It's *Tough* to be *Pretty*: semantic relatedness between *tough* and *pretty* predicates*

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Abstract

Tough-constructions are a kind of infinitival construction that has been a long-standing puzzle in the syntactic literature [Lees, 1960, Chomsky, 1964, Rosenbaum, 1967]. The main paradox posed by those constructions is that (1) their matrix subject seems to receive a θ-role from the embedded predicate (and not the matrix predicate), while (2) movement of the subject from an embedded position to its final matrix position appears problematic from a theoretical standpoint. In this paper, we propose a novel analysis of *tough*-predicates at the syntax-semantics interface, by contrasting *tough*-constructions with another kind of infinitival construction – so-called *pretty*-constructions. *Pretty*-constructions, like *tough*-constructions, involve an adjective embedding an infinitival clause; unlike *tough*-constructions however, *pretty*-constructions seem to involve a more straightforward θ-grid, whereby the matrix predicate assigns a THEME θ-role to the matrix subject. We argue that *tough*-constructions differ minimally from *pretty*-constructions, by showing that both kinds of predicates assign a proper θ-role to their subject, but that the exact nature of the θ-role differs: THEME for *pretty vs* what we will call REFERENCE for *tough*. This analysis, in addition to providing a more fine-grained semantics for *tough*- and *pretty*- constructions, explains a number of syntactic contrasts between the two kinds of structures, among which the (un)availability of an expletive alternation, and the (un)availability of further embedding of the infinitival clause.

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Contents

1 Puzzle: *Tough* and *pretty* predicates seem to differ in their argument structure

Tough (1a) and *pretty* (1b) predicates[1] are two classes of predicates that can take an infinitival clause as complement.

(1) a. **Suzi** is tough to please. (TC)
b. **Those roses** are pretty to look at. (PC)

1.1 Syntactic differences

We are interested in two syntactic contrasts occurring between those constructions. As first observed by [Lees, 1960, Rosenbaum, 1967] *Tough*-constructions allow both an "*it*-variant"[2] (iTC) such as (2b), and a "fronted" variant (fTC) such as (2a). In contrast, *pretty*-constructions only allow a "fronted variant" (fPC) such as (3a); in other words, they do not allow any "*it*-variant", as exemplified in (3b) [Lasnik and Fiengo, 1974]. We call this restriction *iPC.

(2) a. **Suzi** is tough to please. (fTC)
b. **It** is tough to please Suzi. (iTC)

(3) a. **Those roses** are pretty to look at. (fPC)
b. * **It** is pretty to look at those roses. (*iPC)

Interestingly, this syntactic contrast extends to fronted infinitival clauses, which happen to be grammatical in *tough*-constructions as shown in (4a), and yet ungrammatical in *pretty*-constructions, as shown in (4b). We call those alternative structures *clause-fronted* ("cf") structures.

(4) a. **To please Suzi** is tough. (cfTC)
b. * **To look at those roses** is pretty. (cfPC)

The second notable difference between *tough*- and *pretty*-constructions is that the former kind of construction, unlike the latter kind, allows for further embedding within its clausal complement. This ability of *tough*-constructions to exhibit what seems like a long-distance dependency has already been noted by [Longenbaugh, 2017]. The contrast with *pretty*-constructions is exemplified in (5) below.

(5) a. **This horse** is tough to convince Johnny to ride.
b. * **This painting** is pretty to convince Lucy to look at.

	tough-construction	*pretty*-constructions
it-variant	✓	✗
long-distance	✓	✗

Two main syntactic contrasts between *tough*- and *pretty*-constructions

[1] It has been noted that some nouns (e.g. *a pain*, *a pleasure*) and verbs (e.g. *frighten*, *amuse*) behave like *tough*-predicates [Lasnik and Fiengo, 1974, Pesetsky, 1987, Gluckman, 2019], but for the sake of simplicity we will focus on adjectival predicates in that paper.

[2] We adopt this theory-neutral denomination instead of the usual "expletive" denomination for reasons that will be made clear in Section 4.

1.2 Semantic differences

It is certainly true that both the *tough*- and the *pretty*-class seem to involve subjective predicates of personal taste cross-linguistically [Lasnik and Fiengo, 1974, Pesetsky, 1987, Lasersohn, 2005, Gluckman, 2019, Bylinina, 2014]. This is supported by two diagnostics : faultless disagreement and retraction.

(6) *(Faultless) Disagreement [Lasersohn, 2005]*

a. **Suzi** is tough to please. – Well I disagree!

b. **Those roses** are pretty to look at. – Well I disagree!

(7) *Retraction [MacFarlane, 2014]*

a. **Suzi** is tough to please. – But you said last week she was easy to please! – Well, I take it back.

b. **Those roses** are pretty to look at. – But you said this morning that they were quite plain ! – Well, I take it back.

Yet, the two classes of predicates also exhibit some inherent differences. The *tough*-class on the one hand, seems to contain predicates over events [Gluckman, 2019]. *Easy*, *impossible*, *important*, *annoying* are a few examples of such predicates. The *pretty*-class on the other hand, contains "sensory" predicates such as *pretty*, *tasty*, *fragrant*, *melodious*, which seem to be contextually restricted to tangible individuals.[3]

A potentially related fact is that *pretty* appears to take its subject as a THEME argument (8a), unlike *tough*: as shown in (9a), the matrix subject of a *tough*-construction cannot be systematically ascribed the property of being *tough*.[4]

(8) a. **Those roses** are pretty to look at.
$\rightsquigarrow$ ***Those roses are pretty.*** (fPC)

b. **Suzi** is tough to please.
$\not\rightsquigarrow$ ***Suzi is tough.*** (fTC)

Therefore, the subject of a fronted *tough*-construction like (9a) has been usually assumed to receive its θ-role from the embedded predicate (though see [Lasnik and Fiengo, 1974, Chomsky, 1977, Hornstein, 2001, Kawai et al., 2002] for alternative analyses). Under that view, the subject of a fronted-*tough*-construction would play exactly the same role in the sentence as the embedded object of the corresponding *it-tough*-construction.

[3] As an illustration, *pretty* seems to mean that some visually-perceptible features of the THEME argument produce some degree of aesthetic satisfaction from the perspective of the JUDGE. We will come back to the semantics of *pretty*-predicates towards the end of this paper, in Section 5

[4] As previously noted in the *tough*-movement literature (see e.g. [Hornstein, 2001, Kim, 1995, Hicks, 2009]), there are a few cases where the *tough*-adjective seems to directly modify the matrix subject:

(i) a. Your kids are easy.

b. This problem is difficult.

But those examples are restricted to a few possible matrix DPs, and seem to be very close in meaning to their most salient counterparts containing an infinitival clause:

(ii) a. Your kids are easy to manage.

b. This problem is difficult to solve.

In other words, the *tough*-adjective does not seem to directly refer to any intrinsic property of the matrix subject, but rather to a property of the subject, *relative to a very specific situation or event*.

	tough-predicates	*pretty*-predicates
predicate over	events	"pure" individuals (no events)
subject's θ-role	none	THEME

Two main semantic contrasts between *tough*- and *pretty*-constructions

1.3 Proposal

In this paper, we entertain the hypothesis that both *tough*- and *pretty*-subjects are in fact "thematic". The paper is constructed as follows. In section 2, we review previous syntactic approaches to *tough*- and *pretty*-constructions and summarize their predictions regarding the semantics of the constructions at stake. In section 3, we attempt to shed light on the fine-grained semantic properties of *tough*-predicates in the context of fronted *tough*-constructions. We show that those constructions have a more complex argument structure than what was generally assumed, in that *tough*-predicates require a REFERENCE argument, i.e. an individual that is the drive of the *toughness* judgment. In section 4, we extend the analysis to *it-tough*-constructions by relating them to clause-fronted *tough*-constructions. Section 5 attempts to explain the key similarities and differences between *tough*- and *pretty*-predicates. More precisely, we establish in that Section that *tough* and *pretty* take similar semantic arguments (THEME and REFERENCE). Crucially however, we argue that those arguments are associated to different syntactic positions (matrix subject *vs* complement clause) in each construction. We will relate this key difference between *tough* and *pretty* to the structural contrasts regarding the (un)availability of an *it*-variant, and the (im)possibility of long-distance dependencies. We conclude by suggesting that our theory may extend to other (sub)classes of predicates with infinitival complements, offering a more unified picture of what those constructions are, and do. Among those related constructions are *rare*-constructions [Fleisher, 2015], which were previously argued to form a subcategory of *tough*-constructions, coming with specific semantic restrictions. So-called *rude*-constructions [Stowell, 1991], form another interesting category, which seems to share semantic properties with *pretty*-constructions and syntactic properties with *tough*-constructions.

2 Previous accounts of *tough*- and *pretty*-constructions

2.1 Previous approaches to *tough*-constructions

Tough-constructions have been a very debated topic since the early days of generative syntax (see e.g. [Chomsky, 1964] and [Rosenbaum, 1967]). Those constructions have been see as puzzles for syntactic theory, primarily because their subject does not seem to entertain any clear semantic relationship with the matrix predicate, unlike raising or control constructions. Rather, the matrix subject seems to be the PATIENT of the embedded predicate, which suggests that it starts its life as the object of the embedded clause. This observation is clarified in (9), repeated from (9a) below.

(9) a. **Suzi** is tough to please.
   $\not\rightsquigarrow$ ***Suzi is tough.***
   $\rightsquigarrow$ ***Suzi is the (hypothetical)* PATIENT *of a pleasing-event.*** (fTC)

The existence of a dependency between the matrix subject and the embedded object position is supported by a series of diagnostics for A (cf. [Lasnik and Stowell, 1991, Mulder and den Dikken, 1992, Ruys, 2000]), but also Ā-movement (cf. [Chomsky, 1977, Chomsky, 1982, Rezac, 2006]) targeting the matrix subject – which suggests that *tough*-movement,

if it exists, constitutes an instance of Improper Movement [Chomsky, 1986]. This all leads to the following paradox:

> ***The paradox of tough-constructions****: the tough-subject seems to originate in the embedded clause, but movement from the embedded object position to the matrix subject position appears "Improper".*

Previous approaches to *tough*-constructions tried to contend with this paradox in various ways. Those approaches have been traditionally divided into two groups: LONG-MOVEMENT approaches and BASE-GENERATION approaches.

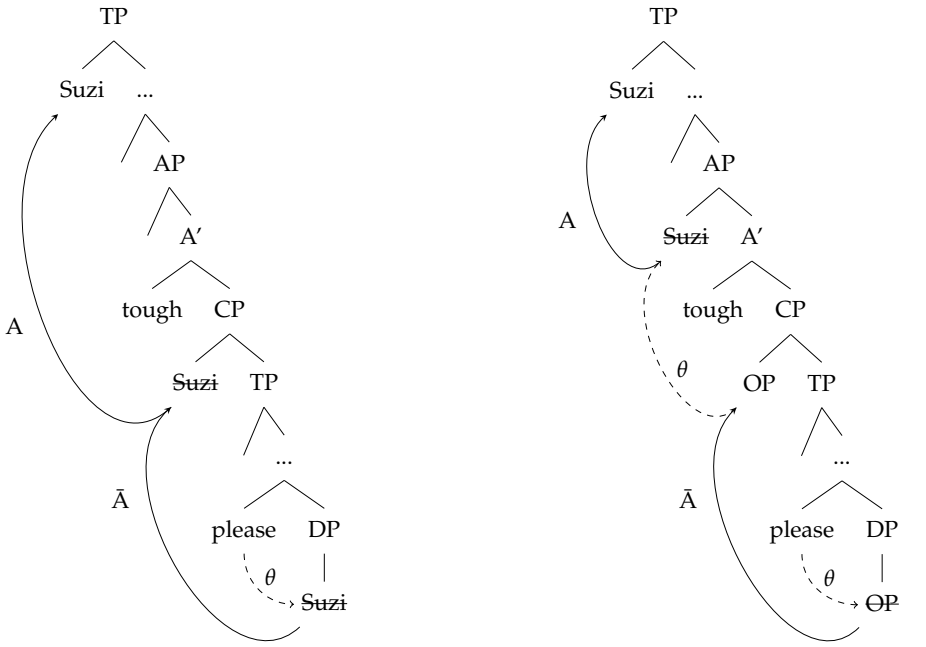
LONG-MOVEMENT approaches [Rosenbaum, 1967, Postal, 1971, Brody, 1993, Hornstein, 2001, Hicks, 2009, Hartman, 2009] on the one hand, assume that the matrix subject originates in the embedded clause (complement position). In earlier versions of this approach, the subject is assumed to Ā-move to the edge of the embedded clause (Spec-CP) before undergoing A-movement to its final matrix position (Spec-TP). This is illustrated in Figure 1a. Earlier LONG-MOVEMENT approaches successfully explain the apparent thematic properties of the *tough*-subject, namely, that it is a PATIENT of the embedded verb. Additionally, they capture the relatedness between fronted and *it-tough*-constructions, the latter being analyzed as *tough*-constructions where movement did not take place, leading instead to expletive insertion in the subject position. Those earlier accounts however, cannot explain why the matrix subject escapes accusative case assignment, and, more importantly perhaps, have to posit an exception to the Ban on Improper Movement [Chomsky, 1973, Chomsky, 1981, May, 1979], i.e. the constraint according to which an element cannot A-move from an Ā position[5]. Some more recent LONG-MOVEMENT approaches ([Hicks, 2009, Longenbaugh, 2017] i.a.) manage to circumvent Improper Movement (while still predicting the right kind of A and Āproperties), but at the cost of positing the existence of a heavier syntactic machinery (e.g. smuggling, composite probes...).

BASE-GENERATION approaches [Ross, 1967, Lasnik and Fiengo, 1974, Chomsky, 1977, Rezac, 2006, Fleisher, 2015, Keine and Poole, 2017] on the other hand, posit that the *tough*-subject is base-generated in the matrix and binds (or agrees with) a null operator that has moved from the embedded complement position to the edge of the embedded clause (Spec-CP). This is illustrated in Figure 1b. BASE-GENERATION approaches provide a straightforward solution to the problem of case and Improper Movement, for the element that undergoes Ā-movement (a null operator) is distinct from the element that undergoes A-movement (the matrix subject). Those accounts however, cannot provide a straightforward explanation of the fronted-*it* alternation; the only way around it seems to consist in positing two separate lexical entries for *tough* [Keine and Poole, 2017]. Moreover, this family of accounts has to make the somewhat *ad hoc* assumption that the embedded θ-role is *transmitted* from the embedded null operator to the matrix subject, in order to explain the apparent θ-assignment pattern of *tough*-constructions. This transmission process is supposed to ensure that the matrix subject fulfills a PATIENT θ-role in the embedded clause, instead of its expected AGENT θ-role in the matrix clause.

[5]This constraint is needed to explain the ungrammaticality of sentences such as (iii):

(iii) * Who$_1$ was believed [$_{CP}$ t$_1$ (that) [$_{TP}$ t$_1$ went to the party]]?

Whereby a *wh*-word Ā-moves to the embedded Spec-CP position, before A-moving to the matrix Spec-TP.



(a) The LONG-MOVEMENT view (b) The BASE-GENERATION view

Two views on θ-assignment in TCs

Table 3 below summarizes the strength and weaknesses of the two families of approaches to *tough*-constructions. Crucially here, the performance of the two approaches w.r.t. the "θ-assignment" criterion is based on the traditional and widely accepted claim that the *tough*-subject is the PATIENT of the embedded predicate, and has nothing to do with the matrix *tough*-predicate from a semantic point of view.

	LONG-MOVEMENT	BASE-GENERATION
θ-assignment	✓	✓modulo θ-transmission
fronted-*it* alternation	✓	✗
case mismatch	✗[6]	✓
Improper Movement	✓modulo smuggling, composite probes...	✓

The two families of approaches and how they deal with key features of the *tough*-construction

2.2 Contrasting *tough*- and *pretty*-predicates

As section 2.1 hopefully made clear, *tough*-constructions have been considered as a puzzle in themselves for a long time. Therefore, they have rarely been compared to other similar adjectival constructions, until recently with [Brillman, 2015] (comparing *tough*-constructions to gapped-degree phrases) and [Keine and Poole, 2017], who first established a clear and formal parallel between *tough*- and *pretty*-constructions. As previously mentioned, *pretty*-constructions seem to

[6]This ✗does not apply to the smuggling account provided by [Hicks, 2009], since under that analysis, a null-operator, "smuggling" superstructure, and not the "smuggled" matrix subject itself, is the target of accusative case within the embedded clause.

exhibit regular θ-assignment (the *pretty*-subject is a THEME of the *pretty*-predicate) and do not involve any fronted-*it*-alternation. Therefore, those constructions seem to be best analyzed under a BASE-GENERATION approach.

The main goal of [Keine and Poole, 2017] was to argue against a LONG-MOVEMENT approach to *tough*-constructions, by comparing *tough*-constructions to the uncontroversially BASE-GENERATED *pretty*-constructions. In particular, they showed that both constructions were subject to so-called *defective intervention effects* [Hartman, 2009], which were previously seen as a signature of LONG-MOVEMENT in the context of the *tough*-construction. [Keine and Poole, 2017] claim that this constraint results from a type-mismatch issue which can only arise in (BASE-GENERATED) fronted *tough*- and *pretty*-constructions.[7] This analysis led Keine and Poole to define two lexical entries for *tough*: one in the context of a fronted construction (Eq. 2.2), and one in the context of an *it*-construction (Eq. 2.2). In other words, *tough* was considered to be lexically ambiguous. Crucially, the two variants of *tough* differ in their type signature: the variant that appears in fronted constructions takes two main arguments, the embedded clause and the matrix subject; while the variant that appears in *it*-constructions only applies to the embedded clause.

$$[\![\text{tough}_{\text{FRONTED}}]\!]^j = \lambda Q_{\langle e\langle st\rangle\rangle}.\ \lambda x_e.\ \lambda w_s.\ \forall (w', j') \in \mathcal{R}^j_w.\ \textsc{Tough}(w')(j')([\![Q]\!]^{j'}(x)) \tag{1}$$

$$[\![\text{tough}_{\text{IT}}]\!]^j = \lambda p_{\langle st\rangle}.\ \lambda w_s.\ \forall (w', j') \in \mathcal{R}^j_w.\ \textsc{Tough}(w')(j')([\![p]\!]^{j'}) \tag{2}$$

The entry for *pretty* on the other hand, was not explicitly defined, but was assumed to have the same type signature as the "fronting" *tough*. The exact semantics the authors give to *pretty*-predicates remains relatively unclear however. In particular, the main semantic semantic contrast between *tough* and *pretty*, namely that *pretty* primarily applies to the matrix subject (an individual), while *tough* primarily applies to the event denoted by the embedded clause, is not extensively discussed in the paper.

In the following sections, we will argue against the lexical ambiguity view of *tough*-predicates entertained by [Keine and Poole, 2017]. We will show that *tough* in fact takes its matrix subject as argument in both fronted and *it*-constructions. We will additionally suggest that this argument is a proper thematic argument of the *tough*-predicate. Regarding *pretty*-predicates, we will attempt to extend and clarify Keine and Poole's view, by suggesting that *pretty* takes the same kind of thematic argument as *tough*, but, crucially, in a different order.

3 A finer-grained semantics for *tough*-predicates

3.1 Basic assumptions about the semantics of infinitival clauses and *tough*-predicates

We assume with [Kratzer, 2006, Moulton, 2009, Moulton, 2015] that embedded clauses denote "properties of individuals with propositional content" (type $\langle e\langle st\rangle\rangle$). This claim comes from the

[7] Fronted *tough*- and *pretty*-constructions are both subject to some kind of PP-intervention that is due to the presence of a null operator in the embedded clause of both structures, causing a semantic type-mismatch issue with the PP. *It-tough*-constructions, which do no seem to lead to the same kind of PP-intervention effect, are assumed to be devoid of any null operator in their embedded clause. This allowed *it-tough*-constructions to escape the type-mismatch problem that arises with PP-insertion in the fronted structures.

general observation that embedded clauses distribute like DPs. First, it has been noted that attitude verbs like *believe* can combine with either DPs (cf. (10a)) or CPs (cf. (10b)).

(10) a. Jotaro believes [$_{DP}$ Jolyne's story].
b. Jotaro believes [$_{CP}$ that Jolyne tells the truth].

Second, *that*- and *for*-clauses can be equated with DPs:

(11) a. [$_{DP}$ The fact] is [$_{CP}$ that Jolyne tells the truth].
b. [$_{DP}$ The challenge] is [$_{CP}$ for Jolyne to escape].

These data make perfect sense as soon as both DPs and CPs denote properties; and motivates an analysis of CPs whereby the C-head (*that*, *for*, or a silent counterpart thereof), changes a proposition (the clause itself) into a "property of individuals with propositional content". This is operationalized in the equations below.

$$[\![\text{C}]\!] = \lambda P_{st}.\ \lambda x_e.\ \lambda w_s.\ \textsc{Content}(x)(w) = P \qquad \text{([Kratzer, 2006])}$$
$$\textsc{Content}(x)(w) = \{w' \mid w' \text{ is compatible with the intentional content of } x \text{ in } w\}$$

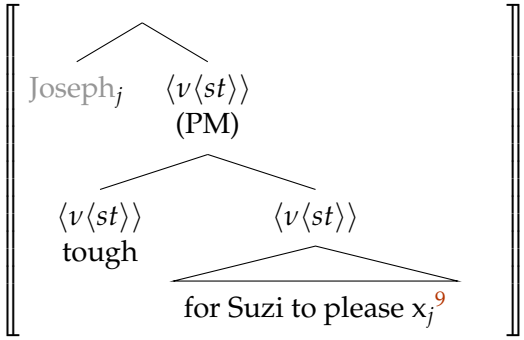
More specifically in our case, and following [Gluckman, 2021], we make the assumption that infinitival clauses compatible with *tough* or *pretty* are properties of *events* (type v) with propositional content, where events are taken to be a subtype of individuals. For instance:

$$[\![\text{for Joseph to please Suzi}]\!] = \lambda v_v.\lambda w_s.\ \textsc{Content}(v)(w) = \{w' \mid \text{Joseph pleases Suzi in } w'\} \quad (3)$$

The infinitival clause is expected to compose with *tough via* Predicate Modification (PM) [Moulton, 2015, Gluckman, 2021]. Following [Pesetsky, 1987, Lasersohn, 2005] and [Keine and Poole, 2017], we also postulate that *tough* and *pretty* predicates are judge-dependent. We define a tentative entry for *tough* under those assumptions (to re revised in Section 3.2):

$$[\![\text{tough}]\!]^j = \lambda v_v.\ \lambda w_s.\ \textsc{tough}^{8}(v)(w)(j)$$

Below is a sketch of the derivation of *Joseph is tough for Suzi to please*. We assume for now that *tough* does not take the matrix subject as argument. We also assume that the embedded object position is not filled with a gap (meaning, a λ-abstracted element), but rather with an element co-referential with the matrix subject. As a result, the sentence *Joseph is tough for Suzi to please* is for now seen as equivalent to *It is tough for Suzi to please Joseph*. Lastly, the first argument that is passed to *tough* is the judge-argument, which for simplicity is assumed to be coreferential with the embedded subject.



[8] TOUGH(v)(w)(j) is a shorthand for *v is tough in w according to j*. This clearly has to be fleshed out. In fact, TOUGH most likely contains another layer of modality.

$$\overset{PM}{=} \lambda v_\nu.\ \lambda w_s.\ \Big([\![\text{tough}]\!]^S(v)(w) \wedge [\![\text{for Suzi to please } x_j]\!]^S(v)(w)\Big)$$

$$\overset{FA+\beta}{=} \lambda v_\nu.\ \lambda w_s.\ \Big(\textsc{Tough}(v)(w)(Suzi) \wedge [\![\text{for Suzi to please } x_j]\!]^S(v)(w)\Big)$$

$$\overset{FA+\beta}{=} \lambda v_\nu.\ \lambda w_s.\ \textsc{Tough}(v)(w)(Suzi) \wedge \textsc{Content}(v)(w) = \{w' \mid \text{Suzi pleases Joseph in } w'\}$$

After *tough* has combined with the infinitival clause through PM (resulting in a $\langle \nu \langle st \rangle \rangle$ type), an existential layer $\lambda Q_{\langle \nu \langle st \rangle \rangle}.\ \lambda w_s.\ \exists v_\nu.\ Q(v)(w)$ guarantees that the sentence has type $\langle s, t \rangle$. In the next section, we argue that there is in fact something more to this, i.e., *tough* is in need of an additional semantic argument.

3.2 Key observation: *tough*-predicates are in need of a "reference" argument

We focus in this section on fronted *tough*-constructions, such as (1a), repeated below.

(12) **Suzi** is tough to please.

Long-Movement accounts straightforwardly predict that the matrix subject of 12 should receive its θ-role from the embedded predicate before moving to its final position. So, under that line of analysis *Suzi* is expected to be the Patient of *please*. To yield the same sort of prediction, Base-Generation approaches generally posit that *Suzi* receives its θ-role *via* binding or agreement with a null operator within the embedded clause, which itself received its θ-role from *please*.

A further prediction of both accounts is the following: fronting various elements from the embedded clause (e.g. an object, a goal, an adjunct...) in a *tough*-construction should not lead to differences in interpretation. We claim here that this is not true: even if *tough* does not take the matrix subject as a somewhat standard Theme or Experiencer argument, we claim that *tough* remains sensitive to the nature of the subject, in a very specific way that cannot be cashed out by traditional θ-roles.

3.2.1 Evidence #1: pure dummies

A first piece of evidence comes English dummy elements, such as existential *there* [Chomsky, 1981] and "weather" *it*. As shown in (13), those vacuous elements are not acceptable as *tough*-subjects (examples taken from [Bayer, 1990])[10]

(13) a. * **There** would be difficult to believe to be a party tonight. *there*-TC

b. * **It** would be difficult to believe to be raining. "weather" *it*-TC

However, as shown in (14), those elements seem fine[11] when combined with a raising predicate (keeping the embedding complexity constant).

(14) a. **There** seems to be believed to be a party tonight. *there*-RC

b. **It** seems to be believed to be raining. "weather" *it*-RC

[9] We use a theory-neutral variable name here, but x_j should be seen as either a trace or a null operator of some sort.

[10] Note that in (13) the presence of an intermediate raising-to-object predicate (*believe*) guarantees that ungrammaticality is not caused by the embedded gap being in a subject position – as subject-gap TCs are notoriously ungrammatical.

[11] It has been argued that such constructions were not necessarily perfect, even when the extracted element is an argument [Nanni, 1978], which suggests some inherent difficulty there. We still think that the contrast between (13) and (13) is real however, as (13) sounds far worse than (13).

This contrast is unexpected if *tough*-predicates, just like raising-to-subject predicates, are not thematically linked to their subject.[12]

3.2.2 Evidence #2: "intention"-inducing adverbs and aspect

Another case where *tough*-predicates do not show the same restrictions as *raising*-predicates has to do with explicit intention or volition on the part of the matrix subject. The use of the progressive, or of an adverb such as *purposely* suggest that the matrix subject *intentionally* realizes the matrix predicate [Lasnik and Fiengo, 1974, Hukari and Levine, 1990]. Therefore, it is no surprise that the progressive or *purposely*-type adverbs be banned from sentences with an inanimate matrix subject (15). In the case of *animate* matrix subject however, a contrast arises between *tough*-constructions and raising constructions: *tough*-constructions allow for the progressive or *purposely*-type adverbs (16a); while raising constructions do not (16b). This discrepancy would be difficult to explain if the matrix subject was considered non-thematic in *both tough*- and raising constructions.

(15) a. * **This package** is {being/purposely} *tough* to send to Lisa.
b. * **This package** is {being/purposely} *likely* to belong to Lisa.

(16) a. **Lisa** is {being/purposely} *tough* to send this package to.
b. * **Lisa** is {being/purposely} *likely* to send this package.

3.2.3 Evidence #3: idiom chunks

The possibility to front an idiom chunk in a *tough*-construction has been debated [Lasnik and Fiengo, 1974, Rezac, 2006, Hicks, 2009]. As observed by [Longenbaugh, 2017], idioms chunk for which an independent (although not fully literal) meaning can be found sound better as *tough*-subjects than purely metaphorical ones. The following minimal pair, taken from [Longenbaugh, 2017], illustrates this claim: in (17a), the subject is perceived as less metaphorical than in (17b).

(17) a. **That habit** will be hard to kick.
b. * **The bucket** will be easy to kick

The fact that the grammaticality of (17a) and (17b) seems to be tied to the semantic interpretation of the *tough*-subject is unexpected under traditional accounts of *tough*-constructions, which generally predict that both (17a) and (17b) should exhibit the same degree of grammaticality (depending on whether idioms are allowed to reconstruct in *tough*-constructions).[13]

3.2.4 Evidence #4: varied fronting strategies

A last piece of evidence comes from the examination of the following sentences:

(18) a. Joseph: **This package** is tough to send to Lisa. (object-fTC)
b. Joseph: **Lisa** is tough to send this package to. (goal-fTC)

Along with the following two Scenarios:

[12] At that point, one could argue that iTCs represent an obvious counter-example to the current argument, as those structures seem to exhibit an expletive *it*, and are yet perfectly grammatical. We will come back to this particular case at length in the next section, Section 4.

[13] We are not discussing this question here. But assuming that the idiom can be interpreted downstairs, we will propose a way to tease apart (17a) and (17b) in the next section.

Scenario 1: *Joseph has to send a very big and heavy package to Lisa, who lives in the same country as Joseph (so that if the package was a simple letter, Joseph would have no problem sending it to Lisa). Joseph complains to Suzi about this.*

Scenario 2: *Joseph has to send a small and lightweight package to Lisa, who lives in an isolated place in a remote island, without any nearby post office. Joseph complains to Suzi about this.*

We argue that the Scenarios compatible with those two slightly different fTCs depend on what the matrix subject actually is. Given **Scenario 1**, the utterance in (18a) seems acceptable, while (18b) does not. With **Scenario 2**, the pattern gets reversed.

	Scenario 1	**Scenario 2**
(18a)	✓	?
(18b)	✗	✓

In both (18a) and (18b), some salient property of the matrix subject (*being bulky*, *living far away*...) seems to cause the sending event to be "hard".[14] This phenomenon has already been discussed in the past ([Bayer, 1990, Goh, 2000, Grover, 1995, Hukari and Levine, 1990, Kim, 1995, Schachter, 1981]). Not all accounts however, linked it to a direct semantic relationship between the subject and the *tough*-predicate. [15] Beside, the accounts that ended up establishing such a link did not provide the relevant lexical entry for *tough* – which is what we will do in the next section.

Coming back briefly to idiom chunks, the contrast in (17) now appears less mysterious. (17a), can be easily understood as "there is a property about this habit that I have, that makes it hard to kick". (17b) on the other hand, cannot be understood as "the is a property of the bucket, that makes it hard to kick". The contrast is crucially made possible by the sensitivity of the *tough*-predicate to the (more or less) idiomatic subject.

3.3 Fleshing out *tough*

We now update the lexical entry of *tough*, taking into account the fact that it takes its subject as a semantic "reference" argument, understood as the causer of the toughness of the situation denoted by the embedded clause.

$$\begin{aligned}[\![\text{tough}]\!]^j = &\lambda r_e.\ \lambda v_v.\ \lambda w_s.\\ &\exists P_{\langle e\langle st\rangle\rangle} : P(r)(w) \wedge \forall w'_s : B^j_w(w') \wedge P(r)(w') \wedge \textsc{Content}(v)(w) = \textsc{Content}(v)(w').\\ &\textsc{Tough}(j)(v)(w')\end{aligned}$$

Tough is parametrized by a JUDGE j and takes as argument a REFERENCE r (type e), to return a property of events with propositional content (as already claimed by [Gluckman, 2021]). More

[14] This might also explain why (18a) is only mildly unacceptable in the context of **Scenario 2**: *being far from Lisa* is a property applicable to the package that, despite not being very salient, can make the sending event hard as well. In **Scenario 1** on the other hand, it appears nearly impossible to find a salient property of Lisa that would cause the *sending*-event to be tough, hence the plain infelicity of (18b) in that context.

[15] [Goh, 2000] for instance, argues that the effect is pragmatic due to its sensitivity to the context; [Grover, 1995] assumes in a HPSG framework that the relationship between the *tough*-subject and the *tough*-predicate is mediated by a separate operator, ENABLE.

precisely, *tough* returns the set of events v such that some property P that is true of r in the evaluation world "causes" j to judge the toughness of v. This causality relationship between P and the toughness judgment of j is operationalized *via* quantification over all the relevantly accessible worlds w' (from the point of view of j) where P still holds of r. In those worlds, j judges v to be tough ($\textsc{Tough}(j)(v)(w')$).

One could then reasonably ask about the exact meaning of $\textsc{Tough}(j)(v)(w')$. Crucially at that point of the logical expression, we cannot state that j actually *experiences* the toughness of v, because *tough*-statements are can be produced about events that have not been completed in the actual world, and sometimes not even in the "judgment" worlds. (3.3) illustrates this characteristic.

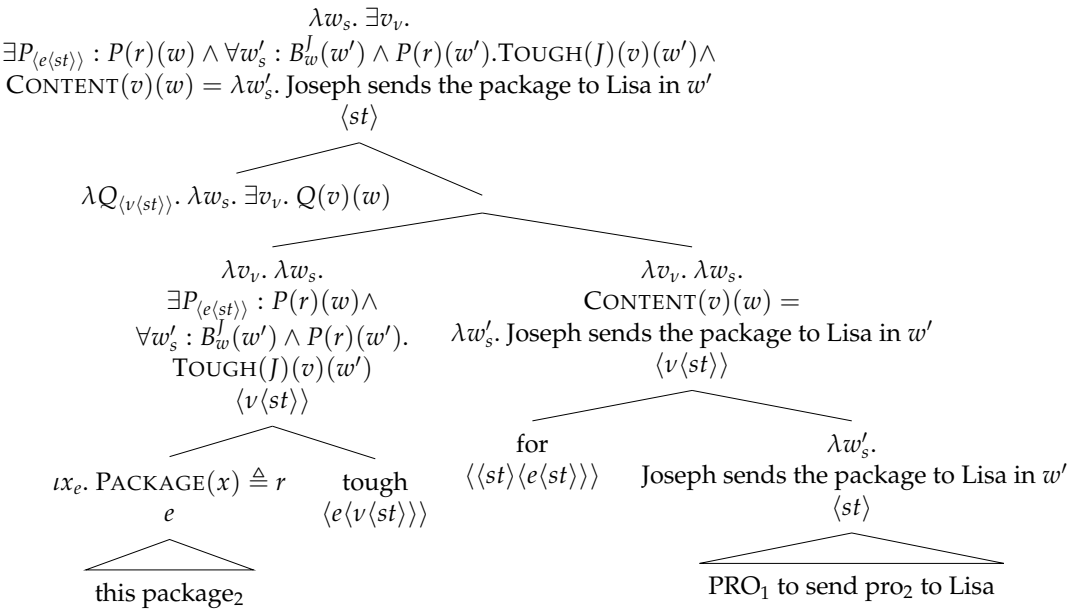
(19) a. Goldbach's conjecture is tough to prove. In fact, no one managed to prove it so far and I doubt anyone will in the near future.

b. This book is easy to read. Even if I have not read it, I know the author well and can assure you will have a nice time.

As a result, we think that $\textsc{Tough}(j)(v)(w')$ should further quantify over worlds that are almost exactly similar to the given "judgment" world (in particular, P is still expected to hold of r in those words), but where v actually takes place. This set of worlds has to be judged as "small" (probably w.r.t. to those where the event does *not* happen) by the judge.

$$\textsc{Tough}(j)(v)(w') = \forall w'' : \textsc{Occurs}(v)(w')(w'') \wedge \text{ } j \text{ has a hard time completing } v$$
$$\textsc{Occurs}(v)(w')(w'') = \textsc{Content}(v)(w')(w'')$$

Under those assumptions, (18a) will be true iff there is a *sending-this package-to-Lisa* event v and a property P that holds of the package, such that in all relevantly accessible worlds (from Joseph's point of view), Joseph judges v to be tough. Below is a more formal derivation of (18a).



A few additional things to note about the updated semantics for *tough* we propose here. First, the meaning of *tough* and other predicates from the same class can be divided into a "core" component, close to what had been proposed for those predicates in the past (TOUGH$(j)(v)(w')$), and a causative "wrapper" ($\exists P : P(r)(w) \wedge \forall w' \ldots$) which introduces the new REFERENCE argument and quantifies over possible worlds.[16] Thus, predicates of the *tough*-class can be rephrased as roughly "REFERENCE causes JUDGE to evaluate EVENT as TOUGH-PRED". While the causative wrapper is expected to remain constant across predicates of the *tough*-class, the core meaning is expected to change.

$$\textsc{Impossible}(j)(v)(w') = \neg\exists w''.\ B^{j}_{w'}(w'') \wedge \textsc{Occurs}(v)(w'')$$
$$\textsc{Fun}(j)(v)(w') = \forall w'' :\ B^{j}_{w'}(w'') \wedge \textsc{Occurs}(v)(w'').\ j \text{ has fun in } v$$

A second thing to note is the presence of JUDGE-dependence at two levels in the meaning of *tough*: at the level of the core meaning (the JUDGE evaluates the putative event), but also at the level of the causative component (causation is being evaluated from the JUDGE's point of view).

The key point of this section is therefore the following: *tough* takes its subject as a semantic argument and assigns a θ-role to it. This is more in line with BASE-GENERATION account of the construction, whereby no θ-transmission is required between the embedded null-operator or pronoun and the matrix subject.

4 The status of *it-tough*-constructions (iTCs)

4.1 iTCs are not expletive constructions

We now turn to the case of iTCs such as (2b) (repeated below), where the REFERENCE argument is expected to be the seemingly expletive *it*.

(20) **It** is tough to send this package to Suzi. iTC

Traditional approaches to *tough*-constructions (both LONG-MOVEMENT and BASE-GENERATION) have taken the existence of such "expletive" *it-tough*-constructions to mean

[16] This might suggest that *tough* should be decomposed in the syntax, and therefore subject to scopal interactions of the form:

OP > CAUS > TOUGH
CAUS > OP > TOUGH
CAUS > TOUGH > OP

To test this hypothesis, one should probably study *tough*-constructions combined with decompositional adverbs [McCawley, , Rapp and Von Stechow, 1999], such as:

(iv) a. Johnny is again/almost impossible for Lucy to negotiate with.
⇝ It is again/almost the case that something about Johnny causes Lucy to find it impossible to negotiate with him.
⇝ There is something about Johnny that again/almost causes Lucy to find it impossible to negotiate with him.
⇝ There is something about Johnny that causes Lucy to find it again/almost impossible to negotiate with him.

Disambiguating scenarios for those readings however, are hard to design, and left for future work.

that the *tough*-subject was *not* thematic. BASE-GENERATION approaches in particular, had to posit a specific θ-transmission process at the syntactic level, and an ambiguous entry for *tough* at the semantic level, in order to account for both fTCs and iTCs (see [Keine and Poole, 2017] and Section 2.2). But if *it* happens to be a contentful element in iTCs, our approach will have a clear advantage since it will allow to assume a simpler version of the BASE-GENERATION approach, along with a single lexical entry for *tough*, applicable to both fTCs and iTCs.

We show here that there is evidence from French that the *it* present in iTCs is not a pure dummy element. In that language, *it* can be expressed *via* two pronouns, an expletive (*il*), which is (unfortunately) ambiguous with the masculine third-person singular pronoun; and a demonstrative (*ça*, *cela*).

The expletive variant *il* is the only variant allowed in (uncontroversially expletive) raising constructions (RCs), as shown by the contrast in (21), as well as impersonal "weather"-sentences (22) and the impersonal deontic *falloir*-construction (23).

(21) a. **Il** semble que Jolyne gagne.
It.EXPL seems that Jolyne wins.
'It seems that Jolyne wins.' *il*-raising ✓

b. * **Ça** semble que Jolyne gagne.
It.DEM seems that Jolyne wins.
Intended: 'It seems that Jolyne wins.' *ça*-raising ✗

(22) a. **Il** neige ce matin.
It.EXPL snows this morning.
'It is snowing this morning.' *il*-weather ✓

b. * **Ça** neige ce matin.
It.DEM snows this morning.
Intended: 'It is snowing this morning.' *ça*-weather ✗

(23) a. **Il** faut que Bruno achète du pain.
It.EXPL must that Bruno buy some bread.
'Bruno must buy bread.' *il*-deontic ✓

b. * **Ça** faut que Bruno achète du pain.
It.DEM must that Bruno buy some bread.
Intended: 'Bruno must buy bread.' *ça*-deontic ✗

The demonstrative variant *ça* on the other hand, is the only variant allowed in subject-doubling (SD) constructions [Jaeggli, 1981, Roberge, 1986, De Cat, 2007], whereby the subject is clearly thematic. This is established by the contrasts in (24)[17] (nominal subject), and (25) (clausal subject).

(24) a. * La lavande$_i$, **il**$_i$ sent bon.
The lavender, it.EXPL smells nice.
Intended: 'Lavender smells nice.' *il*-SD ✗

[17] In (24), we used a feminine subject (*la lavande*) to avoid any ambiguity between the expletive, gender-neutral *il* (target) and the homophonous masculine personal pronoun (automatically banned due to being incompatible with a feminine antecedent).

b. La lavande$_i$, **ça**$_i$ sent bon.
The lavender, it.DEM smells nice.
'Lavender smells nice.' *ça*-SD ✓

(25) a. * Aller au théâtre$_i$, **il**$_i$ change les idées.
To-go to-the theatre, it.EXPL changes the ideas.
Intended: 'Going to the theatre clears your head.' *il*-SD ✗

b. Aller au théâtre$_i$, **ça**$_i$ change les idées.
To-go to-the theatre, it.DEM changes the ideas.
'Going to the theatre clears your head.' *ça*-SD ✓

As a result, *ça*, contrary to *il*, has been consistently argued to be is a "uniformly referential, θ-bearing pronoun" [Kayne, 1983, Pollock, 1983, Jaeggli, 1981, Zaring, 1994]. Interestingly, *ça* is also the preferred pronoun in French iTCs (26b).[18]

(26) a. ? **Il** est dur d' apprécier Jean-Pierre.
It.EXPL is tough to like Jean-Pierre.
'It is tough to like Jean-Pierre.' *il*-TC

b. **C'** est dur d' apprécier Jean-Pierre.
It.DEM is tough to like Jean-Pierre.
'It is tough to like Jean-Pierre.' *ça*-TC

The key takeaway from French is thus that the seemingly "expletive" iTCs license a θ-bearing pronoun as subject, and by that do not pattern like other uncontroversially expletive construction. The behavior of the French pair *il*/*ça* in turn suggests that English *it* is ambiguous between an expletive and a referential pronoun, such that $it_{\text{expl.}}$ (=*il*) would be used in raising and "weather" constructions, and $it_{\text{ref.}}$ (=*ça*) would be used in TCs.[19]

4.2 iTCs have the properties of extraposed constructions

We showed that *it* in iTCs is most likely not an expletive. But then, what is *it*? We argue here that *it* is an extraposition marker, meaning, a cataphoric pronoun referring to the embedded clause. More specifically, we assume that *it* and the embedded CP together form a complex nominal at the matrix level, and that extraposition *per se* amounts to rightward adjunction. This approach to *it*-extraposition has been advocated for by [Rosenbaum, 1967, Sonnenberg, 1992, Müller, 1995, Büring and Hartmann, 1997, Hinterwimmer, 2010], in particular regarding the German proform *es* in various contexts.

In our case, this analysis means that an iTC such as (27b) is derivationally related to a clause-fronted *tough*-construction (cfTC) such as (27a).

(27) a. **To send this package to Lisa** is tough. (**cfTC**)

b. **It** is tough **to send this package to Lisa**. (**iTC** = *it*-extraposed **cfTC**)

[18] The availability of *il* in iTCs remains somewhat mysterious. It might be due to the very same *caveat* we mentioned in the previous footnote, namely that French expletive *il* is ambiguous with the masculine third person singular pronoun. The *il* present in iTCs may thus very well be a referential pronoun as well, and not an expletive. In any event, this does not affect the main point, namely that *ça*, which is unambiguously *in need* of a θ-role, is licensed in iTCs.

[19] The question remains as to why English *this* does not play the same role as French *ça*. I unfortunately do not have any principled explanation for this discrepancy, other than saying that *ça* and *this*, although quite similar on the surface, are not compatible with the exact same environments; of particular relevance perhaps, is that English *this* cannot serve as an extraposition marker.

The *it*-variant of the *tough*-construction would then be analyzed in a similar way as *it*-extraposed sentences featuring rightward CP-movement like those in (28) and (29).

(28) a. **It** was frustrating **that Johnny lost the race**. CP-extraposed
b. **That Johnny lost the race** was frustrating. CP-*in situ*

(29) a. We suggested **it** to them **that we leave later than planned**. CP-extraposed
b. We suggested **that we leave later than planned** to them. CP-*in situ*

A first thing to note is that French infinitival extraposed constructions, just like *it-tough*-constructions, preferentially make use of the pronoun *ça*. In those constructions, the infinitival clause is also consistently introduced by the particle *de*, which usually serves as a genitive marker. This property is shared by French iTCs, as shown in (26b) above. A few examples of such extraposed constructions are given below (note that the c. examples are intended to show that the constructions at stake are *not* instances of the *tough*-construction in French).

(30) a. **??Il/Ça** vaut le coup d' acheter le ticket groupé.
??It.EXPL/It.DEM is-worth the shot DE buy the ticket bundled.
'It is worth it to buy the bundle ticket.'

b. **Acheter le ticket groupé** vaut le coup.
To-buy the ticket bundled is-worth the shot.
'Buying the bundle ticket is worth it.'

c. * **Le ticket groupé** vaut le coup à acheter.
The ticket bundled is-worth the shot À to-buy.
Intended: 'The bundle ticket is worth buying.'

(31) a. ***Il/Ça** demande du courage de faire ce travail.
*It.EXPL/It.DEM asks some courage DE do this job.
'It takes courage to do this job.'

b. **Faire ce travail** demande du courage.
Doing this job asks some courage.
'Doing this job takes some courage.'

c. ?? **Ce travail** demande du courage à faire.
This job asks some courage Á do.
Intended: 'This job takes some courage.'

(32) a. ***Il/Ça** me détend considérablement d' écouter de la musique.
*It.EXPL/It.DEM me relaxes a-great-deal DE listen some the music.
'It relaxes me a great deal to listen to music.'

b. **Écouter de la musique** me détend considérablement.
Listening some the music me relaxes a-great-deal.
'Listening to music relaxes me a great deal.'

c. ?? **La musique** me détend considérablement à écouter.
The music me relaxes a-great-deal Á listen.
Intended: 'Music relaxes me a great deal when I listen to it.'

Extraposed constituents are notoriously frozen to further extraction (second part of [Ross, 1967]'s *Frozen Structure Constraint*, nowadays rephrased in terms of the Adjunct Condition). In particular, *wh*-extraction is predicted to be impossible out of an extraposed constituent.

The contrast between (33b) and (34b) below (adapted from [Keller, 1995]) illustrates this restriction in the case of a clear instance of PP-extraposition (baselines without *wh*-extraction in (33a) and (34a)):

(33) *Wh-movement is permitted out of non-extraposed PPs*

a. You saw a picture **of Rohan** in the newspaper.

b. **Who** did you see a picture of **t** in the newspaper?

(34) *Wh-movement is banned out of extraposed PPs*

a. You saw a picture **t** in the newspaper **of Rohan**.

b. * **Who** did you see a picture in the newspaper of **t**?

This result extends to CP-extraposed constituents, as shown by the contrast between (35b) and (36b).

(35) *Wh-movement is permitted out of non-extraposed CPs*

a. Lucy mentioned to Steven **that Johnny lost the race.**

b. **Which race** did Lucy mention to Steven that Johnny lost **t**?

(36) *Wh-movement is banned out of extraposed CPs*

a. Lucy mentioned **it** to Steven **that Johnny lost the race.**

b. * **Which race** did Lucy mention **it** to Steven that Johnny lost **t**?

One has to note however, that the contrast becomes weaker when extraposition proceeds from the subject position, both in English (37) and French (38).

(37) *Wh-movement is disfavored out of extraposed subject CPs*

a. **It** was frustrating **that Johnny lost the race**.

b. ? **Which race** was **it** frustrating that Johnny lost **t**?

(38) *Wh-movement is disfavored out of extraposed subject CPs*

a. ? Qu' est-ce que **ça** vaut le coup d' acheter **t**?
What is-it that it.DEM is-worth the shot DE buy ?
Intended: 'What is worth it to buy?'

b. ? Qu' est-ce que **ça** demande du courage de faire **t**?
What is-it that it.DEM asks some courage DE do ?
Intended: 'What takes courage to do?'

c. ? Qu' est-ce que **ça** me détend considérablement d' écouter **t**?
What is-it that it.DEM me relaxes a-great-deal DE listen-to ?
Intended: 'What relaxes me a great deal when I listen to it?'

iTCs, contrary to the other variants of the construction[20], seem to verify this fact as well, at least to the extent that CP-extraposed sentences like (37) do.

(39) a. **This package** is tough to send to Lisa. (fTC) ✓

b. **It** is tough **to send this package to Lisa**. (iTC) ✓

(40) a. **Which package t** was tough to send to Lisa? *wh*+fTC ✓

[20] We chose not to use a clause-fronted *tough*-construction as a baseline here, because *wh*-extraction out of a complex subject is ungrammatical for independent reasons.

b. ?? **Which package** was it tough to send **t** to Lisa? *wh*+iTC ✗

This is also verified by French *ça*-TCs.[21]

(41) a. **Ce colis** est difficile à envoyer à Lisa.
This package is tough À send to Lisa.
'This package is tough to send to Lisa.' (fTC) ✓

b. **C'** est difficile **d' envoyer ce colis à Lisa**.
It.DEM is tough DE send this package to Lisa.
'It is tough to send this package to Lisa.' (iTC) ✓

(42) a. **Quel colis** **t** est difficile à envoyer à Lisa?
Which package is difficult À send to Lisa?
'Which package is difficult to send to Lisa?' *wh*+fTC ✓

b. ?? **Quel colis** est-ce difficile d' envoyer **t** à Lisa?
Which package is-it.DEM tough DE send to Lisa?
Intended: 'Which package was such that it was tough to send it to Lisa?' *wh*+iTC ✗

In brief, the infinitival clause of iTCs, unlike that of fTCs, verifies a key property of extraposed constitutents, which suggests that iTCs result from the extraposition of the subject of the corresponding clause-fronted TC. Note that, counter-intuitively maybe, this account of iTCs is still compatible with a simple BASE-GENERATION approach without θ-transmission. clause-fronted TCs, like individual-fronted TCs, can be analyzed as having their subject (the clause) base-generated in the matrix, binding a type-$\langle v\langle st\rangle\rangle$ null operator in the *tough*-complement position. this way, the full-fledged clause plays the role of the REFERENCE, while the coreferential null operator plays the role of the THEME. iTCs would differ minimally from clause-fronted TCs in that the matrix base-generated clause would undergo extraposition. This does not affect the distribution of θ-roles. A LONG-MOVEMENT approach on the other hand, would have to posit that the clause gets both a THEME and a REFERENCE θ-role!

4.3 Extraposition as a potential solution to Bruening's puzzle

We briefly mentioned the issue of "defective intervention" in Section 2.2. This phenomenon, first pointed out in the case of *tough*-constructions by [Hartman, 2009], supposedly causes the ungrammaticality of fTCs (but not iTCs) involving an overt matrix experiencer (43). As noted by [Bruening, 2014] however, defective intervention in *tough*-constructions strangely extends to adjuncts (cf. (44)), and disappears when the seemingly intervening element is slightly displaced (cf. (45)).

(43) *"Standard" defective intervention [Hartman, 2009]*

[21] As already noted by [Zaring, 1994, Shahar, 2008] (examples repeated in v), frozeness to further extraction applies to French *ça*-extraposed clauses, but not *il*-extraposed clauses...

(v) a. Comment plaît-**il** aux instituteurs que ces élèves se comportent **t**?
How please-it to-the teachers that these students self behave
How does it please the teachers that these students behave?

b. * Comment est-ce que **cela** plaît aux instituteurs que ces élèves se comportent **t**?
How is-this that this please to-the teachers that these students self behave
How does it please the teachers that these students behave?

a. It is important to Mary to avoid cholesterol.

b. * Cholesterol is important to Mary to avoid.

(44) *Adjunct intervention [Bruening, 2014]*

a. It was very hard in such conditions to give up sugar.

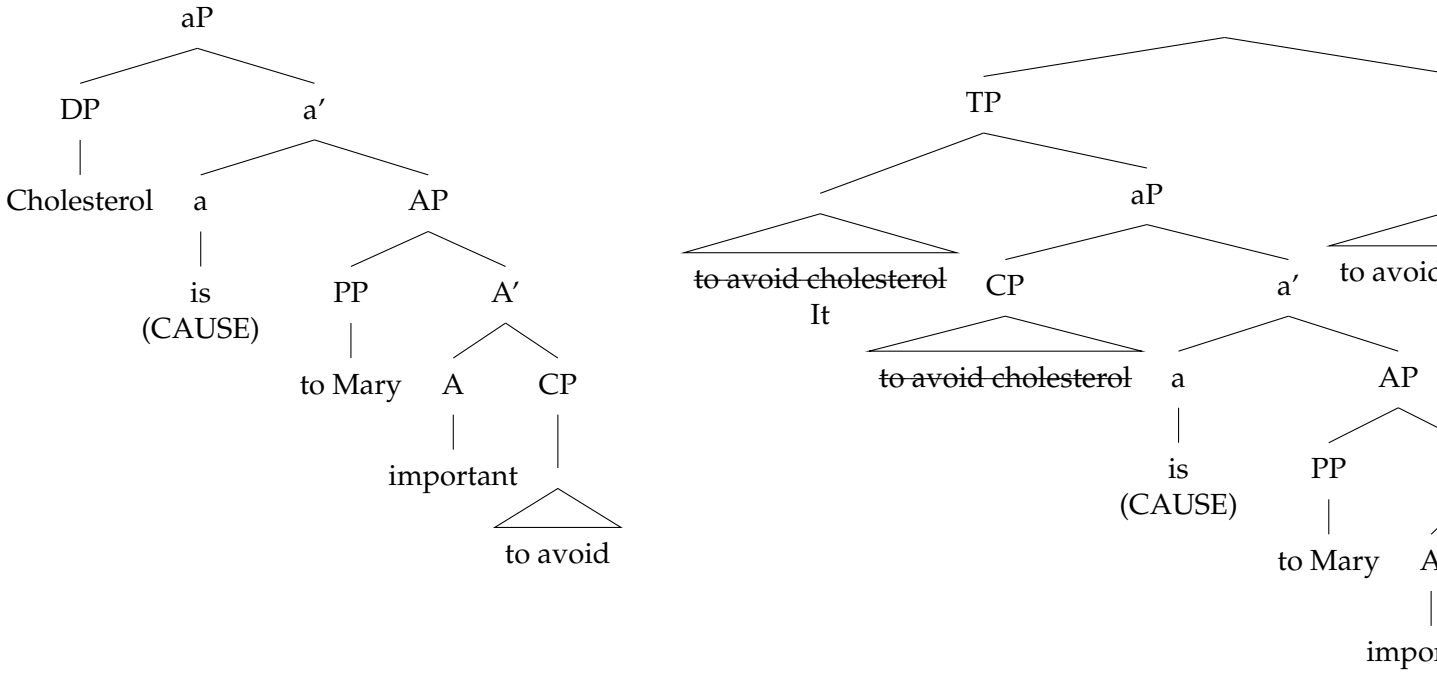
b. * Sugar was very hard in such conditions to give up.

(45) *"Defect" of defective intervention due to displacement [Bruening, 2014]*

a. It is important to Mary/in such conditions to avoid cholesterol.

b. Cholesterol is to Mary/in such conditions important to avoid.

Those datapoints may make sense under our analysis, due the overtly realized embedded clause having a different status in fTCs and iTCs; namely, it is a complement in fTCs, but a high-merged adjunct in iTCs (due to extraposition). This is schematized below.



We assume here that matrix experiencers are adjuncts.[22] In the case of *it-tough*-constructions, the position of the overtly realized CP is high enough to allow adjuncts to the *tough*-predicate to be linearized between the predicate and the CP. Those adjuncts of course, can also be linearized to the left of the predicate. In the case of fronted *tough*-constructions, the embedded CP is a complement of the *tough*-predicate, and therefore, not adjunct can be linearized between the predicate and the CP.

[21] This has to be contrasted with *for*-CP ellipsis, which cannot strand the *for*+Dp complex:

(vi) Mary wanted for Sue to win, but Bill needed for her *(to).

[22] This is mainly a stipulation here, but a few diagnostics in fact seem to point in that direction:

(vii) It is important to Mary to avoid cholesterol, and it is so to John to avoid sugar.

However, adjuncts cannot be linearized between *tough*-predicate and the CP in Figure **??**, while they can in Figure **??**, due to the fact that a very high copy of the CP is being realized. In brief, the extraposition analysis can predict why "low" matrix experiencer and adjuncts are ungrammatical only in fTCs. JUSTIFY CAUSE DECOMPOSITION: TEST WITH NEGATION NOT(IS TOUGH) VS IS (NOT TOUGH). ALSO MENTION COMPATIBILITY OF THIS PACKAGE IS NOT TOUCH TO SEND BUT WELL IT'S TOUGH TO SEND IT.

4.4 iTCs have a clausal REFERENCE argument

We have shown that iTCs are most likely extraposed clause-fronted TCs; which allows the lexical entry of *tough* to apply to iTCs as well as fTCs. A further prediction is that the REFERENCE argument in iTCs should be interpreted as – roughly – the embedded clause; such that (46a) and (46b) end up having the same truth conditions:

(46) a. **It** is tough **to send this package to Lisa**. (**iTC**)
b. **To send this package to Lisa** is tough. (**cfTC**)

We assume here that (46a) and (46b) should be true iff some property P of a salient *sending-this-package-to-Lisa* event is causing this event's own toughness. Assuming that P can be about any *participant* of the event (e.g. *the package* or *Lisa*) or the action itself (*sending*), (46a) is predicted to be relatively acceptable in both **Scenario 1** and **Scenario 2**, repeated below.

> **Scenario 1:** *Joseph has to send a very big and heavy package to Lisa, who lives in the same country as Joseph (so that if the package was a simple letter, Joseph would have no problem sending it to Lisa). Joseph complains to Suzi about this.*

> **Scenario 2:** *Joseph has to send a small and lightweight package to Lisa, who lives in an isolated place in a remote island, without any nearby post office. Joseph complains to Suzi about this.*

We think that this prediction is borne out. Besides being compatible with **Scenarios 1** and **2**, (46a), unlike its fronted alternatives (18a) and (18b) repeated below, should also be compatible with the following scenario, where the *toughness* is induced by the *sending* event as a whole:

> **Scenario 3:** *Joseph has to send a small and lightweight package to Lisa, who lives in the same country as Joseph. However, the local post office has a very restricted schedule, and always ends up crowded; Joseph expects a 3-hour line to send his package. Joseph complains to Suzi about this.*

Below is a recap of the whole paradigm.

(47)	a.	Joseph: **This package** is tough to send to Lisa.	1 ✓	2 ?	3 ✗	(object-fTC)
	b.	Joseph: **Lisa** is tough to send this package to.	1 ✗	2 ✓	3 ✗	(goal-fTC)
	c.	Joseph: **It** is tough **to send this package to Lisa**.	1 ✓	2 ✓	3 ✓	(iTC)

Moreover, this predicts that the the (in)felicity of the following sequences.

(48) a. # **It** is not tough **to send this package to Lisa**. Yet, **to send this package to Lisa** is tough.
b. It's not the case that **this package** is tough to send to Lisa. Yet, **it** is tough **to send this package**.

We have shown that *tough* takes an extra REFERENCE argument and we modified its lexical entry accordingly. We argued that the resulting entry could apply homogeneously in both fTCs and iTCs, modulo the independently motivated assumption that *it* in iTCs is a referential, θ-bearing extraposition marker. We now have done all the heavy-lifting required to naturally extend our account to a construction that is (at least) superficially similar to the *tough*-construction: the *pretty*-construction.

5 Extension to PCs: a reversal in argument structure

We now finally turn to the class of *pretty*-predicates, in an attempt to explain the two main syntactic differences between *tough*-constructions and *pretty*-constructions, namely the (un)availability of an *it*-variant, and the (im)possibility of further embedding within the complement clause.

5.1 Similarities and differences between *pretty* and *tough*

As mentioned in Section 1, a specificity of *pretty*-constructions as opposed to *tough*-constructions is that, those structures do not allow for further embedding within their infinitival complement. This contrast is shown in (5), repeated below.

(5) a. **This horse** is tough to convince Johnny to ride.
b. * **This painting** is pretty to convince Lucy to look at.

Intuitively, it is totally fine for a *convincing-Johnny-to-ride-this-horse* event to be judged as *tough*. The unacceptability of (5b) seems to come from the fact that a *convincing-Lucy-to-look-at-this-painting* event does not constitute a suitable circumstance for a prettiness judgment about the painting. In other words, a *convincing*-event is not susceptible to *cause* a prettiness judgment. This also suggests that the impossibility of long-distance dependencies in *pretty*-constructions is not syntactic, but rather, *appears syntactic* due to embedding predicates (raising, control, attitude...) being generally incompatible with direct sensory experience.

This causality relationship between the *pretty* predicate and the infinitival clause in turn suggests that the infinitival clause constitutes the REFERENCE argument of *pretty*. To flesh out this intuition, let us try to replicate the effect established for *tough*-subject *via* **Scenario 1** and **Scenario 2** back in Section 3.2.4. In the case of the *pretty*-construction, we will need to make the content embedded clause vary, and see if any interpretive differences arise. This as we will see, requires some creativity in the formulation of the Scenarios, because *pretty*-predicates, due to their sensory component, only allow for a reduced number of embedded events in the general case. We tried to circumvent this restriction in the following two Scenarios:

> **Scenario 4:** *In year 3059, people are often subject to chronic ageusia (loss of taste and smell). Ingenious brain implants have been developed however, that allow to "wire" visual perception to a feeling of gustatory pleasure or disgust.*

> **Scenario 5:** *In year 3059, people are often subject to chronic ageusia (loss of taste and smell). Ingenious brain implants have been developed however, that allow to "wire" tactile perception at the level of the mouth to a feeling of gustatory pleasure or disgust.*

Now, let us evaluate the (normally odd-sounding) statements in (49) w.r.t. the previous Scenarios.

(49) a. This cherry pie is delicious to look at.

b. This cherry pie is delicious to feel.

Given **Scenario 4**, (49a) seems rather acceptable, while (49b) seems to be ruled out. Given **Scenario 5**, the judgments get reversed. This is exactly what we would expect if event whose content is the embedded clause "causes" a *deliciousness* judgment. We also see that in principle, a *deliciousness* judgment may not be tied to a *tasting*-like event, but that normally is the case due to how a gustatory experience is usually induced.

We therefore define the lexical entry of *pretty* as similar to that of *tough*, except that the roles of the infinitival clause and that of the subject are reversed. More specifically, *pretty* combines with the infinitival clause (its REFERENCE argument) through Functional Application, just like *tough* did with its own REFERENCE argument. The "cause" of the *prettiness* judgment is some event that is part of the denotation of the infinitival clause; *pretty* states the prettiness of its *subject* each time the circumstances denoted by the embedded clause are met.

$$[\![\text{pretty}]\!]^j = \lambda C_{\langle v\langle st\rangle\rangle}.\ \lambda x_{e\setminus v}.\ \lambda w_s.$$
$$\exists v_v.\ C(v)(w) \wedge \forall w'_s.\ w' \in \mathcal{B}^j_w \wedge C(v)(w').\ \textsc{Pretty}(x)(w')(j)$$

Pretty states the existence of an event v whose CONTENT in w is equal to the proposition denoted by the embedded clause C (i.e. e is a verifier of C), and such that in any relevantly accessible world where v remains a verifier of C, x is judged as pretty by j. Coming back to the case of embedded events in PCs (5b): (5b) is predicted to be true if there is a *convincing-Lucy-to-look-this-painting* event in the actual world such that in all relevantly accessible worlds according to the speaker where *this painting* is still part of the *convincing* event, the speaker judges the painting to be pretty. There is no reason to think that all the relevantly accessible worlds verify the aforementioned condition, i.e., the causality relationship implied by *pretty* in (5b) does not make sense! Our account thus correctly predicts the oddity of this sentence.

5.2 *Pretty*-predicates are properties of "pure" individuals, which explains *iPC

ADD THAT PRETTY CONSTRUCTION HAVE AN OBLIGATORY REFERENCE (EMBEDED CLAUSE) AND THAT THE PB COMES FROM THE FACT THAT A SUBJECT EVENT (ORIGINATING IN THE REF CLAUSE) CANNOT BE LOOKED AT OR TASTED, SO WE HAVE TWO CLASHES. We first argue that *pretty*-predicates normally denote properties of "pure" individuals of type $e \setminus v$ (as opposed to type-v events). Even if it appears possible to say things such as (50a), where the event is a nominal, non-nominal (clausal) events can never be *pretty* (50b), and even less *delicious* (50c):

(50) a. **This wedding** was pretty.
b. ?? **Dancing the waltz** is pretty.
c. ?? **Eating this cherry pie** was delicious.

We assume that event nominals in fPCs are always interpreted in a metonymic way, such that *pretty* applies to some participants of the event instead of the event as a whole. For instance, a *pretty wedding* is expected to involve at least some "pretty" (non-eventive) individuals as participants (animate or not). On the other hand, a contemporary art performance designed to shock and be the ugliest in every detail, but beautifully orchestrated, could hardly be judged as pretty.[23] Since

[23] Or, the public has a very specific notion of beauty, and we are back in the metonymic case.

metonymic interpretation is usually not possible with clausal elements, those are naturally excluded from the subject position of fPCs. As a result, extraposed clause-fronted PCs (=iPCs) are predicted to be bad as well, which is exactly what is desired:

(51) a. * **It** is pretty **to dance the waltz**. (***iPC**)

Conclusion: a typology of predicates with infinitival complements

We showed that *tough* and *pretty* are both subjective predicates in need of a REFERENCE argument, understood as the source of the *toughness* or *prettiness* judgments. *Tough* and *pretty* only differ in the syntactic configuration of their respective arguments. *Tough* on the one hand, takes its subject as REFERENCE in both fTCs and iTCs, states the toughness of the *event* denoted by the infinitival clause. *Pretty* on the other hand, takes the embedded clause as REFERENCE, and states the prettiness of its subject (a "proper" individual).

This paradigm may also extend to other varieties of infinitival constructions: so-called *rare*-constructions [Fleisher, 2015] and *rude*-constructions [Stowell, 1991, Bennis, 2000, Bennis, 2004, Landau, 2006]. *Rare*-constructions, exemplified in (52), have been argued to form an independent subclass of TCs, in that their grammaticality seems to be conditioned by the matrix subject being "kind"-denoting (example from [Fleisher, 2015], extracted from a naturalistic corpus).

(52) **That kind of straight-up statement** is exceedingly rare for a politician to make.

Since in our account *rare* is expected to take its subject (*that kind of straight-up statement*) as argument, the kind-restriction is now trivially accounted for, by simply assuming that the lexical entry of *rare*-predicates imposes an additional type restriction on the REFERENCE argument r. Therefore, our account may allow to unify the class of *tough*-predicates.

Rude-constructions (53) on the other hand, are missing-subject constructions which seem to be part of an alternation similar to that of TCs, featuring a fronted variant (53a) and an *it*-variant (53b). But at the same time, the θ-assignment pattern of those constructions seems closer to that of PCs.

(53) a. **Gabby** was rude to refuse Daiya's invitation. fronted-*rude*
⇝ **Gabby was rude.**

b. **It** was rude of Gabby **to refuse Daiya's invitation**. *it-rude*
⇝ **Gabby was rude.**

- The predicates at play in those constructions all denote mental qualities of proper (animate) individuals (*rude*, *brave*, *nice* etc.).
- Just like *pretty*-predicates, *rude*-predicates are interpreted relatively to the event denoted by the embedded clause, which is the drive of the *rudeness* judgment. In (53a) for instance, Gabby is not inherently *rude*, but rather, judged to be so by the speaker in the context of his refusal of Daiya's invitation.
- This implies that *rude*-predicates take the embedded clause as REFERENCE argument, and the matrix subject as THEME, just like *pretty*-predicates.

- The possibility of an *it*-variant in *rude*-constructions might be explained by an ability of *rude*-constructions to "swap" the syntactic order of their arguments prior to *it*-extraposition[24] – a property that may be linked to the fact that those constructions are subject-gap constructions (as opposed to non-subject-gap TCs and PCs).

A tentative typology of the semantic and syntactic properties of *tough*, *rare*, *pretty*, and *rude* predicates can be found in Table 4 below.

Construction	THEME	REFERENCE	Gap	*it*-variant
tough/rare	infinitival clause	matrix subject	non-subject	✓
pretty	matrix subject	infinitival clause	non-subject	✗
rude	matrix subject	infinitival clause	subject	✓

A tentative typology of predicates with infinitival complements

To summarize, our analysis has three main implications.

1. unifies the semantics of *tough* by proposing one single lexical entry suitable to both fTCs and iTCs (*contra* [Keine and Poole, 2017]).

2. integrates *pretty* within a typology of predicates with infinitival complements, while providing an explanation of the ungrammaticality of iPCs.

3. brings new evidence in favor of a BASE-GENERATION approach applied to all varieties of TCs, without the need of an *ad hoc* θ-transmission mechanism between the matrix subject and a bound null operator.

[24] A signature of this special operation is the presence of the original matrix subject (e.g. *Gabby* in (53a)) within a demoted adjunct PP in the *it*-variant, reminiscent of passive constructions [Bennis, 2004]

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6 Appendices

6.1 Additional support for *tough* existentially quantifying over propositions

We show here that the existentially-quantified proposition introduced by the *tough*-predicate may scopally interact with the modal *want* in the following sentence [25] (the *tough*-predicate being *impossible* here).

(54) John wants to be impossible for Mary to include in her experiment.

If *impossible* indeed involves some existentially-quantified proposition, we expect (54) to have two possible readings:

- (*want* $>$ *impossible*): John wants to verify some property P such that P causes the *Mary-including-John* event to be impossible.
- (*impossible* $>$ *want*): there is a proposition q such that some property P of the *John-wanting-to-verify-q* event causes the *Mary-including-John* event to be impossible.

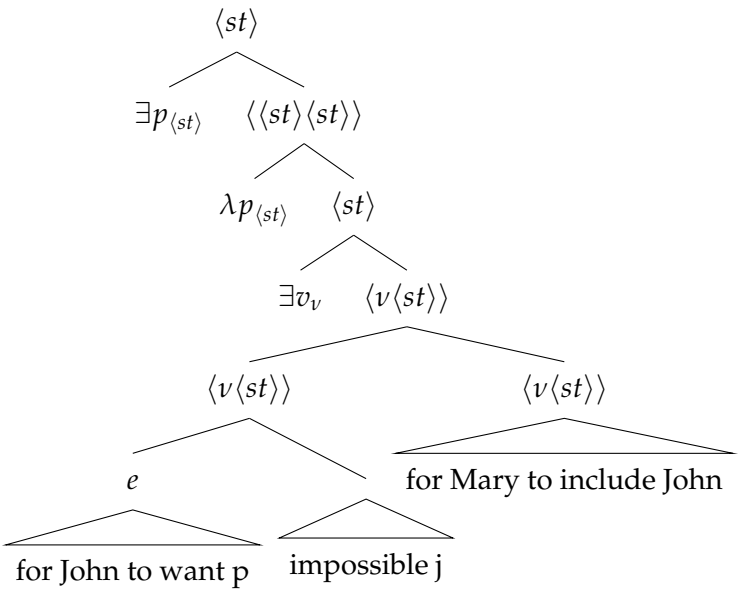
We now argue that (54) is compatible with the two following scenarios, which instantiate the (*want* $>$ *impossible*) reading and the (*impossible* $>$ *want*) reading respectively.

- **Background for both Scenarios**: *Mary wants to run a language learning experiment using Finnish as the target language. One exclusion criterion is that the participants should not be familiar with any Finnish words. John is a language nerd and a colleague of Mary who usually helps her as a guinea-pig in her pilots.*
- **Scenario A**: *John got recently upset with Mary, and does not want to help her this time. He heard that the exclusion criterion is knowing some words of Finnish, so he starts learning Finnish basics for Mary not to include him.*
- **Scenario B**: *As always, John is eager to help Mary, without even knowing the specifics of the experiment. However, John has been learning Finnish for quite a while now...*
- We think **Scenario A** is definitely compatible with (54); **Scenario B** appears more borderline but still okay (comments about it are welcome!).
- If indeed both Scenarios are allowed, we think that the scope interaction between *tough* and *want* could be accounted for by the following two Logical Forms:

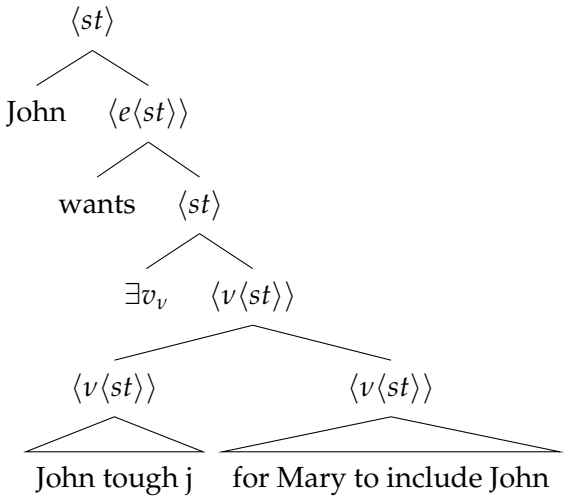
[25] This is heavily inspired by an example from [Nissenbaum and Schwarz, 2011] (itself inspired from [Heim, 2000]), whereby the following sentence is shown to have two readings:

(viii) John wants to be too rich for the monastery to hire him.

- Reading 1: John wants to be rich to a degree d such that d is too high for the monastery to hire John (*want* $>$ *too*)
- Reading 2: John wants to be rich to a degree d, and d happens to be too high for the monastery to hire John (*too* $>$ *want*)



(a) (*impossible* > *want* reading)



(b) (*want* > *tough*) reading

6.2 A type-mismatch issue in the case of *it*- and clause-fronted TCs

An issue that remains to be solved in the case of *it*-TCs is the following: if *it* refers to the embedded clause, then it is predicted to have type $\langle \nu \langle st \rangle \rangle$, which is not a suitable type for the REFERENCE argument (type e). The issue trivially extends to clause-fronted TCs. We present some evidence from French that the REFERENCE in clause-fronted TCs is covertly converted to an e-type (through a process close, if not identical, to that posited in e.g. [Fox, 2003]) We additionally show that French iTCs exhibit overt signs of the same sort of conversion. We start with clause-fronted TCs. (55b) is an alternative formulation of (55a) where the fronted clause seems to be overtly converted to a type-e, as evidenced by the presence of a definite article. This is done through the addition of "dummy" layer *fait de* ('the action'/'the act') which takes the original clause as a complement. Note that *de* is the standard genitive marker in French.

(55) a. **Envoyer ce paquet à Lisa** est difficile.
To-send this package to Lisa is tough.
To send this package to Lisa is tough.

b. **Le fait d' envoyer ce paquet à Lisa** est difficile.
The act DE to-send this package to Lisa is tough.
To send this package to Lisa is tough.

This datapoint may suggest that simple clause-fronted TCs contain a covert nominalizer akin to the overt *le fait de*. Interestingly, the very same genitive marker *de* is found in iTCs (56a), and not in fTCs such as (56b) which feature a different particle, *à* [Huot, 1981, Guerin, 2006, Aguila-Multner and Crysmann, 2022].

(56) a. **C'** est difficile **d' envoyer ce paquet à Lisa**.
This is tough DE to-send this package to Lisa.
It is tough to send this package to Lisa.

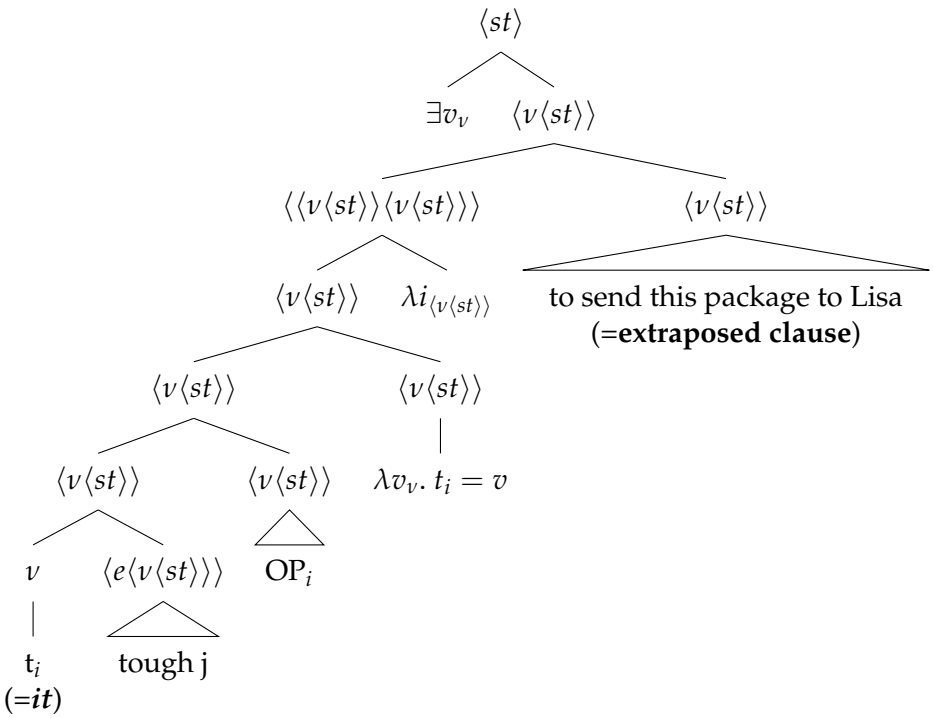
b. **Ce paquet** est difficile **à envoyer à Lisa**.
This package is tough À to-send this package to Lisa.
This package is tough to send to Lisa.

Left-dislocated clause-fronted TCs (57) also make use of the marker *de*.

(57) **D' envoyer ce paquet à Lisa, c'** est difficile.
DE to-send this package to Lisa, this is tough.
It is tough to send this package to Lisa.

This might suggest that iTCs actually derive from clause-fronted TCs featuring a *le fait de* layer. *It* would then result from the reduction of the stranded *le fait*, as *Le fait est difficile d'envoyer ce paquet à Lisa* is ungrammatical for some reason.[26] The upshot here is that the clausal REFERENCE argument in clause-fronted TCs and iTCs is interpreted as a type-*e* (or even more precisely, an event of type ν) which ends up being equated with the event variable bound by the embedded clause, as shown in Figure 4 below.

[26]Surprisingly, the clefted counterpart *Le fait **est qu'il** est difficile d'envoyer ce paquet à Lisa is fine*. I do not have any clear explanation for this contrast.



Solving the type-mismatch in iTCs through some "trace conversion" under a BASE-GENERATION approach

In addition to solving the initial type-mismatch problem, this account of French iTCs sheds light on the longstanding puzzle of the *à/de* alternation between fTCs and iTCs: we argue here that this alternation does not really exist, and that *de* rather alternates with a zero-marker present in garden-variety clause-fronted TCs.