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

Abstract

Tough-like predicates (Lees, 1960; Chomsky, 1964; Rosenbaum, 1967) are involved in an infinitival construction, dubbed *tough*-construction, which constitutes a long-standing paradox in generative linguistics. While *tough*-predicates do not appear thematically related to their subjects, any analysis proposing that the matrix subject originates in the complement clause of *tough*, encounters the issue of Improper Movement (Chomsky, 1986). Based on English and French data, we demonstrate that the interpretation of *tough*-constructions in fact depends on the properties of the matrix subject – supporting a base-generation analysis of such constructions. We then compare *tough*-constructions to the surface-similar *pretty*-constructions. We show that, under our view, *tough*-predicates differ minimally from *pretty*-predicates: both take the same kinds of arguments, but crucially, assign them to different syntactic slots. In addition to providing a more fine-grained and unified semantics for *tough* and *pretty*, this analysis explains a number of structural differences between *tough*- and *pretty*-constructions, regarding experiencer-intervention effects, long-distance dependencies, and the availability or unavailability, of an expletive alternation.

1 The paradox of tough-constructions

Predicates like *tough*, *impossible*, *annoying*,[1] are compatible with infinitival complements – forming constructions dubbed *tough*-constructions (henceforth TC). As first observed by Lees (1960) and Rosenbaum (1967) TCs allow both a "fronted" variant such as (1a) and a "*it*-variant" such as (1b). *Tough*-predicates also allow the whole infinitival clause to be fronted, as shown in (1c).

(1) a. **Jo** is tough to please. "Fronted" TC
b. **It** is tough to please Jo. "*It*" TC
c. **To please Jo** is tough. "Clause-fronted" TC

At first blush, the possibility of an "*it*"-variant suggests that TCs are akin to raising constructions. This is further supported by the observation that the matrix subject of fronted TCs does not seem to receive a THEME θ-role from the *tough*-predicate. For instance, in (1a), repeated below, Jo is not ascribed the property of being tough.[2]

(1a) **Jo** is tough to please. $\not\rightsquigarrow$ Jo is tough.

[1] Some nouns (e.g. *a pain*, *a pleasure*) and verbs (e.g. *frighten*, *amuse*) have been shown to behave like *tough*-predicates (Lasnik and Fiengo, 1974; Pesetsky, 1987; Gluckman, 2019). For simplicity, we will focus on adjectival predicates.

[2] There are a few cases where the *tough*-adjective seems to directly modify the matrix subject (Hornstein, 2001; Kim, 1995; Hicks, 2009). Such cases, exemplified in (i), are however restricted to a few possible matrix DPs, and might be analyzed as involving an elided, salient-enough infinitival complement, as in (ii). This implies that, even in purely predicative cases, the *tough*-predicate does not directly refer to any intrinsic property of the matrix subject, but rather to a property of the subject, *relative to a specific situation or event*.

It has thus been widely assumed that the matrix subject of fronted TCs receives its θ-role from the embedded predicate.[3] This is supported by the inference below, showing that Jo seems to act as the PATIENT of the embedded predicate *please*. The most natural way to explain this pattern is to assume that the matrix subject is base-generated in the embedded clause, and subsequently moves its final matrix position.

(1a) **Jo** is tough to please. $\rightsquigarrow$ Some people tried to please Jo.

The existence of a dependency between the matrix subject and the embedded object position is in fact supported by a variety of diagnostics for both A (Lasnik and Stowell, 1991; Mulder and den Dikken, 1992; Ruys, 2000), and Ā-movement (Chomsky, 1977, 1982; Rezac, 2006). More specifically, these tests imply that *tough*-movement is not raising proper, but instead involves Ā-movement at the embedded-level, followed by A-movement at the matrix level. But this kind of dependency, dubbed *Improper Movement* by Chomsky (1986), is robustly ungrammatical in other corners of English, e.g. in cases of hyperraising, as shown in (2) (Chomsky, 1973, 1981; May, 1979).

(2) a. * Jo seems that knows it all.
b. * Jo is believed that knows it all.

The major paradox posed by TCs is summarized in (3) below.

(3) *The paradox of tough-constructions.*

- The existence of "*it*"-TCs, and the role of fronted matrix subjects as PATIENT of the embedded predicate, suggest fronted TCs are derived *via* movement...
- but movement from an embedded position to the matrix subject position in TCs has "improper" features.

Previous approaches to *tough*-constructions tried to contend with this paradox in two main ways. First, LONG-MOVEMENT approaches (Rosenbaum, 1967; Postal, 1971; Brody, 1993; Hornstein, 2001; Hicks, 2009; Hartman, 2009) assume that the matrix subject originates in the embedded clause before moving to its final matrix position. Under that kind of view, the apparent thematic properties of the *tough*-subject are easily explained, as well as the existence of "*it*" variants. But additional assumptions are necessary to explain why the matrix subject escapes accusative case assignment, and, more importantly perhaps, why the Ā-A dependency characterizing *tough*-movement should not be seen as "improper". Recent LONG-MOVEMENT approaches, such as Hicks (2009) and Longenbaugh (2017), manage to circumvent Improper Movement while still predicting the right kind of A and Ā properties in TCs, but do so at the cost of positing the existence of a heavier syntactic machinery.

Second, BASE-GENERATION approaches (Ross, 1967; Lasnik and Fiengo, 1974; Chomsky, 1977; Rezac, 2006; Fleisher, 2015; Keine and Poole, 2017) posit that the *tough*-subject is base-generated in the matrix and binds (or agrees with) a null operator that has moved to the edge of the embedded clause. This process is assumed to ensure that the matrix subject inherits its PATIENT θ-role from the null operator (θ-transmission). BASE-GENERATION approaches provide a straightforward solution to the problem posed by accusative case-marking and Improper Movement, for the

(i) a. Your kids are easy.
b. This problem is difficult.

(ii) a. Your kids are easy ⟨to manage⟩.
b. This problem is difficult ⟨to solve⟩.

[3] See Lasnik and Fiengo (1974); Chomsky (1977); Hornstein (2001); Kawai et al. (2002) for alternative analyses.

element that undergoes Ā-movement (a null operator) is distinct from the element that undergoes A-movement (the matrix subject). Such accounts however, do not provide a principled explanation for the alternation between fronted and "*it*" variants of the construction. Relatedly, deriving the proper meaning for both variants of the TC under a BASE-GENERATION approach seems to require two separate lexical entries for *tough*, as proposed by Keine and Poole (2017). The two entries proposed by Keine and Poole are given in (4).

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

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

j, Q, x in (4a) respectively refer to a JUDGE-parameter, a function from individuals to propositions (corresponding to the gapped infinitival clause), and an individual (corresponding to the matrix subject). In (4b), p corresponds to a proposition denoting the (gapless) embedded clause. In both entries, $\mathcal{R}^j_w$ denotes the set of judge-world pairs compatible with j's beliefs in w. Crucially, it can be seen that the two entries differ in their type signature: the variant compatible with fronted TCs takes two main arguments (matrix subject and gapped infinitive); while the variant compatible with "*it*"-TCs only applies to the (gapless) embedded clause. Nevertheless, fronted- and "*it*"-TCs are predicted to convey the same global meaning once the computation of the sentence's meaning is completed; both entries end up stating that the proposition denoted by the embedded clause (where the potential gap is replaced by the matrix subject, if needed), is judged as *tough*, in all worlds compatible with the JUDGE's beliefs.

In this paper, we argue against the lexical ambiguity view of *tough*-predicates entertained by Keine and Poole (2017). We do so by showing that one of the premises of the paradox in (3), namely that the matrix subject does not thematically interact with the *tough*-predicate, is not accurate: the matrix subject in fact receives a θ-role from the *tough*-predicate, which is not THEME, but TRIGGER. We show that this view additionally allows to posit one single lexical entry for *tough*, therefore unifying fronted and "*it*"-variants of the TC. Lastly, it allows to directly relate *tough*-predicates to another class of predicates compatible with infinitival complements, namely, the *pretty*-class, also discussed by Keine and Poole (2017). The rest of this paper is constructed as follows: in section 2, we bring evidence for the fact that the matrix subject of fronted TCs semantically interacts with the *tough*-predicate, which leads us to introduce a new TRIGGER θ-role assigned by the *tough*-predicate to the matrix subject. We then propose an updated lexical entry for *tough* reflecting this observation. In section 3, we show how this analysis can extend to "*it*"- and clause-fronted TCs; in particular, we discuss data from French supporting the idea that the apparent expletive in "*it*"-TCs can be seen as a θ-bearing extraposition marker. We show that analyzing "*it*"-TCs as extraposed clause-fronted TCs allows to retain the same lexical entry for *tough*, and interpret the embedded clause as both THEME and TRIGGER. in section 4, we extend our analysis to the class of *pretty* predicates, which allow for gapped infinitival complements, but do not license an "*it*"-variant. We argue that *tough*-like and *pretty*-like predicates take the same kind of arguments (THEME, and TRIGGER), but crucially arrange them differently in the syntax. We show how this explains a range of structural contrasts between the two classes of predicates. Section 5 concludes by suggesting that our analysis 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; and *rude*-constructions Stowell (1991), which seem to share semantic properties with *pretty*-constructions and syntactic properties with *tough*-constructions.

2 *Tough*-arguments

Most past approaches to TCs assumed that, in fronted variants, the matrix subject receives a THEME θ-role from the embedded predicate, directly (LONG-MOVEMENT), or indirectly (BASE-GENERATION). This yields one key prediction: fronting distinct elements linked to various positions (direct object, indirect object, adjunct...) within the embedded clause, should not lead to any difference in meaning between the resulting fronted variants. In this section, we challenge this prediction and propose a new lexical entry for *tough* that we think better reflects the empirical picture.

2.1 Contrasting fronting strategies reveal a semantic interaction between the *tough*-predicate and its subject

Our key argument is based on the subtle contrasts in semantic interpretations induced by different fronting strategies, in TCs whose embedded clause involves more than one non-subject DP. (5a) and (5b) for instance, are two fronted TCs that only differ in that the embedded direct object is fronted in (5a), while the embedded indirect object is fronted in (5b). In (5c), the whole clause is fronted ("clause-fronted" variant).

(5) a. **This package** is tough for Jo to send to Al.
b. **Al** is tough for Jo to send this package to.
c. **For Jo to send this package to Al** is tough.

We argue that this syntactic difference translates into a difference in the sentences' truth conditions, in light of the following two scenarios, in (6) and (7). It appears that (5a) is compatible with scenario (6), but not scenario (7); while (5b) is compatible with scenario (7), but not scenario (6).

(6) "tough" object; "easy" recipient: *Jo has to send a **very bulky and heavy package** to Al. Al lives in **the same country** as Jo; had the package been a single letter, Joseph would have had no issues sending it to Al.*

(7) "tough" recipient; "easy" object: *Jo has to send a **very small and light package** to Al. Al lives **on a remote island, without any post office**. Had Al lived closer to Jo, Jo would have had no issues sending the package to Al.*

This contrast would be unexpected if (5a) and (5b) involved identical assignments of thematic roles, originating from the embedded predicate *send*. Instead, this contrast implies that the matrix subject position gets assigned a specific thematic role.[4] Additionally, the clause-fronted variant (5c), as well as the "*it*"-variant given in (8), seem to be compatible with *both* scenarios. This implies that whatever θ-assignment characterizes the matrix subject DPs in (5a) and (5b), is *not* identical to the θ-assignment received by these same DPs when they occur within the embedded clause.

(8) **It** is tough for Jo to send this package to Al.

[4] One could argue that the contrast in the sentences' truth-conditions is driven by focus. Embedding the TCs (5a) and (5b) in downward-entailing environments however, seem to preserve the contrast in adequacy between scenario (6) and (7).

(i) a. If **this package** is tough to send to Al, ask Ed.
b. If **Al** is tough to send this package to, ask Ed.

(ii) a. Ed doesn't think **this package** is tough to send to Al.
b. Ed doesn't think **Al** is tough to send this package to.

The same pattern can be replicated using an embedded control construction. In that case, the embedded object (9a), or the embedded controller (9b) can be fronted.

(9) a. **This book** is tough for Jo to convince Al to read.
b. **Al** is tough for Jo to convince to read this book.
c. **For Jo to convince Al to read this book** is tough.
d. **It** is tough for Jo to convince Al to read this book.

Similar to the ditransitive case, the two following contrasting scenarios are designed to tease apart the meanings of (9a) and (9b): (10) is compatible with (9a), but not (9b), while (11) is compatible with (9b), but not (9a). (9c) and (9d) appear compatible with both scenarios.

(10) "tough" object; "easy" controller: *The book in question is* ***extremely badly written and unpopular****. Even tough Al is very open-minded and enjoys reading all kinds of books, they are likely to refuse reading this one.*

(11) "tough" controller; "easy" object: *The book in question is extremely well-written and popular, but* ***Al simply hates reading in general****. They are likely to refuse reading this book.*

Let us try to intuitively phrase the difference between (5a) vs. (5b), and (9a) vs. (9b). In both (5a) and (5b), some salient property of the matrix subject (*being bulky*, *living far away*...) seems to cause the sending event to be "tough".[5] The same can be said of (9a) and (9b). This view can extend to the clause-fronted variants (5c) and (9c): in such cases it could be said that some property of the *sending* or *convincing* event (that could have something to do with any participant of such event), causes the event to be tough.

Therefore, for all fronted variants, it is understood that some specific trait of the subject justifies or triggers a *toughness* judgment. This is slightly different from saying that the subject itself, directly causes the embedded event to be *tough*. For this reason, we assume the matrix subject gets assigned the role of TRIGGER (and not, say CAUSER) by the tough predicate. The next section provides additional arguments in favor of this view.

2.2 Further evidence in favor of a TRIGGER role

We start by showing evidence from dummy pronouns and idioms that the *tough*-subject in fronted TCs is constrained by semantic considerations that are not a play in, for instance, raising-to-subject constructions. First, consider existential *there* in (12a) and "weather" *it* in (13a). Such elements can appear in raising-to-object constructions, as shown by (12b) and (13b) (Chomsky, 1981). These raising-to-object constructions themselves, can be embedded under a *tough*-predicate to form an "*it*"-TC, as shown in (12c) and (13c). What is not possible however, as noticed by Bayer (1990), is to have existential *there* or weather *it* as matrix subjects in *fronted* TCs. This is shown in (12d) and (13d). Lastly, keeping the embedding complexity constant, and replacing *tough* by a raising-to-subject predicate like *seem*, leads to a significant improvement, as shown in (12e) and (13e). [6]

(12) a. **There** is a party.

[5] This might also explain why (5a) is only mildly unacceptable given scenario (7): *being far from Al* is a property applicable to the package that, despite not being very salient, can make the sending event hard. In scenario (6) however, it appears nearly impossible to find a salient property of Al that would cause the *sending*-event to be tough, hence the plain infelicity of (5b) in that context.

[6] It has been argued that such constructions were not necessarily perfect, even when the extracted element is an argument Nanni (1978). But we still think a clear contrast is present between (12d)/(12e) and (13d)/(13e).

b. Jo believes **there** to be a party.
c. It would be difficult (for Jo) to believe **there** to be a party tonight.
d. * **There** would be difficult (for Jo) to believe to be a party tonight.
e. **There** seems to be believed to be a party tonight.

(13) a. **It** is raining
b. Jo believes **it** to be raining.
c. It would be difficult (for Jo) to believe **it** to be raining.
d. * **It** would be difficult (for Jo) to believe to be raining.
e. **It** seems to be believed to be raining.

What this paradigm suggests, is that subjects of fronted TCs are more restricted than subjects of raising predicates. More specifically, it seems that purely contentless subjects do not make good *tough*-subjects. This is consistent with our hypothesis that the matrix subject gets assigned the role of TRIGGER: to be a good TRIGGER, one must have a salient property triggering a *toughness*-judgment. Existential *there* and weather *it* cannot exhibit such a property.

Second, assuming the matrix subject of fronted TCs is assigned a TRIGGER role may shed light on the grammaticality of TCs with fronted idiom chunks. The possibility to front idiom chunks in TCs has been debated (Lasnik and Fiengo, 1974; Rezac, 2006; Hicks, 2009). As recently pointed out by Longenbaugh (2017), idioms chunks for which an independent (although not fully literal) meaning can be retrieved make better *tough*-subjects than purely metaphorical ones. The minimal pair in (14) illustrates this claim: (14a) appears better than (14b), potentially because *kick that habit* is felt to be more compositional than *kick the bucket*. In particular, the object *that habit* in *kick that habit* is directly related to the global meaning of the idiom, in a way that the object *the bucket* in *kick the bucket* is not.

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

The fact that the grammaticality of (14a) and (14b) seems to be tied to the literal interpretation of the *tough*-subject is unexpected under most pasts accounts of TCs, which predict that both (14a) and (14b) should exhibit the same degree of grammaticality.[7] Under the assumption that the *tough*-subject semantically interacts with the *tough*-predicate, the contrast in (14) appears less mysterious. (14a), can be easily understood as "there is a property about this habit that I have, that makes it hard to kick". (14b) on the other hand, cannot be understood as "there is a property of the bucket, that makes it hard to kick". The contrast is made possible by the sensitivity of the *tough*-predicate to the (more or less) idiomatic subject.

A last piece of evidence in favor of the matrix subject being assigned a separate θ-role, comes from AGENTIVITY tests. If the matrix subject was not assigned a specific θ-role by the *tough*-predicate, we would expect it to get its θ-role from the embedded predicate. In particular, if the embedded predicate is transitive, we would expect the matrix subject of a fronted-object TC not to have any agentive properties. This is not the case, as shown by the availability of the progressive

[7] Under LONG-MOVEMENT analyses, the matrix subject is expected to reconstruct, which predicts idiom chunks to make good *tough*-subjects across the board. BASE-GENERATION approaches on the other hand, do not allow reconstruction, and as such predict idiom chunks to make bad *tough*-subjects across the board.

aspect (cf. (15a)),[8] by the licensing of adverbs such as *deliberately*, *purposely* and *intentionally* (cf. (15b); Lasnik and Fiengo 1974; Hukari and Levine 1990), and by the possibility to add of a purpose clause modifying the matrix predicate (cf. (15c)). (16) shows how this contrasts with the case of raising constructions where a non-AGENT moves to the matrix subject position. In such cases, all AGENTIVITY tests (expectedly) fail.

(15) a. Jo is **being** tough to send this package to.
b. Jo is {**purposely/deliberately/intentionally**} tough to send this package to.
c. ? **In order for her not to waste her precious time**, Jo is tough to convince to read this book.

(16) a. * Jo is **being** likely to be sent this package.
b. ?? Jo is {**purposely/deliberately/intentionally**} likely to be sent this package.
c. ?? **In order for her not to waste her precious time**, Jo is unlikely to be convinced to read this book.

If we take that the TRIGGER role, unlike the PATIENT role, is compatible with agentive properties (in particular when the DP receiving the role is animate as in (15)), then, assuming that *Jo* gets assigned a TRIGGER role in the sentences in (15), but not in those in (16), allows to capture the observed contrasts.

2.3 A more fine-grained lexical entry for *tough*

We know flesh out the intuition that *tough*-predicates are sensitive to the semantics of their subject (dubbed TRIGGER). Although this observation is not new (see Bayer, 1990; Goh, 2000; Grover, 1995; Hukari and Levine, 1990; Kim, 1995; Schachter, 1981), none of the previous accounts explicitly fleshed it out by proposing a lexical entry for *tough*. We propose such an entry in (17).

(17) *An updated lexical entry for tough.*

$$\begin{aligned}[\![\text{tough}]\!]^j = \;& \lambda r_e.\, \lambda v_v.\, \lambda w_s. \\ & \exists P_{\langle e\langle st\rangle\rangle}.\, P(r)(w) \wedge \forall w'_s :\; R^j_w(w') \wedge P(r)(w') \wedge \textsc{Content}(v)(w) = \textsc{Content}(v)(w'). \\ & \textsc{Tough}(P(r))(v)(w') \\ \textsc{Content} \;& = \lambda v.\, \lambda w.\, \lambda w'.\, w' \text{is compatible with the content of v in w}\end{aligned}$$

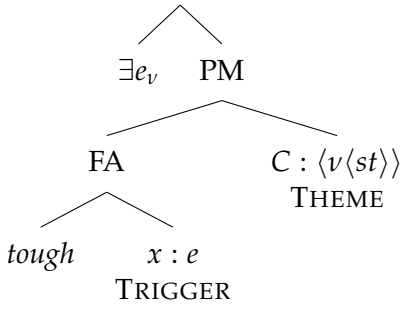
Before unpacking this definition, let us review basic assumptions about the semantics of infinitival clauses and *tough*-predicates. We assume, following Kratzer (2006) and Moulton (2009, 2015), that embedded clauses denote "properties of individuals with propositional content" (type $\langle e\langle st\rangle\rangle$), as a result of the action of the C-head, as formalized in (18). Following Gluckman (2021), we posit that infinitival clauses are properties of *events* (type v) with propositional content, where events are taken to be a subtype of individuals ($v \subset e$). This is applied to a concrete sentence in (18): *for Jo to please Al* ends up denoting the set of event-world pairs (v, w), such that the content of v in w is equal to the proposition *Jo pleases Al*. Infinitival clauses of this sort are expected to compose with *tough* (first applied to its TRIGGER argument) *via* Predicate Modification (Moulton, 2015; Gluckman, 2021). This gives rise to the simplified LF in (19). This LF shows that an additional layer of existential quantification over events allows to derive a propositional type for the whole sentence, after Predicate Modification takes place.

[8] The observation that the progressive forces AGENTIVITY with adjectives, is attributed to Barbara Partee by Dowty (1975).

(18) *The C-head lifts propositions into properties of individuals with propositional content.*

$$\begin{aligned} [\![\text{C}]\!] &= \lambda P_{st}.\, \lambda x_e.\, \lambda w_s.\, \textsc{Content}(x)(w) = P \\ \textsc{Content}(x)(w) &= \{w' \mid w' \text{ is compatible with the intentional content of } x \text{ in } w\} \\ [\![\text{for Jo to please Al}]\!] &= \lambda v_\nu.\, \lambda w_s.\, \textsc{Content}(v)(w) = \{w' \mid \text{Jo pleases Al in } w'\} \end{aligned}$$

(19)



Now back to our new entry in (17). *Tough* is parametrized by a JUDGE j and takes as first argument a TRIGGER r of type e. This argument, which is intended to correspond to the matrix subject, constitutes the key innovation of (17) and is supported by the data in (5) and (9), among others. The TRIGGER argument is understood as the individual whose salient property justifies j's *toughness* judgment. Further unraveling (17), after taking its TRIGGER argument, *tough* returns a property of events with propositional content, in line with Gluckman (2021)'s proposal. This translates as the set of event-world pairs (v, w) such that some property P that is true of the TRIGGER r in w "causes" the JUDGE j to believe the event v to be tough. What does it mean then for P to cause j to judge v tough? We model this kind of causation *via* universal quantification over the worlds w' that are (i) compatible with j's beliefs (i.e. such that $\mathcal{R}^j_w(w')$); (ii) where P still holds of r; and (iii) where the content of v remains unchanged ($\textsc{Content}(v)(w) = \textsc{Content}(v)(w')$). In those worlds, v is tough given $P(r)$ ($\textsc{Tough}(P(r))(v)(w')$).

What about the paraphrase of $\textsc{Tough}(P(r))(v)(w')$, or more generally, $\textsc{Tough}(Q)(v)(w')$, with Q a certain proposition? We submit that judging the toughness of an event v does not imply directly experiencing v. (20) for instance, shows that *tough*-statements can be produced about events (such as proving Goldbach's conjecture) that have not been completed in the actual world, and not even in the "judgment" worlds.

(20) **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.
Paraphrase given (17): there is something about Goldbach's conjecture, s.t. proving Goldbach's conjecture would be just as tough in any world I can think of where Goldbach's conjecture has the same property and where proving it involves the same things.

As a result, we propose that $\textsc{Tough}(Q)(v)(w')$ should further quantify over worlds that are almost exactly similar to the given "judgment" world w' (in particular, the triggering proposition Q is still expected to hold in those words), but where v *actually* takes place. In those worlds, it is stated that the AGENT of the event (possibly different from the original judge) has a hard time completing the said event.

(21) *Paraphrasing toughness in the judgment-worlds.*

$$\textsc{Tough}(Q)(v)(w') = \forall w'' : \textsc{Content}(v)(w')(w'')^{9} \wedge Q(w'').$$
$$\textsc{Agent}(v) \text{ has a hard time completing } v$$

An updated paraphrase for (20) is given below.

(20) **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.
Paraphrase given (17) and (21): there is something about Goldbach's conjecture, s.t. in any world I can think of where Goldbach's conjecture has the same property and where proving it involves the same things, it is true that any minimally differing state of such a world where the conjecture has the same key property and got proved, is s.t. whoever proved it struggled doing so.

It is worth noting that (21) defines TOUGH independently of j, which means that the JUDGE may not be involved in the *tough*-event *per se*. We think this is right, given (22). In (22) the speaker, who is forced to correspond to the judge, is totally excluded from the *Al-pleasing-Jo* event.

(22) **Jo** is tough for Al to please. I know Al does not realize it, but seeing it from the outside, this is quite obvious.
Paraphrase given (17) and (21): there is something about Jo, s.t. in any world I can think of where Jo has the same trait and where Al pleasing Jo involves the same things, it is true that any minimally differing state of such a world where Jo still has the same trait and is pleased by Al, is s.t. Al struggled pleasing Jo.

Back to (5a) vs. (5b): the contrast reflected by scenarios (6) and (7) is now captured assuming (17) and (21).

(5) a. **This package** is tough for Jo to send to Al.
Paraphrase given (17) and (21): there is something about the package, s.t. in any world Jo can think of where this package has the same trait and where sending it to Al involves the same things, it is true that any minimally differing state of such a world where the package still has the same trait and is actually sent to Al, is s.t. whoever sent it struggled doing so.

b. **Al** is tough for Jo to send this package to.
Paraphrase given (17) and (21): there is something about Al, s.t. in any world Jo can think of where Al has the same trait and where sending the package to Al involves the same things, it is true that any minimally differing state of such a world where Al still has the same trait and the package is actually sent to Al, is s.t. whoever sent it struggled doing so.

Regarding the clause-fronted variant (5c), one slight complication arises, which stems from the fact that infinitival clauses are typically properties of events with propositional content of type $\langle v\langle st\rangle\rangle$ (cf. (18)), while *tough*-subjects are expected to be individuals (including, possibly, events of type v). In order to convert the $\langle v\langle st\rangle\rangle$-type of the matrix clausal subject into a v-type, one should posit the existence of a covert definite applying to the infinitive and extracting the most salient

[9] Let us clarify the use of CONTENT here. By definition, CONTENT is a function that takes an event v and a world w, and returns the set of worlds compatible with the content of v in w. Saying that w'' verifies $\textsc{Content}(v)(w')$ amounts to saying that w'' is compatible with the content of v in w'. Looking back at the entry for *tough*, we note that w' is guaranteed to be such that $\textsc{Content}(v)(w') = \textsc{Content}(v)(w)$. So, by transitivity, w'' is guaranteed to verify $\textsc{Content}(v)(w)$, i.e., it is compatible with the content of v in the actual world. $\textsc{Content}(v)(w')(w'')$ therefore expresses that w'' is a world where v takes place.

element of the set it denotes. This process would be relatively similar to TRACE CONVERSION (Fox, 2003).[10] Additionally, we expect the clausal subject to bind a null proform in the complement of *tough*, which ensures that the infinitival clause fills the role of both TRIGGER and THEME in such constructions. Consequently, we expect clause-fronted TCs to roughly mean that the subject event causes itself to be tough. This is exemplified (and fleshed out) for (5c) below.

(5c) **For Jo to send this package to Al** is tough.
Paraphrase given (17) and (21): there is something about the salient Jo-sending-the-package-to-Al event, s.t. in any world Jo can think of where this sending event has the same trait and involves the same things, it is true that any minimally differing state of such a world where the sending event still has the same trait and the package is actually sent to Al, is s.t. whoever sent it struggled doing so.

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 (e.g. $\textsc{Tough}(Q)(v)(w')$), whose semantics depends on the particular *tough*-predicate at stake, and a causative "wrapper" ($\textsc{Caus}(j,r,v,w,\textsc{Pred}) = \exists P : P(r)(w) \wedge \forall w' \ldots$) which incorporates the role of the new TRIGGER argument and quantifies over possible worlds to model causation. Thus, predicates of the *tough*-class can be rephrased as roughly "TRIGGER causes JUDGE to evaluate EVENT as PRED". While the causative wrapper is expected to remain constant across predicates of the *tough*-class, the core meaning is expected to change. This is summarized in (23).

(23) *Generalizing (17) and (21) to other tough-predicates.*

$$
\begin{aligned}
[\![\text{pred}]\!]^j = \;& \lambda r_e.\, \lambda v_v.\, \lambda w_s.\, \textsc{Caus}(j,r,v,w,\textsc{Pred}) \\
\textsc{Caus}(j,r,v,w,\textsc{Pred}) = \;& \exists P_{\langle e\langle st\rangle\rangle}.\, P(r)(w) \wedge \\
& \forall w'_s :\; B^j_w(w') \wedge P(r)(w') \wedge \textsc{Content}(v)(w) = \textsc{Content}(v)(w'). \\
& \textsc{Pred}(P(r))(v)(w') \\
\textsc{Impossible}(Q)(v)(w') = \;& \neg\exists w''.\, \textsc{Content}(v)(w')(w'') \wedge Q(w'') \\
\textsc{Fun}(Q)(v)(w') = \;& \forall w'' :\; \textsc{Content}(v)(w')(w'') \wedge Q(w'').\ \textsc{Agent}(v) \text{ has fun in } v
\end{aligned}
$$

The key point of this section is therefore the following: *tough* takes its subject as a proper semantic argument and assigns a TRIGGER θ-role to it. This view is in line with a BASE-GENERATION account of TCs, which additionally does not require to stipulate a θ-transmission mechanism between the embedded null-operator and the matrix subject. Clause-fronted TCs, like DP-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 matrix clause plays the role of the TRIGGER, while the coreferential embedded null operator plays the role of the THEME. In the next section, we explore further predictions of this account, in particular regarding "*it*"-TCs.

3 Back to "*it*" TCs

The existence of a semantic interaction between the *tough*-predicate and its subject makes interesting predictions regarding "*it*"-TCs like (1b), repeated below. In this section, we show how the analysis laid out in the previous section can extend to such cases, providing a more unified view of fronted and "*it*"-TCs.

(1b) **It** is tough to please Jo.

[10] It is also worth noting that this process can be taken to have overt counterparts in languages such as French, in the form of periphrases such as *le fait de* ('the deed of') (*Le fait d'envoyer ce paquet est difficile*, 'The deed of sending this package is tough'). In English, gerunds could be taken to achieve a similar function, in e.g. *Sending this package is tough*.

3.1 Matrix *it* in TCs is (sometimes, at least) contentful

The existence of a TRIGGER argument in fronted TCs raises the question of the nature of the *it* subject in "*it*" TCs. Is this subject contentful? We argue that the answer is yes. Supporting evidence comes from French. In that language, the "*it*" present in TCs can be expressed *via* two kinds of pronouns *il* (glossed it_R, for "Raising"), and *ça*/*cela* (glossed it_T, for "Tough"). (24) exemplifies this.

(24) { Il / Ça } sera difficile de trouver Jo.
{ It_R / It_T } will-be tough to find Jo.
'It will be tough to find Jo.'

Interestingly, *il* is the only pronoun allowed in raising constructions, as shown in (25). It is also the only option in impersonal "weather"-sentences (26) and the impersonal *falloir*-construction (27-28).

(25) { **Il** / ***Ça** } semble que Jo mène.
{ It_R / It_T } seems that Jo is-winning.
'It seems that Jo is winning.'

(26) { **Il** / ??**Ça** } neige bien ce matin.
{ It_R / It_T } snows a-lot this morning.
'It is snowing a lot this morning.'

(27) { **Il** / ***Ça** } faut que Jo achète du pain.
{ It_R / It_T } must that Jo buy some bread.
'Bruno must buy bread.'

(28) { **Il** / ***Ça** } me faut acheter du pain.
{ It_R / It_T } I.CL must to-buy some bread.
'I must buy bread.'

The pronoun *ça* on the other hand, has been argued to be is a "uniformly referential, θ-bearing pronoun" (Kayne, 1983; Pollock, 1983; Jaeggli, 1981; Zaring, 1994). It is indeed found in positions that are clearly thematic in French, such as the anaphoric pronoun in subject-doubling constructions (Jaeggli, 1981; Roberge, 1986; De Cat, 2007). (29a) and (29b) exemplify this.

(29) a. La lavande$_i$, { ***il**$_i$[11] / **ça**$_i$ } sent bon.
The lavender, { $\textbf{it}_R$ / $\textbf{it}_T$ } smells nice.
'Lavender smells nice.'

b. Aller au théâtre$_i$, { ***il**$_i$ / **ça**$_i$ } change les idées.
To-go to-the theatre, { $\textbf{it}_R$ / $\textbf{it}_T$ } changes the ideas.
Intended: 'Going to the theatre clears your head.'

The key takeaway from French is that in this language "*it*"-TCs license a θ-bearing pronoun as *tough*-subject. 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 $\textit{it}_{\text{expl.}}$ (=*il*) would be used in raising and "weather" constructions, and $\textit{it}_{\text{ref.}}$ (=*ça*) would be used in at least a subset of "*it*"-TCs.

[11] Because the antecedent (*lavande*) is feminine, *il* here cannot be confused with the masculine personal pronoun (also realized as *il*), whose Φ-features would not match those of its antecedent.

Two questions remain. First, the availability of *il* in French "*it*"-TCs is somewhat mysterious if all *tough*-subjects *need* to be contentful. One possible explanation is that *il* in TC is understood as the (referential) masculine third person singular pronoun. But even if *il* were not referential, the mere possibility of *ça*, which is unambiguously *in need* of a θ-role, as a *tough*-subject, suggests that a specific θ-role should be assigned to the matrix subject position in at least a subset of the cases. The second question, is why English *this* cannot play the same role as French *ça* in TCs. While we do not have a principled explanation for this discrepancy, it is worth noting that English *this* cannot serve as an extraposition marker, while French *ça* and English *it* can. We explore the implications of this observation in the next section.

3.2 *It*-TCs have share properties with extraposed constructions

We showed that *it* in TCs is at least sometimes, a referential expression. What does *it* refer to then? First, it is worth noticing that "*it*" TCs can be seen as part of an alternation that has been so far overlooked in the *tough*-movement literature: namely the alternation with clause-fronted TCs. This alternation, repeated in (1b) and (1c), is unavailable in raising constructions, as shown by (31a) and (31b).

(30) (1b) **It** is tough to please Jo.
(1c) **To please Jo** is tough.

(31) a. **It** seems that Jo is nice.
b. * **That Jo is nice** seems.

This suggests that *it* in TCs may be related to the embedded clause in a way that *it* in raising constructions is not; and more precisely, that *it* in TCs can be cataphoric pronoun referring to the embedded clause. "*It*"-TCs would then be analyzed in a similar way as *it*-extraposed sentences featuring rightward CP-movement, as exemplified in (32) and (33).

(32) a. **It** was frustrating **that Ed lost the book**.
b. **That Ed lost the book** was frustrating.

(33) a. We suggested **it** to them **that we leave later than planned**.
b. We suggested **that we leave later than planned** to them.

Evidence supporting this analysis can again be found in French. In this language, infinitival extraposed constructions, just like "*it*"-TCs, preferentially make use of the pronoun *ça*. A few examples of such extraposed constructions are given in (34-36) below.[12] It is also worth noting that the infinitival clause of such constructions is consistently introduced by the particle *de*, just like the infinitival complement of French "*it*"-TCs (see e.g. (24) above).

(34) a. { **??Il** / **Ça** } vaut le coup d' acheter le ticket groupé.
{ ??It$_R$ / It$_T$ } 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.'

[12] The c. examples are intended to show that the constructions at stake do not allow fronting of the embedded object, and are thus distinct from TCs.

(35) a. { ***Il*** / **Ça** } demande du courage de faire ce travail.
{ *It$_R$ / It$_T$ } 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.'

(36) a. { ***Il*** / **Ça** } me détend considérablement d' écouter de la musique.
{ *It$_R$ / It$_T$ } 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.'

Another diagnostic for extraposition in English and French is based on the observation that extraposed constituents are frozen to further extraction (Ross, 1967; Cattell, 1976; Huang, 1982; Chomsky, 1986). In particular, *wh*-extraction is impossible out of an *it*-extraposed CP, as shown by (37b).

(37) a. Al mentioned (**it**) to Jo **that Ed lost the book.**

b. **Which book** did Al mention (***it***) to Jo that Ed lost?

Wh-extraction becomes slightly more acceptable if extraposition proceeds from the subject position, both in English (38b) and French (39).

(38) a. **It** was frustrating **that Ed lost the book**.

b. ? **Which book** was **it** frustrating that Ed lost?

(39) a. ? **Qu'** est-ce que **ça** vaut le coup d' acheter?
What is-it that it$_T$ is-worth the shot DE buy?
Intended: 'What is worth it to buy?'

b. ? **Qu'** est-ce que **ça** demande du courage de faire?
What is-it that it$_T$ asks some courage DE do?
Intended: 'What takes courage to do?'

c. ? **Qu'** est-ce que **ça** te détend considérablement d' écouter?
What is-it that it$_T$ you relaxes a-great-deal DE listen-to?
Intended: 'What relaxes you a great deal whenever you listen to it?'

As (40b) shows, the infinitival complement of English "*it*"-TCs verifies the freezing constraint as well – at least as much as (38b) does. This is also the case for French *ça*-TCs (41b), but not *il*-TCs (41c).[13]

[13]This contrast between *ça* and *il* with respect to *wh*-extraction had already been noted by Zaring (1994) and Shahar (2008) for constructions other than the TC in French.

(40) a. **It** is tough to send this package to Al.
b. **Which package** is (**?it**) tough to send to Al?

(41) a. {**Il**/**C'**} est difficile **d' envoyer ce colis à Al**.
{It$_R$/It$_T$} is tough DE send this package to Al.
'It is tough to send this package to Al.'
b. ?? **Quel colis** est-**ce** difficile d' envoyer à Al?
Which package is-it$_T$ tough DE send to Al?
Intended: 'Which package was such that it was tough to send it to Al?'
c. **Quel colis** est-**il** difficile d' envoyer à Al?
Which package is-it$_R$ tough DE send to Al?
'Which package was such that it was tough to send it to Al?'

In brief, the infinitival clause of "*it*"-TCs patterns like an extraposed constituent. This implies two things. First, "*it*"-TCs result from the extraposition of the (clausal) subject of a clause-fronted TC. Second, *it* in TCs can be seen as coreferential with the infinitival clause, i.e. "*it*"-TCs have a clausal TRIGGER, just like clause-fronted TCs. We review the consequences of this last prediction in the next section.

3.3 *It-tough*-constructions have a clausal TRIGGER

We established that *it* in TCs can be contentful, and in such cases refers to the infinitival clause. This allows the lexical entry of *tough* defined in (17) to apply to "*it*"-TCs, just like it applies to clause-fronted TCs. In particular, *it*, being the TRIGGER, is expected to refer to the ν-type interpretation of the infinitival clause (obtained by the action of a covert definite determiner, cf. our discussion on the clause-fronted variant (5c)), binding a THEME null proform referring to the $\langle \nu \langle s, t \rangle \rangle$-version of the clause. This predicts (5c) and (8), repeated below, to have the same truth conditions:

(5c) **For Jo to send this package to Al** is tough.

(8) **It** is tough for Jo to send this package to Al.

More specifically, (5c) and (8) should be true iff some property P of a salient *Jo-sending-this-package-to-Al* event is causing its own toughness. Assuming that P can be about any *participant* of the event (e.g. *the package* or *Al*) or the action itself (*sending*), (5c) and (8) are predicted to be relatively acceptable in both scenario (6) and scenario (7), repeated below.

(6) "tough" object; "easy" recipient: *Jo has to send a* ***very bulky and heavy package*** *to Al. Al lives in* ***the same country*** *as Jo; had the package been a single letter, Joseph would have had no issues sending it to Al.*

(7) "tough" recipient; "easy" object: *Jo has to send a* ***very small and light package*** *to Al. Al lives* ***on a remote island, without any post office****. Had Al lived closer to Jo, Jo would have had no issues sending the package to Al.*

We think that this prediction is borne out. Besides being compatible with scenarios (6) and (7), (5c) and (8), unlike their DP-fronted alternatives (5a) and (5b), should also be compatible with scenario (42), where the toughness is induced by the *sending* event as a whole:

(42) "easy" object; "easy" recipient; "tough" event: *Jo has to send a small and lightweight package to Al, who lives in the same country as Jo. However,* ***the local post office has a very restricted schedule****, and always ends up crowded; Jo expects a 3-hour line to send his package.*

Additionally, this account successfully predicts the (in)felicity of the following sequences.

(43) a. # **It** is not tough **for Jo to send this package to Al**. Yet, **for Jo to send this package to Al** is tough.

b. It's not the case that **this package** is tough for Jo to send to Al. Yet, **it** is tough **for Jo to send this package**.

c. It's not the case that **Al** is tough for Jo to send this package to. Yet, **it** is tough **for Jo to send this package**.

Let us take stock. In assuming the matrix subject of TCs was not a proper argument of *tough*, previous BASE-GENERATION approaches 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 fronted and "*it*"-TCs (cf. Keine and Poole, 2017). By showing that the subject of "*it*"-TCs was likely to be as contentful as DP-like or clausal subjects in fronted TCs, we made way for a simpler version of the BASE-GENERATION approach, applicable to both fronted TCs and "*it*"-TCs. This approach involves a single lexical entry for *tough*, as defined in (17), and no longer appeals to θ-transmission, since the matrix subject (whatever it is) is assumed to receive its own TRIGGER θ-role directly from the *tough*-predicate.

4 The "*pretty*" twist

We now turn to the class of *pretty*-predicates, and show that such predicates differ minimally from *tough*-predicates, in that they take the same kinds of arguments (in particular, a TRIGGER), but assign them to different syntactic slots. We then show that this distinction, supplemented by the idea that *pretty*, unlike *tough*, requires direct perception, explains three main structural differences between TCs and PCs: the (im)possibility of further embedding within the complement clause (seen as a subcase of predicate selectivity), the (un)availability of an intervening *for*-experiencer in fronted variants; and the (un)availability of a clausal or *it* subject.

4.1 Contrasting *tough*- and *pretty*-predicates

Pretty-like predicates, such as *delicious*, *fragrant*, or *melodious*, are compatible with a missing-object infinitival clause (44a), just like predicates of the *tough*-class. By analogy with TCs, such constructions were dubbed *pretty*-constructions (henceforth, PC). The key difference between the *pretty* and the *tough*-class however, is that the former neither allows for an "*it*"-variant, as shown in (44b) (Lasnik and Fiengo, 1974), nor for a clause-fronted variant, as shown in (44c).

(44) a. **This painting** is pretty to look at.

b. * **It** is pretty to look at **this painting**.

c. * **To look at this painting** is pretty.

Relatedly, *pretty* predicates, unlike *tough*-predicates, seem to take their matrix subject as a THEME argument. (44a) for instance, leads to the inference that *the painting* is pretty.

(44a) **This painting** is pretty to look at. $\rightsquigarrow$ This painting is pretty.

Pretty-THEMES often, if not always, denote individuals or reified (nominalized) events which can give rise to sensory experiences, as supported by the contrast in (45) vs. (46a) and (46b). This contrasts with *tough*-predicates, which we argued (following Gluckman, 2021) were modifiers of event properties.

(45) **Jo performing his gymnastics routine** is pretty to watch.

(46) a. ?? **This idea** is pretty to contemplate.

b. ?? **The memory I have of this painting** is pretty to remember.

Additionally, *pretty*-predicates require direct perceptual evidence from the point of view of the JUDGE (Pearson, 2012; Hirvonen, 2016). As an example, it seems impossible refer to a cake as *tasty to eat* without having tasted it (47a); embedding under *seem* makes it possible (47b). This again contrasts with *tough*-predicates, which do not require the event denoted by the embedded clause to take place in the worlds where *toughness* is evaluated (cf. (20)).

(47) a. Yesterday was Ed's birthday. There were a lot of food and a big birthday cake. Even if this cake **was** delicious to eat as dessert, { #I / Al} did not get to try it.

b. Yesterday was Ed's birthday. There were a lot of food and a big birthday cake. Even if this cake **seemed** delicious to eat as dessert, { I / Al} did not get to try it.

A last thing to note at that point is that *pretty*-predicates are compatible with a fairly restricted range of embedded predicates:

(48) a. **Those flowers** are pretty to {look at/admire/contemplate/*grow/*pluck/*buy}.

b. **This cherry pie** is tasty to {eat/savour/devour/*bake/*share/*buy}.

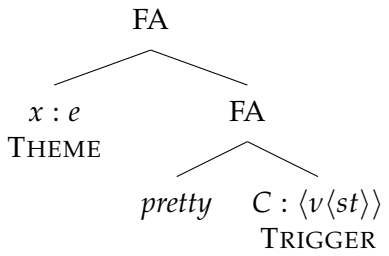
The kind of infinitival clauses compatible with *pretty*-predicates seem to denote events of perception, which are susceptible to directly trigger a *prettiness* judgment. In other words, it appears that *pretty*-predicates take their infinitival complement as TRIGGER argument. This contrasts with *tough*-predicates, for which the TRIGGER was the (nominal or clausal) matrix subject.

4.2 Fleshing ou *pretty*

Keine and Poole (2017) first established a parallel between *tough*- and *pretty*-constructions, with the goal to show that both constructions were amenable to a BASE-GENERATION analysis. If their approach defined two entries for *tough* (cf. (4)), no entry for *pretty* was explicitly proposed, although it was implicitly assumed that *pretty* should have the same type signature as $tough_{\text{FRONTED}}$. This account thus left unexplained the intuition that *pretty*-predicates primarily apply to the individual denoted by the matrix subject (THEME) while still incorporating the information provided by the embedded clause. More fundamentally perhaps, Keine and Poole's lexical-ambiguity account did not predict any semantic difference between fronted- and "*it*"-TCs as a whole (despite differences in the lexical entry for *tough*); and therefore, it could not provide a principled explanation as to *why* other categories of predicates (e.g., the *pretty*-class), do *not* exhibit the same kind of ambiguity at the lexical level. In the following, we attempt to extend and clarify Keine and Poole's view on *pretty*-predicates, by suggesting that *pretty* takes the same kinds of thematic arguments as *tough*, but crucially assigns them to different syntactic slots.

More specifically, we take that *pretty* combines with the infinitival clause (its TRIGGER argument) *via* Functional Application, just like *tough* was assumed to do with its subject. *Pretty* then returns a property of individuals, combining with the matrix subject (THEME) *via* Functional Application, as well. We assume that the infinitival clause is a property of events with propositional content (as we did for TCs, cf. (18)). This is summarized by the LF in (49).

(49)



The lexical entry for *pretty*, given in (50), then minimally differs from that of *tough*.

(50) *A lexical entry for pretty.*

$$[\![\text{pretty}]\!]^j = \lambda C_{\langle \nu\langle st\rangle\rangle}.\ \lambda x_e.\ \lambda w_s.\ \exists P_{\langle\langle \nu\langle st\rangle\rangle st\rangle}.\ P(C)(w) \wedge \forall w'_s : w' \in \mathcal{R}^j_w \wedge P(C)(w').\ \textsc{Pretty}(x)(w')(j)$$

Pretty is parametrized by a JUDGE j and takes as first argument a TRIGGER C of type $\langle \nu\langle st\rangle\rangle$. This argument, which is intended to correspond to the embedded clause, is understood as the element whose salient property justifies j's *prettiness* judgment. After taking its TRIGGER argument, *pretty* returns the set of individuals x, such that some property P that is true of the TRIGGER C in w "causes" j to find x pretty. What could such a salient property P be? Recall C is a property of events with propositional content. P is a property of such a property, i.e., applies to C and a world w to yield a truth condition. How to create a truth condition out of a clause C of type $\langle \nu\langle st\rangle\rangle$ and a world w of type s then? The most obvious option is to apply C to a bound event v, and to w, to produce an element of type t: $C(v)(w)$. The bound event could be introduced by some form of quantification, for instance, existential quantification. A salient P would then state that there is an event whose content corresponds to the proposition denoted by the embedded clause. This is summarized in (51). (52) updates the entry for *pretty*, taking the assumption of (51) into account.

(51) $P \in \{\lambda C_{\langle \nu\langle st\rangle\rangle}.\ \lambda w_s.\ \exists v_\nu.\ C(v)(w)\}$

(52) *A lexical entry for pretty, assuming the salient property P has to take the form of (51).*

$$[\![\text{pretty}]\!]^j = \lambda C_{\langle \nu\langle st\rangle\rangle}.\ \lambda x_e.\ \lambda w_s.\ \exists v_\nu.\ C(v)(w) \wedge \forall w'_s : w' \in \mathcal{R}^j_w \wedge \exists v'_\nu.\ C(v')(w').\ \textsc{Pretty}(x)(w')(j)$$

Further unraveling (52), after taking its TRIGGER argument, *pretty* returns the set of world-event pairs (w, v) such that the CONTENT of v in w is equal to the proposition denoted by the embedded clause C (i.e. v is a "verifier" of $C(.)(w)$), and such that in any world compatible with j's beliefs in w where a verifier of C v' can be found, x is judged as pretty by j ($\textsc{Pretty}(x)(w')(j)$). We assume that this relation requires direct perception, which means that, for j to judge x as pretty in w', j and x must perceptually interact in w'. In other words, j has to be a participant of the trigger event. A paraphrase for (44a), given this entry, is given below.

(53) To Jo, **this painting** is pretty to look at.
Paraphrase given (52): there is an event that is about *Jo-looking-at-the-painting*, s.t. in any world Jo can think of where a *Jo-looking-at-the-painting* event takes place, Jo directly judges the painting as pretty.

Given this definition of *pretty*, we now proceed to explain three structural contrasts between *tough*- and *pretty*-constructions. Our account derives these restrictions from an interaction between syntactic and semantic properties of the *tough*- and *pretty*-class of predicates.

4.3 Embedded predicate selectivity

The fact that the embedded clause is understood as the TRIGGER argument in PCs can explain why such constructions exhibit a high degree of selectivity in the kind of predicate they embed: not all kind of events can reliably cause a *prettiness* judgment across *all* worlds epistemically accessible from the point of view of the judge. For instance, replacing *look at* by *buy* in (53) causes oddness, at least in out-of-the blue contexts. This is explained by the paraphrase in (54): there is no reason to think that in all worlds where the painting is bought by Jo, the painting has to be judged as pretty.

(54) # To Jo, **this painting** is pretty to buy.
Paraphrase given (52): there is an event that is about *Jo-buying-the-painting*, s.t. in any world Jo can think of where a *Jo-buying-the-painting* event takes place, Jo directly judges the painting as pretty.

In a context where Jo is taken to be a very materialistic person, for whom the aesthetic value of an object directly depends on its monetary value, (54) significantly improves.

(55) To Jo, this painting is not pretty to look at. To Jo, this painting is pretty to buy.

This selectivity can be compared to the selectivity of *tough*-predicates with respect to their *subject*: we saw for instance that not all idioms make good *tough*-subjects, because they do not always have the relevant property to trigger a toughness judgment in all accessible worlds. We also observed that *tough*-predicates cannot take pure dummies as subject, because such items lack the relevant triggering property altogether.

We think that this line of analysis extends to another contrast between TCs and PCs, which was previously taken to be of a syntactic nature. TCs, unlike PCs, allow for their infinitival complement to feature further embedding. This kind of contrast is exemplified in (56), with the embedded control predicate *convince*.

(56) a. **This painting** is tough to convince Al to study.
b. * **This painting** is pretty to convince Al to look at.

This contrast may seem syntactic at first blush: it may be that TCs and PCs have fundamentally different structures, the latter construction selecting for a small clause, for instance. But a syntactic approach alone would not explain why the selectional properties of *tough*- and *pretty*-predicates could not in principle be swapped. Instead, we propose that the difference in embeddability between TCs and PCs can be analyzed as a case of predicate selectivity: PCs are generally incompatible with further embedding, because the predicates that allow such embedding (e.g. raising or control predicates) rarely create events that make good TRIGGERS for a prettiness judgment, at least out-of-the-blue. To better see the issue, let us paraphrase (56a) and (56b), given our entries for *tough* and *pretty*.

(56) a. **This painting** is tough to convince Al to study.
Paraphrase given (17) and (21): there is something about the painting, s.t. in any world I can think of where this painting has the same trait and where convincing Al to study it involves the same things, it is true that any minimally differing state of such a world where the painting still has the same trait and is s.t. Al get convinced to study it, is s.t. whoever convinced Al struggled doing so.
b. # **This painting** is pretty to convince Al to look at.
Paraphrase given (52): there is an event that is about *me-convincing-Al-to-look-at-the-*

painting, s.t. in any world I can think of where a such a convincing event takes place, I directly judge the painting as pretty.

The problem with the paraphrase of (56b), is that the action of convincing someone to look at a painting generally does not make a good TRIGGER for a *prettiness* judgment, because it is not essentially tied to a direct perceptual experience of the relevant object. Such a problem does not arise in the TC (56a), because it is reasonable to consider a *convincing* event (THEME of the TC) as *tough*. If the issue with (56b) is indeed semantic, we expect it to improve in specific scenarios manipulating the set of epistemically accessible worlds in such a way that a *convincing* event becomes more likely to be tied to an aesthetic judgment. We think that it is the case.

(57) *Scenario: Jo is a very insecure artist. She will only judge her paintings as pretty if she can see that other people look at them intensely.*
? To Jo, this painting is not pretty to look at. To Jo, this painting is pretty to watch other people look at intensely.

(58) *Scenario: Jo has a sweet tooth but hates being forced to do things. If she is forced to eat something for instance, there is no way she will enjoy it.*
To Jo, this cherry pie is not disgusting to eat. To Jo, this cherry pie is disgusting to be compelled to eat.

In brief, the apparent ungrammaticality of long-distance dependencies in PCs may be caused by the conspiration of two semantic properties. The first is that predicates from the *pretty*-class require direct sensory evidence to induce a judgment, which in the general case entails that the embedded clause denotes an event of a perceptual nature. The second semantic restriction is that embedding predicates (raising, control, attitudes...) do not generally convey an idea of direct sensory experience.

4.4 Experiencer intervention

The licensing of overt experiencers in TCs and PCs is a debated topic (Hartman, 2009; Bruening, 2014; Keine and Poole, 2017). The main datapoints are the following. Unambiguously prepositional experiencers are degraded in both fronted TCs and PCs, at least when adjacent to the embedded clause (59). They however appear fine in "*it*"-TCs (60).

(59) a. **This painting** is important (*to Jo) to study.
b. **This painting** is pretty (*to Jo) to look at.

(60) It is important to Jo to study this painting.

Experiencers introduced by *for* appear fine in all kinds of TCs, as shown by (61a) and (62), but degraded in PCs (61b). Such experiencers, when adjacent to the embedded clause, are in principle ambiguous between matrix PPs and CP-internal DPs (Hartman, 2009).

(61) a. **This painting** is tough (for Jo) to study.
b. **This painting** is pretty (*for Jo) to look at.

(62) It is tough for Jo to study this painting.

These data suggest that PCs rule out all kinds of experiencers (PPs, and CP-internal), that fronted TCs only disallow PP-experiencers, and that "*it*"-TCs allow PP-experiencers, and possibly CP-experiencers, as well. We think our analysis can account for this pattern. Regarding TCs, there is no reason (neither syntactic, nor semantic) to rule out experiencers when they are part of the

embedded CP, as we argued that the AGENT of the embedded clause could very well differ from the matrix JUDGE. So, (61a) and (62) are predicted to be rescued by the CP-parse of their overt experiencers (as already pointed out by Hartman). Regarding PP-experiencers, we can assume that they constitute adjuncts of the *tough*-predicate and as such cannot be linearized between *tough* and its clausal complement in (59a). What about (60) then? Recall that we assumed "*it*"-TCs are extraposed clause-fronted TCs; in other words, the overt realization of the infinitival clause in such constructions is merged high enough for a PP-adjunct to be linearized between them and the *tough*-predicate. This, we think, explains the acceptability of a PP-experiencer in (60).

Regarding PCs, we suggest semantic and syntactic constraints conspire to rule out overt experiencers across the board. In the case of unambiguous PPs (59b), assuming such PPs are adjuncts to the *pretty*-predicate allows to cash out ungrammaticality in terms of a linearization issue (just like in the TC case, (59a)). In the case of an ambiguous *for*-experiencer (61b), we argue PCs cannot be rescued by a CP-parse, due to the semantic requirement that the *prettiness* judgment involve direct perception by the matrix judge, in *all* epistemically accessible worlds where the embedded event takes place. For this to hold, the matrix judge should themselves be a participant of the embedded event in all epistemically accessible worlds where it takes place. This can be ensured on the syntax side by assuming that the embedded clause of PCs, unlike that of TCs, obligatorily features JUDGE-control, which, in turn, forces the embedded subject to be silent. This kind of analysis is outlined in (63) – struck-through element are assumed to undergo PF-deletion.

(63) a. ~~For me$_i$,~~ This painting is pretty ~~for~~ PRO$_i$ to look at.
b. ~~For me$_i$,~~ This painting is pretty for Jo$_{*i}$ to look at.
c. For Jo$_i$, this painting is pretty ~~for~~ PRO$_i$ to look at.

4.5 Incompatibility of *pretty*-predicates with clausal and *it* subjects

We saw that TCs allow for "*it*"- and clause-fronted variants, while PCs do not, as shown in (44b) and (44c), repeated below.

(44b) * **It** is pretty to look at **this painting**.

(44c) * **To look at this painting** is pretty.

Let us assume (based on our discussion of "*it*"-TCs) that in (44b) and (44c), the THEME and TRIGGER both refer to the clause *to look at this painting*.[14] Does the issue stem from the fact *pretty*-subjects cannot be event-like? It does not seem so: for instance gerunds can make good *pretty*-subjects.

(64) **Jo dancing with Al** is pretty (to watch).

In (44b) and (44c), the issue rather seems to stem from the fact that the clause is understood as *both* the THEME and TRIGGER of *pretty*, which clashes with the direct perception requirement of this kind of predicate. More specifically, under our analysis of *pretty*, both (44b) and (44c) are predicted to imply that the clausal event (seen as TRIGGER) induces a prettiness judgment regarding itself (seen as THEME). Additionally, the direct perception requirement forces the JUDGE to be part of the TRIGGER event, and thus of the THEME event, as well. In sum, (44b) and (44c) end up meaning that the JUDGE evaluates the event they are themselves involved in as pretty, based on the features of the event itself. This we think, defines odd truth conditions. To exemplify the issue, we compute the paraphrase of (44c) below.

[14] The only difference being that the TRIGGER denotes a set of events whose content involves *looking at this painting*, while the THEME denotes one salient *looking at this painting*-event, obtained *via* the addition of a covert definite.

(44c) # **To look at this painting** is pretty.
Paraphrase given (52): there is an event that is about *me-looking-at-the-painting*, s.t. in any world I can think of where a such an event takes place, I directly judge *me-looking-at-the-painting* as pretty.

It is hard to imagine that the speaker of (44c), who is also the JUDGE, can both be involved in the event denoted by the embedded clause (as required by direct experience), and judge the very same event to be pretty as a whole. We think this approach can also answer why event-like *pretty*-subject become better when they surface as gerunds, as in (45). In such cases, it can be assumed that the subject does not bind a coreferential null operator in the complement of *pretty*, but instead, that the complement of *pretty* is an implicit infinitive (*e.g., to watch*), denoting a different event. This allows the TRIGGER and the THEME to be different in (64), and solves the original JUDGE-within-THEME issue.

(45) **Jo performing his gymnastics routine** is pretty (to watch).

5 Conclusion and outlook

We showed that *tough* and *pretty* are both subjective predicates in need of a TRIGGER 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 TRIGGER in both fronted and "*it*"-variants, and states the toughness of the event denoted by the infinitival clause. *Pretty* on the other hand, takes the embedded clause as TRIGGER, and states the prettiness of its subject, in the circumstances defined by the embedded clause. We showed that this view, combined with additional considerations about the semantics of *tough*- vs. *pretty*-predicates, could derive various contrasts that were previously thought to be purely syntactic.

Our analysis has three main implications. First, it unifies the semantics of *tough* by proposing one single lexical entry suitable to both fronted and "*it*"-TCs (*contra* Keine and Poole, 2017). Second, it brings new evidence in favor of a BASE-GENERATION approach to TCs, without the need of a θ-transmission mechanism between the matrix subject and a bound null operator. Third, it integrates *pretty*-predicates, and explains why predicates of the *tough*- and *pretty*-class behave the way they do, and at the same time exhibit such a high level of semantic homogeneity within their class.

As a final note, the analysis developed in this paper may extend to other varieties of adjective-infinitive constructions: so-called *rare*-constructions (Fleisher, 2015) and *rude*-constructions (Stowell, 1991; Bennis, 2000, 2004; Landau, 2009). First, *rare*-constructions have been argued to form an independent subclass of *tough*-constructions, because their grammaticality seems to be conditioned by the matrix subject being "kind"-denoting. This is supported by the (naturalistic) example in (65), taken from Fleisher (2015).

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

Under our analysis, *rare* is a *tough*-predicate and as such is expected to take its subject (*that kind of straight-up statement*) as TRIGGER argument. The kind-restriction of *rare*-type predicates can then be easily cashed out, by assuming that the lexical entry of such predicates imposes an additional restriction on the TRIGGER argument. Our account therefore allows to unify the class of *tough*-predicates.

Second, *rude*-constructions involve predicates such as *rude*, *brave*, or *smart*, which denote mental or moral qualities, . Such predicates can take missing-subject infinitival clauses as complement,

as shown in (66a). Additionally, (66a) alternates with an "*it*"-variant (66b) and a clause-fronted variant (66c). In that sense, *rude*-constructions seem to pattern like TCs. This is replicated in (67) for *smart*.

(66) a. **Jo** was rude to refuse Al's help.
b. **It** was rude of Jo **to refuse Al's help**.
c. **To refuse Al's help** was rude of Jo.

(67) a. **Jo** was smart to bring extra snacks.
b. **It** was smart of Jo **to bring extra snacks**.
c. **To bring extra snack** was smart of Jo.

Yet the θ-assignment pattern of those constructions seems closer to that of PCs: *rude*-predicates are interpreted relatively to the event denoted by the embedded clause, which is seen as the TRIGGER of the *rudeness* judgment. Additionally, being *rude* (or *smart*, or *brave*) seems to be a property of the (THEME) matrix subject. In (66a) for instance, Jo is not taken to be inherently *rude*, but rather, judged to be so by the speaker in the context of his refusal of Al's help. In (66b-66c), the refusal *per se* (more than Al's intent) seems to be judged as rude. If *rude*-predicates exhibit the same θ-assignment pattern as *pretty*-predicates, how to explain the possibility of "*it*"- and clause-fronted variants? A difference between *rude* and *pretty* is that the *rude*-class does not force the JUDGE to be part of the TRIGGER event. As a result, *rude*-constructions are not subject to the JUDGE-within-THEME paradox pointed out in PCs where TRIGGER and THEME are equated.

References

Bayer, S. (1990). Tough movement as function composition. In *Proceedings of the 9th West Coast Conference on Formal Linguistics (WCCFL 9)*.

Bennis, H. (2000). Adjectives and argument structure. In *Lexical Specification and Insertion*, page 27. John Benjamins Publishing Company.

Bennis, H. (2004). Unergative adjectives and psych verbs. In *The Unaccusativity Puzzle*, pages 84–113. Oxford University Press.

Brody, M. (1993). θ-theory and arguments. *Linguistic Inquiry*, 24(1):1–23.

Bruening, B. (2014). Defects of defective intervention. *Linguistic Inquiry*, 45(4):707–719.

Cattell, R. (1976). Constraints on movement rules. *Language*, 52(1):18–50.

Chomsky, N. (1964). Current issues in linguistic theory.

Chomsky, N. (1973). Conditions on transformations. In Anderson, S. and Kiparsky, P., editors, *A Festschrift for Morris Halle*, pages 232–286, New York. Academic Press.

Chomsky, N. (1977). On wh-movement. In Cullicover, P., Wasow, T., and Akmajian, A., editors, *Formal Syntax*, pages 71–132. Academic Press, New York.

Chomsky, N. (1981). *Lectures on Government and Binding*. Studies in generative grammar. Foris Publications.

Chomsky, N. (1982). *Some Concepts and Consequences of the Theory of Government and Binding*. Linguistic Inquiry monographs. MIT Press.

Chomsky, N. (1986). *Barriers*. Linguistic Inquiry Monographs. MIT Press.

De Cat, C. (2007). *French dislocation: Interpretation, syntax, acquisition*, volume 17. OUP Oxford.

Dowty, D. R. (1975). The stative in the progressive and other essence/accident contrasts. *Linguistic Inquiry*, 6(4):579–588.

Fleisher, N. (2015). Rare-class adjectives in the tough-construction. *Language*, 91:108–73.

Fox, D. (2003). On logical form. In Hendrick, R., editor, *Minimalist Syntax*, pages 82–123. Blackwell.

Gluckman, J. (2019). The natural class of tough-predicates, and non-finite clauses. In Stockwell, R., O'Leary, M., Xu, Z., and Zhou, Z. L., editors, *Proceedings of the 36th West Coast Conference on Formal Linguistics (WCCFL 36)*, pages 149–158, Somerville, MA. Cascadilla Press.

Gluckman, J. (2021). The meaning of the tough-construction. *Natural Language Semantics*, 29(3):453–499.

Goh, G.-Y. (2000). Pragmatics of the english tough-construction. In Hirotani, M., Coetzee, A., Hall, N., and Kim, J.-y., editors, *Proceedings of the North East Linguistics Society 30*, pages 219–230, Amherst, MA. GLSA.

Grover, C. (1995). *Rethinking Some Empty Categories: Missing Objects and Parasitic Gaps in HPSG*. PhD thesis, University of Essex.

Hartman, J. (2009). Intervention in tough constructions. In Lima, S., Mullin, K., and Smith, B., editors, *Proceedings of the 39th Meeting of the North East Linguistic Society (NELS 39)*, pages 387–397, Amherst, MA. GLSA.

Hicks, G. (2009). Tough-Constructions and Their Derivation. *Linguistic Inquiry*, 40(4):535–566.

Hirvonen, S. (2016). *Predicates of personal taste and perspective dependence*. PhD thesis, University College London.

Hornstein, N. (2001). *Move! A minimalist theory of construal*. Blackwell, Oxford.

Huang, C.-T. J. (1982). *Logical Relations in Chinese and the Theory of Grammar*. PhD thesis, Massachusetts Institute of Technology.

Hukari, T. E. and Levine, R. D. (1990). The complement structure of tough constructions. In *Proceedings of the 7th ESCOL*, pages 124–135, The Ohio State University.

Jaeggli, O. (1981). *Topics in Romance Syntax*. Foris, Dordrecht.

Kawai, M., Burelle, S., and Somestalean, S. (2002). Tough subjects are thematic. *Proceedings of the 2002 Annual Confert nce of the Canadian Linguistic Association*, pages 167–180.

Kayne, R. (1983). *Connectedness and Binary Branching*. Foris, Dordrecht.

Keine, S. and Poole, E. (2017). Intervention in tough-constructions revisited. *The Linguistic Review*, 34(2):295–329.

Kim, B. (1995). Predication in tough constructions. In Camacho, J., Choueiri, L., and Watanabe, M., editors, *Proceedings of the Fourteenth Conference on Formal Linguistics*, pages 271–285, Stanford, CA. CSLI.

Kratzer, A. (2006). Decomposing attitude verbs.

Landau, I. (2009). Saturation and reification in adjectival diathesis. *Journal of Linguistics*, 45(2):315–361.

Lasnik, H. and Fiengo, R. (1974). Complement object deletion. *Linguistic Inquiry*, 5(4):535–571.

Lasnik, H. and Stowell, T. (1991). Weakest crossover. *Linguistic Inquiry*, 22(4):687–720.

Lees, R. B. (1960). A multiply ambiguous adjectival construction in english. *Language*, 36:207–221.

Longenbaugh, N. (2017). Composite A/A-bar-movement: Evidence from english tough-movement.

May, R. (1979). Must COMP-to-COMP movement be stipulated? *Linguistic Inquiry*, 10(4):719–725.

Moulton, K. (2009). *Natural selection and the syntax of clausal complementation*. PhD thesis, University of Massachusetts, Amherst.

Moulton, K. (2015). Cps: Copies and compositionality. *Linguistic Inquiry*, 46(2):305–342.

Mulder, R. and den Dikken, M. (1992). Tough parasitic gaps. In Broderick, K., editor, *Proceedings of the 22nd Meeting of the North East Linguistic Society (NELS 22)*, pages 303–317, Amherst, MA. GLSA.

Nanni, D. L. (1978). *The "easy" class of adjectives in English*. PhD thesis, University of Massachusetts Amherst.

Pearson, H. (2012). A Judge-Free Semantics for Predicates of Personal Taste. *Journal of Semantics*, 30(1):103–154.

Pesetsky, D. (1987). Binding problems with experiencer verbs. *Linguistic Inquiry*, 18(1):126–140.

Pollock, J.-Y. (1983). Accord, chaines impersonnelles et variables. *Lingvisticæ Investigationes. International Journal of Linguistics and Language Resources*, 7(1):131–181.

Postal, P. (1971). *Cross-over Phenomena*. Transatlantic series in linguistics. Holt, Rinehart and Winston.

Rezac, M. (2006). On tough-movement. In *Linguistik Aktuell/Linguistics Today*, pages 288–325. John Benjamins Publishing Company.

Roberge, Y. (1986). Subject doubling, free inversion, and null argument languages. *Canadian Journal of Linguistics/Revue canadienne de linguistique*, 31(1):55–80.

Rosenbaum, P. S. (1967). *The grammar of English predicate complement constructions*. PhD thesis, MIT.

Ross, J. R. (1967). *Constraints on variables in syntax*. PhD thesis, MIT.

Ruys, E. G. (2000). Weak crossover as a scope phenomenon. *Linguistic Inquiry*, 31(3):513–539.

Schachter, P. (1981). Lovely to look at. *Linguistic Analysis*.

Shahar, J. (2008). *What some its are: non-referential it, extraposition, and copies*. PhD thesis, The City University of New York.

Stowell, T. (1991). The alignment of arguments in adjective phrases. In Rothstein, S., editor, *Perspectives on Phrase Structure: Heads and Licensing*, Syntax and Semantics 25, pages 105–135. Academic Press.

Zaring, L. (1994). On the relationship between subject pronouns and clausal arguments. *Natural Language & Linguistic Theory*, 12(3):515–569.