certain “intensionalized” contexts, e.g. as in question/answer pairs:

Question: Que cherches-tu (what are you looking for)? Answer: une histoire qui soit ... (a story that BE..). In order to avoid having to resolve what happens in such cases (plausibly I think, covert informationally given licensing material e.g. I am looking for), it suffices to understand the examples of the text and the

- (10) une histoire qui soit intéressante est facile à trouver / à inventer/ à imaginer t



3. Merging and Moving in *Tough* Constructions

How exactly does this derivation proceed?

A number of observations are relevant, many classical, several from Kayne (1972) and several inferred from Chomsky (1977).

i. The main subject does not seem to require a theta role from the “*tough*” predicate.⁵ Such predicates are typically two place predicates, one argument being the infinitive clause, the other a “for-PP” (the affected party e.g. *tough for John*). This suggests movement into this subject position from some other theta position.

ii. There is a switch in the particle introducing the infinitive depending on whether or not there has been movement:

- (11) Il est facile **de** résoudre ce problème
it is easy de solve this problem

- (12) Ce problème est facile **à** résoudre
this problem is difficult à solve

The presence of the particle **à** in the *tough* movement variant is strongly reminiscent of what happens in infinitival relatives (Kayne, 1972)

- (13) une femme à qui parler (relativized PP object)
a woman to whom to speak

- (14) une manière de résoudre ce problème (relativized manner adjunct)
a way to solve de this problem

contrasts given as outside of such contexts (e.g. out of the blue) although some contrasts subsist even in such contexts.

⁵ It is sometimes suggested otherwise, e.g. in Dalrymple et al (2000), but unconvincingly so. This of course does not mean that a theta role is never available with such *tough* predicates.

- (15) un monument à photographier (relativized direct object)
 a monument a photograph

This suggest that both involve wh-movement (say to the C domain of the infinitive) with the presence of *à* triggered by a DP wh-phrase (which could be described as a complementizer agreeing with a +wh DP in spec, CP).⁶

iii. As expected, both constructions (*tough*-movement and infinitival relatives) license parasitic gaps, an expected behavior given the wh-movement analysis above.

- (16) ce fort sera facile à assiéger t sans encercler pg
 This fort will be easy to lay siege to without surrounding
- (17) un fort à assiéger t sans encercler pg
 a fort to lay siege to without surrounding

iv. Both constructions are subject to similar (theoretically ill-understood) restrictions on the distance this wh-movement can span:⁷

- (18) ce fort sera facile à (?penser à / *persuader l'armée d') assiéger t
 this fort will be easy to (think / persuade the army to) lay siege to
- (19) un fort à (?penser à / *persuader l'armée d') assiéger t
 a fort to (think / persuade the army to) lay siege to

In the case of the relative, one analysis we expect to be available (Vergnaud, 1974/1985, Kayne, 1994) is one involving head raising:

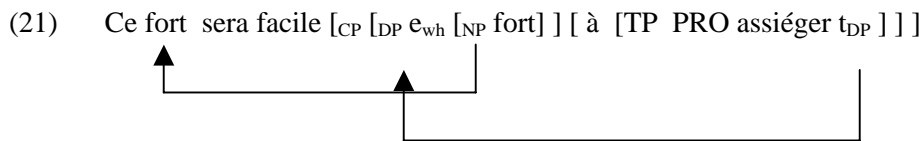
- (20) [Le fort] [DP e_{wh} [NP fort]] [à [TP PRO assiéger t_{DP}]]
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⁶ DP wh-phrases (as opposed to adverbials or PPs) induce all sorts of peculiarities in French tensed relatives as well (cf. Kayne, 1972).

⁷ And to a certain extent reminiscent of the restrictions described in Stowell, 1985 on null operator constructions in English).

With the assumption (agreeing with Vergnaud rather than with Kayne) that the NP acquires a D (here *le*) and forms a constituent with it.

In the case of *tough*-movement, I would like to suggest a similar derivation, in which the NP raises further out than the position head of the relative clause, but in a similar way to form a constituent with a D initially introduced (merged) in the main clause.



Such an analysis is consistent with

- i. the assumption that the subject does not receive a theta role in the main clause
- ii. wh-movement does take place in the infinitive
- iii. movement into the main clause does take place – thus in principle allowing reconstruction – but it is movement of an NP, not of a DP.

4. Checking Some Predictions

This account makes a number of predictions which now turn to.

First, it may seem to suggest that reconstruction is always possible in *tough*-movement cases.

However, this is not the case. When an NP moves to form a constituent with some higher element, this NP may be prevented to reconstruct if this element semantically requires the presence of this NP.

Thus, as I have discussed elsewhere, in our initial example:

(22) No prime number has been proved [t to be the largest prime number]

Prime number is prevented to reconstruct because natural languages require restricted quantification (not only semantically but also to be) syntactically enforced.⁸

⁸ In all likelihood, modification also needs to be syntactically coded.

Thus the D *no* requires its NP semantic argument *prime number* as a syntactic sister at the LF interface. This does not prevent this NP to be interpreted in its initial position, but it prevents (radical reconstruction, that is) interpreting the NP solely in its initial position. From a semantic point of view, there will be no difference interpreting this NP only in its high position, or both in its high and low positions: reconstruction (the possibility of interpreting it in the low position) will be invisible in such cases.⁹

As a consequence, we will have (apparent) failure of reconstruction whenever an element generated in the main clause semantically, hence syntactically requires the presence of its NP restriction.

Coming back to our initial example of reconstruction:

(23) une histoire qui soit intéressante est facile à trouver / à inventer/ à imaginer

We can hypothesize that the string *une histoire qui soit intéressante* is an NP (in fact a NumP with the article *un* as number head) which has raised, say, to a silent dummy D which has no semantics, and thus does not require a restriction. Such raising is purely formal hence can freely reconstruct.

Turning to such examples as:

(24) *chaque /toute/ aucune histoire qui soit intéressante est facile à lire/ à recopier/à illustrer / à réinventer...

(25) *chaque /toute/ aucune histoire qui soit intéressante est facile à trouver / à inventer/ à imaginer

The surprise is the ill formedness of the second example, suggesting that reconstruction is not possible here. However, the quantifiers *chaque*, *toute* or *aucune* cannot have raised from the embedded infinitive (such quantifiers are incompatible with the silent wh-operator). They are thus initially merged in the main clause and as a result prevent reconstruction of the raised NP.

⁹ Thus, Reconstruction will be semantically detectable only if it is radical, that is only if the moved phrase is not interpreted in its high position.

More generally, we expect subject quantified expressions in general – because they cannot have been wh-moved - not to reconstruct in *tough* constructions. This is noted in Postal, 1974, paralleling the paradox we discussed with raising structures:

- (26) Nothing is hard for Melvin to lift (wide scope only for nothing)
- (27) It is hard for Melvin to lift nothing (narrow scope)

Attempting to delimit exactly what kind of main clause subject can wholly reconstruct would go beyond this short note. It is reasonably clear that, at the two extremes, Strongly quantified DPs will in general fail, while bare indefinite will not. Intermediate cases such as idiomatic definites etc.. (which can be relativized) will fall in between.

In general, as we have seen, a (bare) indefinite subject – which basically is just an NP - should be able to wholly reconstruct into the infinitive. We thus predict that if such an indefinite contains a pronoun or an anaphor, it should be possible to understand this pronoun as being bound by a quantifier that c-commands its original position but not its surface position. This seems correct, witness the well formedness of such French examples

- (28) Il est difficile de PRO_j vendre une photo de son meilleur ami_j
 It is hard PRO_j to sell a picture of one_j's best friend
- (29) Une photo de son_j meilleur ami est difficile à PRO_j vendre
 A pictures of one_j's best friend is hard PRO_j to sell.

Of the more complex English examples such as:

- (30) Pictures of his_i friends are hard for every photographer_i to sell.
- (31) Pictures of his_j friends are easy to persuade every photographer_j to sell
- (32) Pictures of each other would be hard for them to sell
- (33) Pictures of each other would be easy to persuade them to sell

As soon however as the subject is quantified, such examples degrade, as we would expect:

- (34) * Chaque photo de son_j meilleur ami est difficile à PRO_j vendre
 (35) * Most pictures of his_i friends are hard for every photographer_i to sell.
 (36) * Most pictures of his_j friends are easy to persuade every photographer_j to sell
 (37) * Most pictures of each other would be hard for them to sell
 (38) * Most pictures of each other would be easy to persuade them to sell

The account proposed here also predicts that there should be a split between two movement diagnostics, namely (some) idiom splitting and *there* raising. Indeed, raising of *there* in *tough*-movement cases should be systematically ruled out either because it is a D (a common, although not entirely convincing view) and thus incompatible with a wh-operator, or simply because, whatever it is (e.g. a pro-form predicate as in Moro's 1997 work), it cannot be wh-quantified and thus cannot be *tough*-moved constructions just like it cannot be the head of a relative clause.

Some idioms on the other hand, can be relativized, hence wh-moved. Although it is difficult to predict what kind of correlation we would expect given the different semantic properties of the two constructions¹⁰, we would at least expect some idioms to be able to *tough*-move as well. Some do (see e.g. Ruwet, 1991 for a more complete list), for example:

- (39) (La) Justice est difficile à rendre / la promesse sera facile à tenir /
 (The) Justice is difficult to render/ the promise will be easy to keep

Which incidentally, corroborates the non thematic status of the main subject position (the key here is of course the equivalent truth values of the *tough*-moved case and its non *tough*-moved counterpart).

Finally, the constructions such as:

- (40) Cette table est jolie (à regarder) / lourde (à porter)
 This table is pretty (to look at) / heavy (to carry)

¹⁰ Infinitival relatives (in French) have a modal necessity or possibility readings, while tough constructions often impose the highest infinitival clause to have volitional or intentional subjects (see e.g. Dalrymple and King and references therein).

differ minimally from *tough*-movement constructions, as is standardly assumed, in that the main clause predicate must take its subject as thematic argument. In terms of the present analysis, they share (in French) the property that the infinitive is a relative clause, but they differ in being control constructions with the head of the relative controlled by the NP restriction of the main subject. As a consequence, none of the movement diagnostics based on there being a single theta role hold: no idiom chunks, and no reconstruction for subjunctive relatives (although the relevant examples are perhaps not constructible for independent reasons) or pronominal binding. For example, the following sentence:

- (41) Une table construite par son_j meilleur ami est toujours jolie à PRO_j regarder
 A table built by one's best friend is always pretty to look at

is well formed, but not under the indicated reading in which the pronoun is bound by the (arbitrary) PRO in the infinitive.

References

- Chomsky, Noam. (1977). On wh-movement. In P. Culicover, T. Wasow, and A. Akmajian, eds. *Formal Syntax*. New York: Academic Press. Pp. 71-132.
- Dalrymple, Mary and Tracy Holloway King. (2000) *Missing Object constructions: Lexical and Constructional Variation*, Proceedings of the LFG00 Conference, Miriam Butt and Tracy Holloway King (Editors), CSLI Publications.
- Postal, Paul. (1974). *On Raising*. Cambridge, MA: The MIT Press.
- Kayne, Richard (1972) "French Relative QUE", in *Recherches Linguistiques* 2, Université de Paris 8.
- Kayne, Richard (1994) *The Antisymmetry of Syntax*. MIT Press.
- Moro, Andrea. (1997) *The Raising of Predicates: Predicative Noun Phrases and the Theory of Clause Structure* Series: Cambridge Studies in Linguistics (No. 80)
- Ruwet, Nicolas. (1991) *Syntax and Human Experience*, U of Chicago Press.

- Sportiche, Dominique. (2002). Movement types and triggers. *GLOW Newsletter* 48:116–117.
- Sportiche, Dominique. (2005). Division of Labor between Merge and Move: Strict Locality of Selection and Apparent Reconstruction Paradoxes, in *Proceedings of the Workshop Divisions of Linguistic Labor, The La Bretesche Workshop*.
- Vergnaud, Jean Roger (1974) *French Relative Clauses*. PhD dissertation, MIT.
- Vergnaud, Jean Roger (1985) *Dépendances et Niveaux de Répresentation en Syntaxe*. Amsterdam: John Benjamins.