

When are Adjectives Raisers? Tough to get it

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1. Introduction

This paper deals with some unsolved problems raised by *Tough-* adjectives in Romance languages. *Tough-* adjectives are characterized by the alternation pattern exemplified in (1). The construction exemplified in (1)b-c is known as the T(ough) C(onstruction), illustrated here in its predicative use (1b) and in its attributive use (1c), the latter being less addressed in the literature.

- (1) a. Il est difficile de lire ces livres (Fr.)
It is hard to read those books
b. Ces livres sont difficiles à lire (predicative use)
These books are hard to read
c. des livres difficiles à lire (attributive use)
books hard to read

This pattern distinguishes *tough-* adjectives from other adjectives taking an infinitival:

- (2) a. Cette femme est belle à regarder
This woman is beautiful to look at
b. *Il est beau de regarder cette femme
it is beautiful to look at this woman

The TC illustrated in (1)b has been a long standing problem in the P&P framework. The debate is still open today. The various competing analyses can be subsumed under two main classes: with raising of the subject (Rosenbaum 1967, Postal 1971, Berman 1973, Bayer 1990, Sportiche 2002, 2006, Hicks 2004), and with the subject base generated. This latter class has the following variants: (i) object deletion under identity (Akmajian 1972, Ross 1967), (ii) null operator movement (Chomsky 1977) and (iii) complex predicate formation by reanalysis (Nanni 1978, 1980, Chomsky 1981)

The aim of this paper is to contribute to this debate with new data from Romance supporting a raising analysis. We will also show that in Romance infinitivals in TC are reduced structures, which do not case-mark the object. Since arguably the same reduced structures appear in modal non-finite relatives, we will extend our analysis to these constructions.

2. Arguments for Raising

2.1. General arguments

Some well-known arguments put forward in the literature on raising also have been argued to hold for TCs. The most important are the following.

First, the subject seems not to be theta-marked by the *tough-* adjective. This is shown for instance by the possibility to have idiom chunks, illustrated in (3);

- (3) a. The hatchet is hard to bury after long years of war (Berman 1973)
b. La justice sera difficile à rendre (Ruwet 1991)

The justice will be difficult to render

Moreover, the nominalization is unavailable (Miller and Chomsky 1963, Chomsky 1970 – cf. (4)a-b). When the nominalization is obtained, as in (4)c, it is however not for the form that selects the infinitival.

- (4) a. *John's easiness to please
b. John's eagerness to please
c. Mary's prettiness (*to look at)

Goh (2000) argues against Kim (1995) which claims that the subject in TC is assigned a Cause role, being somehow causally related to the easiness/difficultness. (5)b is Goh's counterexample, which shows that the subject cannot be inherently a cause of the difficulty.

- (5) a. This mountain is difficult to walk up (Kim 1995)
b. Even the smallest mountain is difficult to walk up while wearing size 14 stilettos
(Goh 2000)

Another classic argument comes from properties indicating reconstruction. On the one hand, TCs allow low readings of numerals. The sentence in (6) has a reading in which *dix livres* “ten books” is interpreted under the modal introduced by the infinitival (“it is hard to find ten books”). This reading can only be derived by reconstructing the subject inside the infinitival, providing an argument in favor of raising.

- (6) Dix livres de mathématiques sont difficiles à trouver dans cette maison (Fr)
ten books of mathematics are hard to find in this house

On the other hand, variable-binding is possible. In (7), *his* can only be interpreted in a position c-commanded by *every photographer*, so it must have raised from such a position:

- (7) Pictures of his_i friends are hard for every photographer_i to sell t_i (Sportiche 2002)

The same reasoning holds for anaphor-binding, illustrated in (8).

- (8) A book about himself_i would be tough for John_i to forget

2.2. Arguments specific to the Romance family

We add to this list some new arguments from the Romance domain. First, we may notice that TCs license subject bare nouns:

- (9) a. Prestiti stranieri sono difficili da ottenere (Italian)
loans external are difficult to get
b. Împrumuturi externe sunt greu de obținut (Romanian)
c. Informații de calitate privitoare la piață sunt dificil de obținut
informations of quality regarding market are hard to get

As is well known (see Dobrovie-Sorin 1997, Beyssade & Dobrovie-Sorin 2004, Kleiber 2001, McNally 1995, 1998), argumental bare plurals in Romance languages are allowed only with predicates that provide existential closure, typically “localizing” predicates:

- (10) a. *În cameră erau bolnavi/triști copii. (rom.)
 in room were ill/sad children
 a'. *Nella stanza erano /tristi bambini (it.)
 b. *Admir/respect profesori (rom.)
 I-admir/I-respect teachers
 b'. *Ammiro/rispetto professori. (it.)
 c. În cameră dormeau copii (rom.)
 in room were-sleeping children
 c'. Nella stanza dormivano bambini (it.)
 d. Caut/ascult profesori (rom.)
 I search/listen teachers
 e. Această demonstrație conține erori
 this proof contains errors
 f. Pe pereți erau hieroglife
 on walls were hieroglyphs
 g. Bordeaban cipreses el camino (sp.)
 were bordering cypresses the road

Tough- adjectives don't qualify as localizing predicates, as proven by (11). We have to conclude that in the examples (9), the subject must be interpreted inside the non-finite clause.

- (11) a. *Prestiti stranieri sono difficili
 b. *Împrumuturi externe sunt dificile

Another piece of evidence is represented by the existence of non-agreeing *tough*- adjectives. In Romanian, unlike in the other Romance languages, the adjective in the TC doesn't agree with the subject, although the copula does. This proves that in this language the subject is not the external argument of the adjective:

- (12) Aceste ipoteze sunt greu/*grele de acceptat (Romanian)
 these hypotheses.fpl. are difficult.msg/difficult.fpl to accept

3. Problems for the Raising Analysis

The raising analysis, however, is not without problems.

First, this constructions has both A and A' movement properties. The target position is a case position, which indicates A-movement. But other properties are incompatible with A-movement. For instance, the base position seems to be a case position, which would lead to improper movement

- (13) a. The solution is easy to find_
 b. This tray is easy to forget about_

- (14) *John is likely that comes

Furthermore, according to Kaplan and Bresnan 1982, the base position may be inside a finite clause, which point to a less local movement in the case of TCs:

- (15) Mary is tough for me to believe that John would ever marry

Finally, licensing of parasitic gaps seems to be possible in TCs:

(16) This book is hard to understand without reading twice

A mixed solution has been proposed in order to capture these mixed properties: it is a special kind of movement which has some of the properties of A-bar movement + A movement (Brody (1993), Hornstein (2001), Hicks (2004)). To discuss the most recent, Hicks (2004) avoids the case problem by resorting to the hypothesis of a ‘big-DP’: the higher DP, headed by the Null Op, would receive case in the embedded clause, while its DP complement would raise from Spec of the embedded C to the matrix subject position.

This analysis also has some problems. On the one hand, there is no independent evidence for big DPs elsewhere in the grammar. On the other hand, there is no clear semantic role for the Null Operator; this item is normally interpreted as forming a predicate, but it is not clear how a predicate of individuals can combine with a *tough* adjective.

Moreover, a raising analysis should be able to deal with the attributive use of TCs (illustrated in (17)), and this is not addressed in the afore-mentioned papers.

(17) This is a movie hard to forget
C’est un film difficile à oublier (fr.)
Ăsta e un film greu de uitat (rom.)

4. Towards an analysis of TC in Romance

4.1. The infinitival in TC and Modal Reduced Relatives – reduced structures

The proposal that we defend here is that in Romance TC the infinitival represents a reduced structure, which does not case-mark the object, behaving on a par with participles and not with finite relatives. We propose a unified analysis following this line for TC and modal reduced relatives. Our main arguments in support of this view come from a parallel behaviour observed for the two kinds of structures, concerning the form of the embedded verb, the distribution and the locality constraints.

The non-finite form in TC is the same as the one used in modal reduced relatives (as noticed, for French, by Kayne 1972).

(18) a. Ces livres sont difficiles **à lire** (Fr.)
these books are hard *à* read.Inf
b. livres **à lire** “books to read”
books *à* read.Inf

(19) a. Questi libri sono difficili **da leggere** (It.)
these books are hard *da* read.Inf
b. libri **da leggere**
books *da* read.Inf

(20) a. Aceste cărți sunt greu **de citit** (Rom.)
these books are hard *de* read.Sup
b. cărți **de citit**
books *de* read.Sup

The non-finite form used in TC is different from the form used in clausal complements of evaluative control adjectives of the type *clever, kind* (which do case-license the object) (in western Romance, the introductory element is different - fr. *de* vs. *à*, it. *di* vs. *da*; in Romanian, the form itself is different – supine in TC and modal relatives vs. subjunctive in control clauses):

- (21) a. Vous avez été gentil **de** le faire (Fr.)
 you have been kind *de* it do
 b. cela est difficile **à** faire
 this is difficult *à* do
- (22) a. Lei è gentile **di** averlo fatto (It.)
 you are kind *de* have-it done
 b. Questo è difficile **da** fare
 this is hard *da* do
- (23) a. Ați fost amabil **să** o faceți (Rom.)
 you-have been kind Subj it you-do
 b. Asta e greu **de** făcut
 this is hard *de* do.Sup

In Western Romance, in the impersonal use of Tough adjectives, the clausal complement has the same form as with control adjectives, which is different from that used in TCs.

- (24) a. Il est difficile **de** soutenir cette analyse (Fr.)
 it is difficult *de* defend this analysis
 b. Cette analyse est difficile **à**/*de soutenir
 this analysis is difficult *à* defend
- (25) il a été gentil **de** soutenir cette analyse
 he has been kind *de* defend this analysis

In Romanian, both forms may be used: the subjunctive and the supine (see discussion under 42 below).

- (26) a. e greu să răspundem la aceste întrebări
 is hard Subj answer. 1pl to these questions
 b. e greu de răspuns la aceste întrebări
 is hard *de* answer.Sup to these questions

Assuming that the formal resemblance between infinitivals in TC and in Modal relatives reflects a similar structure, it is worth noticing that Romance modal infinitival relatives are reduced relatives, unlike their English counterparts. They verify indeed Bhatt's (1999) criteria for reduced relatives, namely:

(i) they can appear in postcopular position (cf., for this criterion, Embick 1997, Iatridou et al. 1999):

- (27) a. Ces livres sont à lire jusqu'à mardi (fr)
 these books are *à* read until Tuesday
 b. Questi libri sono da leggere fino a martedì (it)

- c. Aceste cărți sunt de citit pînă marți (rom)
- (28) * These books are to read until Tuesday

(ii) relativization is strictly local:

- (29) a. * Un livre à dire à tes enfants de lire (fr.)
a book *à* tell to your children *de* read
b. *O carte de zis copiilor să citească (rom.)
a book *de* tell.Sup children.the.D Subj. read.3pl
- (30) A book to tell your children to read

On the other hand, infinitival relatives involving relativization of the subject, which in English do qualify as reduced structures, do not exist in Romance:

- (31) a. a man to fix the sink
b. *un homme à réparer l'évier (fr.)
c. *un om de reparat chiuveta (rom.)

A further difference is that periphrastic passive is not allowed in Romance, as opposed to English:

- (32) a. a book to be read
b. *un livre à être lu

Some of these properties are also found with TCs. First, the gap in the non-finite clause only corresponds to the object:

- (33) a. ces livres / *ces personnes sont difficiles à lire (fr.)
these books/these persons are hard to read
b. *Cette personne est difficile à dormir
this person is difficult to sleep
c. *Cette personne est difficile à parler avec
this person is tough to speak with

Secondly, the gap cannot be further embedded inside the complement of the infinitival, it must be an argument of the infinitival, unlike in English:

- (34) a. *Un livre difficile à convaincre tes enfants de lire
b. *O carte greu de convins pe elevi să (o) citească
c. A book hard to convince your children to read

On the other hand, no periphrastic passive is allowed:

- (35) * un livre difficile à être lu
a book difficult to be read

The Romanian Supine, used in *tough*- constructions and modal reduced relatives, arguably has a more reduced structure than the Infinitive, since it does not allow clitics of any

sort, nor “clausal” negation (which is the same as constituent negation in Romanian) – it only allows a participial negation (*ne*) in the reduced relative construction, which then gets a special meaning (impossibility; the obligation meaning is lost) (cf. Soare 2002):

- (36) a. înainte de a-i spune
before of to-him(DCl) do.Inf
b. * e greu de-i spus
is hard *de*-him(DCl) tell
c. pentru a nu rata
for to not fail
d. *carte greu de nu citit
book hard *de* not read.Sup

To make this more precise, we propose to adapt the following cross-linguistic generalization proposed by Bhatt (1999):

"Reduced relatives are only based on the relativization of the *external* argument"

We propose that this generalization should be restated in terms of case-marking:

“external” = **non-case-marked** (cf. the passive participle)

So - in spite of active morphology, we can assume that modal reduced-relatives are passive-like structures.

Further evidence comes from the fact that in Romanian, agent adjuncts with supine (in modal relatives and even in TCs) are possible for some speakers:

- (37) a. Sunt multe lucruri de rezolvat de către ministerul Agriculturii
are many things *de* solve.Sup by ministry.the agriculture.the.G.
“There are many things to be solved by the Ministry of Agriculture
(www.amosnews.ro/PrintArticle201911.phtml)
- b. Japonia este greu de înțeles de către cineva care nu locuiește acolo
Japan is hard *de* understand.Sup by somebody who not lives there
“Japan is difficult to understand for somebody who doesn’t live there”
(www.targetonline.ro/articol_168/soc_cultural_in_japonia.html)
- c. Prețurile (...) par greu de "înțeles" de către mulți dintre români.
prices-the seem hard *de* understand.Sup by many among Romanians
“The prices (...) seem to be difficult to understand for many Romanians”
(www.stiriauto.ro/articol/888/Romanii-se-orienteaza-catre-masini-din-import)

- **A unified analysis**

Based on the formal and syntactic resemblances between non-finite forms used in TCs and in modal reduced relatives, we can assume that the same structure underlies both. Then we can conclude that:

- Raising in TC in Romance can dispense with A-bar movement. A-movement suffices.
- TCs as well as modal reduced relatives are based on a passive-like inflection.

- **Modal Inflection**

We consider this inflection to be an inflection with modal properties, I_{Mod} , which normally combines with a Pred head in order to externalize the object, as passive morphology normally does in these languages. The only exception would be TCs, in which the *Tough* adjective directly selects I_{Mod} . Since the introductory element appears both in attributive/predicative

uses and in argument uses (in TC), we cannot take it to represent C or Pred, so we consider the whole complex WRom. *à*+Inf., Rom. *de*+Sup. to represent the Spell-Out of I_{Mod}.

We assume that I_{Mod} has a subspecified modal meaning. Either it is modal by itself – deontic necessity under Pred –, or it is selected by a modal, when selected by the *tough*-adjective. We assume that *tough*- predicates introduce modality, as shown in Addendum 2.

Moreover, in Romanian, under Pred with participial Negation (*ne*-), it expresses impossibility:

- (38) *carte de necitit*
 book *de ne*-read.Sup
 “unreadable book”

This analysis encounters some potential problems. One of them is that these structures use active morphology. The answer that we could suggest runs in the following terms. Historically, the origin of the construction is the nominal use of the infinitive. This is clear in Romanian and Latin, where the Supine form is also one of the Complex-Event-Nominalizations, and in Latin (where it can also build (simple and complex) event nominalizations). (Latin uses its ‘Supine’ in TCs but not in modal reduced relatives, for which it has a special participial form – *-nd-us*).

- (39) *tunsul oilor de către păstori* (Rom.)
 sheep.the.Gpl. by shepherds
- (40) a. *facile dictū* (Latin)
 easy say-*tu*-Abl. (*tu*=Sup)
 b. *(frequens) concursus omnium*
 frequent gather-*tu*-Nom. all.Gpl. (*tu*=Nominalizer: “ing”)
 c. (...) *a mulieribus, quas frequens partus debiles reddit* (Serv., *Aen.* 5, 396)
 from women which.Apl. frequent childbirth.Nsg. weak.Apl. makes

In Western Romance, the nominal use of the Infinitive is more sporadic, but still possible:

- (41) *le manger*
 the eat.Inf

Since with event nominalizations, the object is not accusative-marked, but case-marked by some nominal functional material (getting genitive), we must conclude that v* is lacking¹. So lack of v* is not incompatible with infinitive morphology. We consider that the same lack of v* is found with I_{Mod}. The difference is that case-marking does not come from a nominalizer (since I_{Mod} is not a nominalization), so it must obtain externally to the structure.

Another potential problem concerns object case-licensing in the Romanian supine. We saw that in Romanian the supine may also appear in the impersonal use of *tough*- adjectives, where we don’t expect a passive form (see 26 above).

¹ Active nominalizations do exist, cf. Borer (2007), Cornilescu (2001), contra Grimshaw (1990), but they still do not assign accusative in English and in Romanian. English allows two types of genitive in this case, whereas in Romanian these nominalizations are unergative. For these cases, we should assume an active v without the property of accusative case assignment.

other principles of the system. Chomsky suggests that building this rule into the computational system reduces computational burden. But we may also consider it a default rule, which can be overridden by a positive specification on the selector head which indicates that the label of the object formed by Merge will be the label of the selected item. The effect of reducing computational burden may be achieved by default rules too.

In minimalism, labels are not primitives, but are short-cuts for bundles of combinatorial properties. So, in $\{\alpha, \beta\} \rightarrow \gamma$, there are in fact more than two labelling possibilities:

- γ inherits properties of α
- γ inherits properties of β
- γ inherits properties of both

The inclusiveness condition prohibits γ from adding properties of its own.

Movement is an instance of selection-driven merge (Chomsky's Set-Merge). The remerged element has some feature X which verifies a feature of the head/selector H. According to Chomsky, this happens in two steps: first, X or the bearer of X is identified by Agree, checking an unvalued feature of H. Then, in case H has an additional EPP feature, the bearer of X is remerged to SpecH.

If selector-projecting is the default, we may assume that selectee-projecting is triggered by a special feature, let's say +proj, always associated to a selectional feature (in this case EPP, but it is conceptually possible that this feature may be c-selectional; perhaps, this could work for conjunctions, and even for adjuncts).

For raising relatives, the feature-complex $\{+N +EPP\}$ will have a +proj feature².

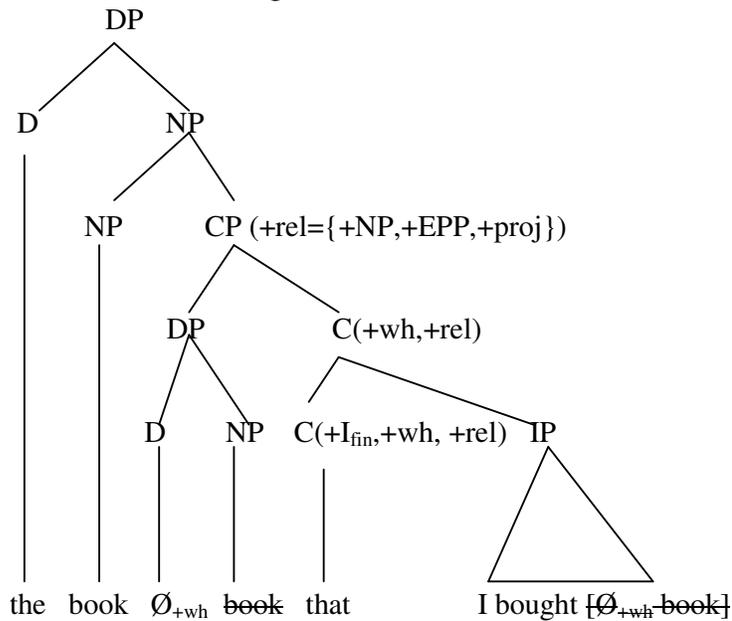
This analysis of relative clauses solves an important problem which the previous analyses, of which the most recent and full-fledged is Bianchi's (1999), raised, namely the fact that D is a nominal functional item, typically selecting (projections of the) N (it belongs to the extended projection of the N). Bianchi claimed that the NP in SpecCP sufficed to satisfy the categorial +N feature of D (adopting Kayne's (1994) proposal to extend government by head H to the specifier of the complement of H). But this proposal doesn't dispense us with having two selectional features on D. The feature +N is still not enough, because an item cannot simply select just the specifier of its complement. Otherwise, we would expect, for instance, that an IP having a DP as its specifier (the subject) could behave as a DP wrt. selection, which, of course, is not the case. Moreover, it predicts that the relative could be ambiguous, being able to be selected both as a +N and as a +C. But this is not the case either. $[[NP][CRel\dots]]$ -phrases are always nominal.

The structures we propose for full relatives, adapted from Bhatt 1999, are represented in the following trees:

² Chomsky (2005) proposes another labelling mechanism, based on two principles: (i) in $\{H, \alpha\}$, H an LI, H is the label, and (ii) if α is internally merged to β , forming $\{\alpha, \beta\}$ then the label of β is the label of $\{\alpha, \beta\}$. This system allows "projecting movement" only when the moved item is a head, in which case either item may project. Following Donati (2006), he takes free relatives to illustrate this situation.

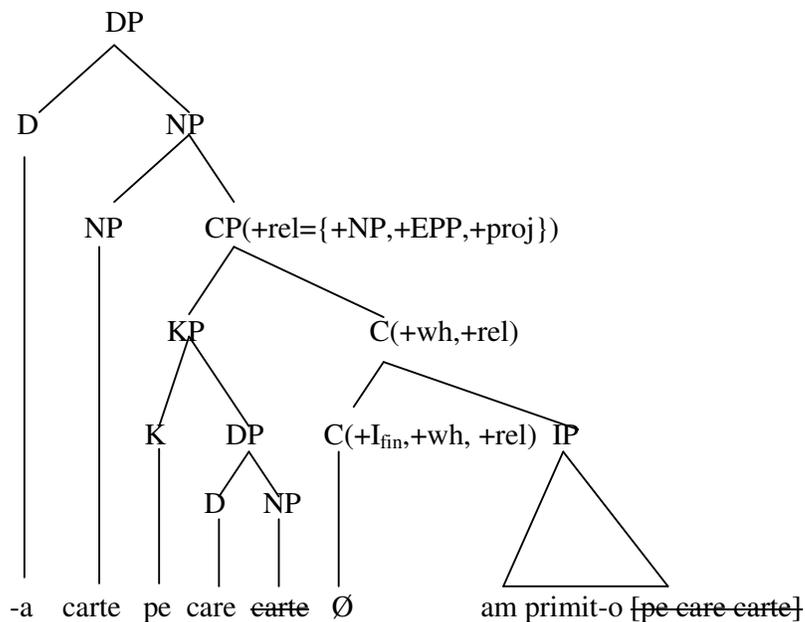
(a) With a relative complementizer:

(46) the book (that) I got



(b) With a relative pronoun:

(47) cartea pe care am primit-o
 book-the Ac which I-have received-AcCl

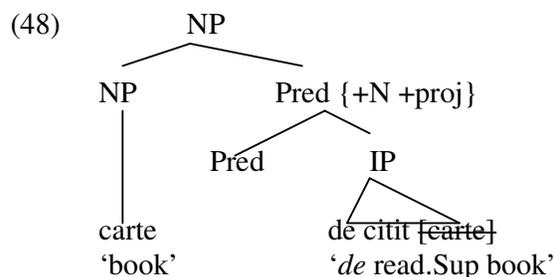


To account for the differences between full and reduced relatives, we propose the following analysis of reduced relatives:

The head responsible for raising is not $C_{+rel+wh}$, but rather $Pred_{+rel}$. This $Pred_{+rel}$ head does not have a $+wh$ feature, so that it cannot attract a nominal with a special mark (namely $+wh$). It just looks for a $+N$, with the effect that the closest nominal will be attracted.

If we assume Chomsky's activeness condition, this closest nominal must lack case in order to be accessible to attraction. Since it does not have an unsatisfied $+wh$ feature to make it active, the only feature which could do this job for him is Case. This explains Bhatt's generalizations, that in reduced relatives relativization is strictly local, and it only affects "external" arguments – i.e. non-case-marked arguments.

Lack of case-marking of the relativized nominal explains the predicative use of reduced relatives, which is another feature distinguishing them from full relatives. In the predicative use, all we have to assume is a $Pred$ not endowed with $+rel+proj$. The un-case-marked argument raises (perhaps through the specifier of this $Pred$) in order to be case-marked by T or by another higher head in the sentence (e.g. v^* or $AgrO$ for ECM).



For the interpretation of an NP without a $+wh$ D, we may assume that Trace-Conversion creates the expression $\{\text{the } x. N(x)^{\lambda x=n}\}$, where n is λ -bound by the relativizer, anyway, regardless of the presence of a D. (See Fox 2003 for Trace Conversion)
Notice that a special Trace-Conversion rule is needed anyway. Traces cannot be interpreted either as generalized quantifiers or as bare NPs (predicates).

For attributive TCs, we assume a $Pred_{+rel}$ above the *tough*- adjective.

5. Agreement in TCs

Recall (12): in standard Romanian, the *tough*- adjective doesn't agree with the "subject" (or head-noun in attributive use), while in western Romance and regional varieties of Romanian: the *tough*- adjective does agree:

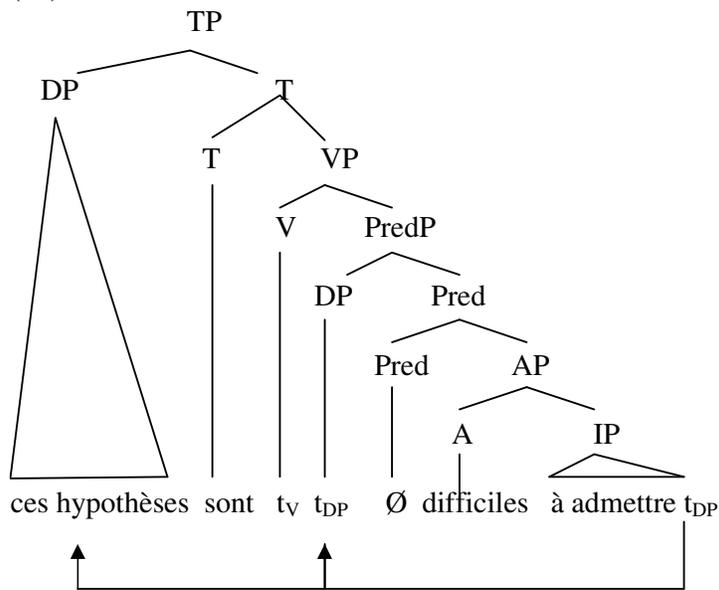
- (49)
- | | | | |
|----|---|-------------|------------|
| a. | Aceste ipoteze sunt greu/*grele | de acceptat | (Romanian) |
| | these hypotheses(fpl) are difficult.msg/difficult.fpl | to accept | |
| b. | Ces hypothèses sont faciles à admettre | | (French) |
| | these hypotheses(fpl) are difficult.fpl. | to accept | |
| c. | Queste ipotesi sono difficili da accettare | | (Italian) |

We propose that this difference comes from the selectional properties of the *tough*- adjective. We consider that predicative adjective agreement is realized in the configuration $SpecPred - Comp-Pred$. Agreeing *tough*- adjectives take the clause as an internal argument. Furthermore they project a $Pred$ (or a) endowed with an attracting feature. Raising adjectives are adjectives

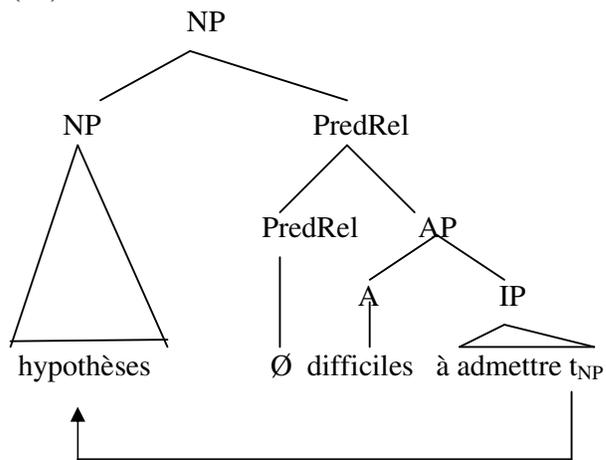
Here are the structures we propose for agreeing and non-agreeing *tough*- adjectives:

Agreeing *tough*-

(55) Predicative :

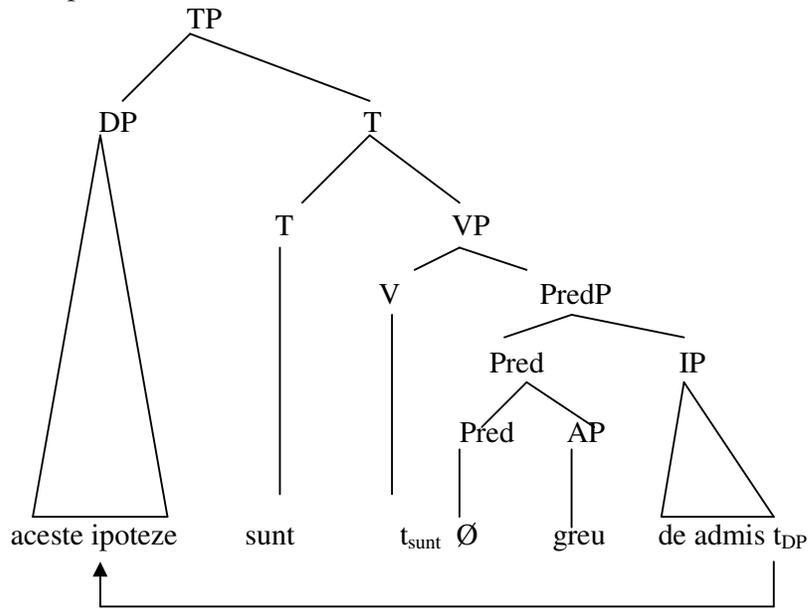


(56) Attributive :

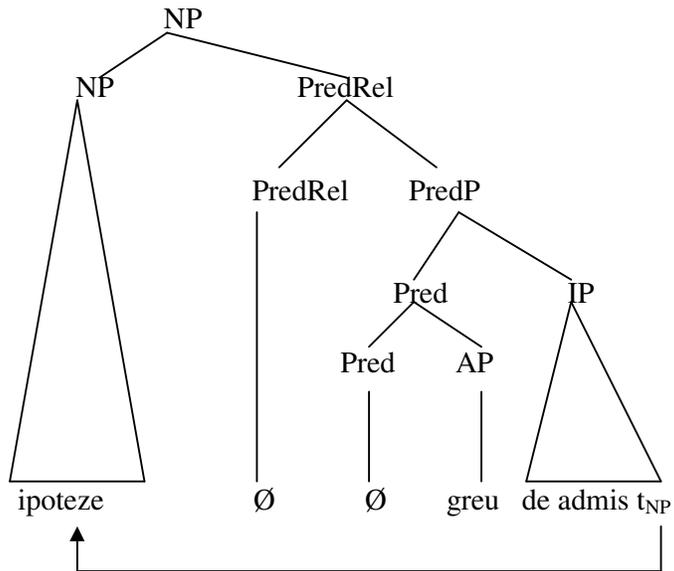


Non-agreeing *tough*:

(57) predicative



(58) attributive



Addenda

1. Non-agreeing *tough*- adjectives are not “adverbs”:

If we call non-agreeing predicative adjectives (such as in (58)) “adverbs”, then, of course *tough*- adjectives are ‘adverbs’.

- (59) E imposibil să câștige
is impossible Subj wins

But it was proposed that they are ‘real adverbs’ inside the non-finite clause (IP here) (Soare 2002, Soare & Dobrovie-Sorin (2002)). However, this does not seem to be correct, as no *bona fide* adverb can ever appear before the *de* head which introduces the non-finite clause:

- (60) a. cărți greu de citit
books hard *de* read.Sup
b. * cărți bine/adesea de citit
books well/often *de* read.Sup
c. cărți de citit bine/adesea
books *de* read.Sup well/often

2. Tentative semantics for TCs

- *Tough* + Experiencer:

- (61) $[[\text{tough}]] = \lambda F_{\langle e, \langle w, t \rangle \rangle} \lambda x \lambda w \forall w' \in f_{\text{CIRC}}(w) ((w' \leq_{\text{stereotyp.}(w)} \wedge \exists e (\text{attempt}(e, x, F(x), w'))))$
 $\rightarrow \forall e ((\text{attempt}(e, x, F(x), w') \rightarrow \text{tough-for}(e, x, w')))$
 $F = \lambda x \lambda w [\exists e (\text{read}(e)(y)(x)(w))]$

- Purely modal *Tough*:

- (62) $[[\text{tough}]] = \lambda F_{\langle e, \langle w, t \rangle \rangle} \lambda x \lambda w \text{FEW } w' \in f_{\text{CIRC}}(w) ((w' \leq_{\text{stereotyp.}(w)} \wedge \exists e (\text{attempt}(e, x, F(x), w')))) [F(x)(w')]$

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