

Taking Time with *Tough*-Movement

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1 Introduction

- I introduce and analyze the Take-TIME Construction (TTC), exemplified in (1a).¹
- (1) a. It took John an hour to read the article
b. The article took John an hour to read *e*
- While widely used as a diagnostic for telicity (cf, (Dowty, 1979; Borer, 2005; MacDonald, 2006)), the syntactic structure of the TTC has not been investigated.
 - First, I'll demonstrate that the gap in (1b) is identical to other more widely studied instances of infinitival object gaps, e.g., *tough*-constructions, *too/enough*-degree clauses, *pretty*-class adjectives, *a pleasure*, *a pain*, *so*-clauses, etc.
 - Second, I'll make a theoretical claim about the how these gaps are derived: (1b) provides strong evidence against an **Agree-based analysis** of *Tough*-Constructions *et al.*
 - In brief, *John* sits between the gap and the matrix subject, and so should count as an intervener under an(y) Agree view.
 - If movement is taken to be dependent on Agree, then the TTC provides a general argument against a **movement analysis** of infinitival object gaps (Chomsky, 2000; Hicks, 2009; Hartman, 2011, 2012), and in favor of a predication approach (Chomsky, 1977; Browning, 1987; Keine and Poole, 2015).

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- However, in light of the fact that sometimes interveners are perfectly grammatical, I'm going to propose that intervention in general is tolerated in the syntax, but not in the semantics.
 - Specifically, I make the generalization that **only attitude holders (defectively) intervene**, and I'll suggest a semantic constraint that derives this generalization.

Roadmap

- §2: A/ \bar{A} -properties
- §3: Agree and intervention
- §4: TTC and intervention
- §5: Inactivity and raising Middle Subjects
- §6: A new generalization about intervention
- §7: Conclusion
- §8: (Appendices)

2 A/ \bar{A} -Properties

- TCs are known to display a variety of A and \bar{A} properties.
 - Generally, there's an \bar{A} -step around the infinitival clause, which is linked to an argument sitting in an A-position – an **Improper Movement** configuration.²

(2) [_{TP} the article was difficult [_{CP} <the article> to read <the article>]]

↑
↑

A-movement
̄A-movement

- Here I demonstrate that for all relevant properties, the TTC and TC pattern identically.

²Cross-linguistically the facts are not so clear-cut. Many languages (even English) display A-like movements in the lower clause. While I restrict the discussion to English here, in the languages I've checked, the TTC and TC still exhibit identical properties, whatever they are for that language.

2.1 Evidence for \bar{A} -movement in the lower clause

2.1.1 Ban on IO extraction

- There is a general ban on \bar{A} -moving, but not A-moving, the higher object in a Double Object construction, (3).

(3) * Who did John read t_{wh} the book?

- Creating this gap in TC and the TTC is likewise ungrammatical.

(4) a. * John was difficult (for Mary) to read e the book. **TC**
 b. * John took an hour (for Mary) to read e the book. **TTC**

2.1.2 (Partially) clause-unbounded

- TC and the TTC have partially unbounded \bar{A} dependencies. The gap cannot freely span multiple finite clauses, but it can span smaller distances not permitted under A-movement.

(5) a. * The book was difficult to say (that) John read e . **TC**
 b. * The book took an hour to say (that) John read e . **TTC**

(6) a. The book was difficult to manage to read e . **TC**
 b. The book was easy to persuade John to read e . **TC**
 c. The book took an hour to manage to read e . **TTC**
 d. The book took an hour to persuade John to read e . **TTC**

- So while the \bar{A} -step in TC and the TTC is not a “true” unbounded dependency, it is \bar{A} -like in being able to be extracted across multiple verbs, and over another argument (or without passivization).³

2.1.3 Islandhood

- TC Phrases with a gap are not islands for further wh-extraction (Chomsky, 1977).

(7) a. Which violin was the sonata easy to play e on t_{wh} ? **TC**
 b. Which violin did the sonata take an hour to play e on t_{wh} ? **TTC**

³Note that this renders moot diagnostics like the Complex-NP Constraint, and wh-island constraints.

- The evidence comes from reconstruction (idioms/scope), definiteness effects, the ban on IO \bar{A} -extraction, and languages which have overt applicative morphology. See Appendix 1.
- More importantly, Middle Subjects structurally intervene between the TTC subject and the gap:
 1. The Middle Subject controls PRO in the infinitival clause.
 - Moreover, this control relationship is **predicative** as opposed to **logophoric**. If Landau (2015) is correct, then there are much stricter structural conditions on the antecedent for predicative control, namely, the antecedent must locally c-command PRO. (I'll return to this later.)
 2. Middle Subjects can bind variables in the infinitival clause.

(21) It took every boy_i an hour to wash his_i dog.
 3. Moreover, Middle Subjects *can* be interveners, namely, when we relativize the probing for wh-features, Superiority effects surface.
 - You can extract a wh-element out of the lower clause, but not over another wh-element.

- (22)
- | | | |
|----|---|----------------------|
| a. | It took who an hour to read what? | wh in situ |
| b. | What did it take John an hour to read t_{wh} ? | Wh-extraction |
| c. | * What did it take who an hour to read t_{wh} ? | Superiority |

- The Superiority facts are naturally derived if the Middle Subject structurally intervenes, but the relationship between the subject and the gap in (20b) remains mysterious. **Middle Subjects should be interveners, but aren't.**

5 Saving Agree: Are Middle Subjects inactive?

- An Agree-based story would still be appealing if we can show that Middle Subjects are otherwise completely **inactive** for (ϕ -)Agree.
 - An argument can be rendered inactive for Agree if all its features have already been valued/checked. Thus, a higher probe won't be able to “see” an inactive argument (Chomsky, 2000, 2001).

- If we wanted to stick with Agree-based intervention, we would have to stipulate that varying “levels” of activation for the Middle Subject. But this is just stipulating the surface facts into the syntax; it’s not explanatory..
- Moreover, it ends up being highly conspiratorial: only in the cases where there has been \bar{A} -movement in the lower clause is the Middle Subject (completely) inactive.
- Importantly, the results here are problematic for *any* theory of Agree-based intervention in TC/TTC, regardless of a movement or predication approach.
- But under the assumption that movement is Agree-based (Chomsky, 2000), then this is a further argument against a movement approach for TC, and in favor of a predication approach.

6 A new generalization about intervention

- The discussion above demonstrates that, at least sometimes, **interveners are tolerated**.
- But if that’s the case, what is the cause of intervention in (27a), but lack of intervention in (27b)? That is, if interveners are ok, why do we ever see intervention effects?

- (27) a. * The article was important to John to read *e*. TC
 b. The article took John an hour to read *e*. TTC

- The difference between the interveners in (27a) and (27b) comes down to **intentionality**: *John* in (27a) is an **attitude holder**, but not in (27b).
- The clearest way to observe this difference is to look for a *de re/de dicto* ambiguity, which is a diagnostic for intensional contexts.

- (28a) and (28b) are extensionally equivalent, but not intensionally so according to John’s beliefs.
- (28) a. It’s important to John to meet the president.
b. It’s important to John to meet Barack Obama.
- We can attribute to John a belief in (28), namely, “Meeting X is important”.
 - In contrast, there is no *de dicto* reading of *the president* in (29) according to John’s beliefs. That is, in the TTC, we cannot attribute to John a belief, “Meeting X took a month.”
- (29) a. It took John a month to meet the president
b. It took John a month to meet Barack Obama
- More formally, TC predicates are **Evaluative**: the truth of the proposition in (27a) is evaluated based on John’s epistemic/doxastic state (Kölbel, 2004).⁹
 - The “evaluator” is a **Judge**. While the Judge is typically taken to be the speaker (or speaker-oriented) (Stephenson, 2007; Pearson, 2013a; Moltmann, 2012), an overt Judge can be supplied in a prepositional phrase.
- (30) a. Mary: “It’s important to read the article” **implicit Judge**
 ≈ According to Mary, reading the article is important.
b. Mary: “It’s important to John to read the article” **explicit Judge**
 ≈ According to John, reading the article is important.
- Note that it’s helpful to use adjectives that idiosyncratically license the Judge with a preposition other than *for* (like *important to*, *annoying to*, *surprising to*, ...) as this allows us to control for ambiguity with the subject of the *for*-infinitival clause.
- (31) It’s difficult for John to read the article.
a. It’s [_{AP} difficult for John] to read the article **Judge**
b. It’s difficult [_{CP} for John to read the article] **for-subject**
- See also Hartman (2011) for relevant diagnostics about the difference between an “Experiencer” and a *for*-subject.
 - In the next couple sections, I’ll show that there’s a correlation between being a Judge (i.e., an attitude holder) and giving rise to intervention effects.

⁹The two diagnostics for Evaluativity are Subjective Disagreement (Kölbel, 2004) and embeddability under *find* (Kennedy, to appear). I leave these out for time/space reasons.

6.1 Control

- While the Middle Subject controls PRO predicatively, unambiguous Judges control PRO “logophorically”, which (despite its name) is only available in attitude contexts (Landau, 2015). One diagnostic for the difference is that only logophoric control permits partial control.¹⁰

- (33) a. * John_i started PRO_{i+} to gather at the park **predicative**
 b. John_i wanted PRO_{i+} to gather at the park **logophoric**
- (34) a. It was important to John_i PRO_{i+} to gather at the park **TC, logophoric**
 b. * It took John_i an hour PRO_{i+} to gather at the park **TTC, predicative**

- Building on this, when we force a prepositional phrase that is ambiguous between a Judge or a *for*-subject to be a Judge using partial control, then the gapped version becomes ungrammatical.

- (35) a. It’s fun for John_i PRO_{i+} to gather at the park. **unambiguous Judge**
 b. * The park is fun for John_i PRO_{i+} to gather at. **unambiguous Judge**

- Compare the same phrases with a subject that is compatible with a CP-internal *for*-subject.

- (36) a. It is fun for the students to gather at the park **ambiguous Judge/*for*-subject**
 b. The park is fun [_{CP} for the students to gather at] **unambiguous *for*-subject**

6.2 Manipulating Evaluativity

- Some adjectives are not Evaluative, and still allow infinitival gaps. No intervention effects occur.

¹⁰Note that when we force the intervener to be a CP internal subject by using *for*, then the phrases are ungrammatical.

- (32) a. * It was important [_{CP} for John to gather at the park]
 b. * It took an hour [_{CP} for John to gather at the park]

- (37) a. * The gardens were annoying to the public to visit *e* during the summer.
Judge intervener
- b. The gardens were open to the public to visit *e* during the summer.
Non-judge intervener
- (38) a. * The teacher was important to the students to meet with *e* after class.
Judge intervener
- b. The teacher was available to the students meet with *e* after class.
Non-judge intervener

- Note that *the public* and *the students* in (37b, 38b) still control PRO (predicatively) and can variable-bind inside the infinitival clause, so they still c-command into the infinitival clause.
- The TTC allows us to manipulate this as well by using a more subjective measure phrase like *a while, forever, an eternity, some time*, although admittedly the judgments are slightly degraded.

- (39) *Scenario: John has been waiting for George R. R. Martin to finish the new Game of Thrones novel, but George is an extremely slow writer, and John is getting impatient*
- a. ? It's taking a while to/for John for George R. R. Martin to finish the new book.
- b. * The new book is taking a while to/for John for George R. R. Martin to finish *e*.

- In summary, it's not the case that intervening arguments in infinitival object gap constructions always produce ungrammaticality. Rather, **the semantic role of the intervener matters.**

Generalization about intervention

Intervention effects in infinitival object gaps only arise in the presence of an attitude holder.

Explanation 1

- Attitude holders occupy a structurally unique position, and there's a type-mismatch (Keine and Poole, 2015).

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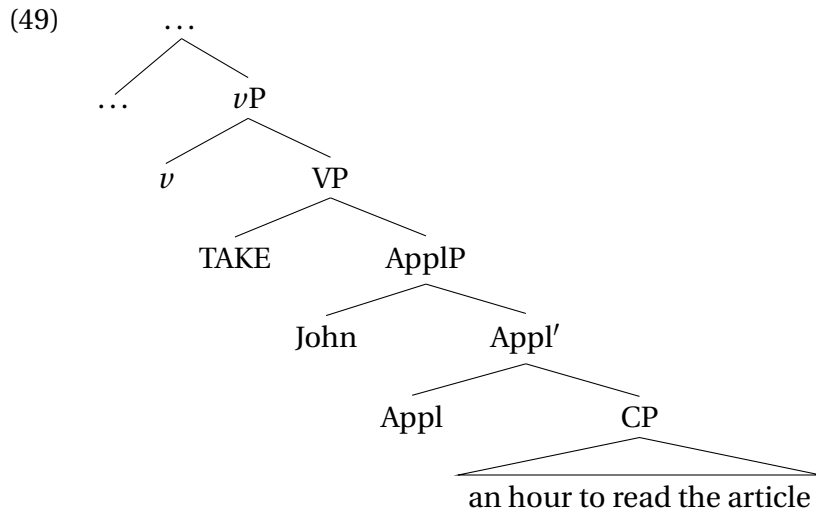
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Appendix 1: Middle Subjects are applied objects

- First, they are not derived by movement out of the lower clause, say by incorporation of the *for* complementizer.
- (44) No idiom chunk reconstruction
- a. It took a while for the cat to get out of the bag **idiom interpretation**
 - b. It took the cat a while to get out of the bag **literal interpretation only**
- (45) No scope reconstruction
- a. It took a hour for a policeman to become necessary
necessary > policeman
 - b. It took a policeman a while to become necessary
necessary > policeman
- The Middle Subject displays definiteness effects, similar to the higher object of a double object construction.
- (46) a. ?? I showed lions/wildlife the carcass
b. ?? It took lions/wildlife an hour to eat the carcass
- Furthermore, as we saw earlier, the higher argument in a double object construction cannot be \bar{A} -extracted.
- (47) a. * Who did you read t_{who} the book?
b. * Who did it take t_{who} an hour to read the book?
- Lastly, in languages in which applicative morphology is overt, and which have a TTC, the applicative morphology appears only when there is a Middle Subject.
- (48) Logooli (Luhya, Bantu)
- a. *e-a-vogor-i muhiga mu-lala kweega ologooli*
9-TNS-take-FV 3year 3-one INF.learn 11Maragoli
‘It took a year to learn Maragoli.’
 - b. *e-a-vogor-*(εl)-i Sira muhiga mu-lala kweega ologooli*
9-TNS-take-APPL-FV 1Sira 3year 3-one INF.learn 11Maragoli
‘It took Sira a year to learn Maragoli.’

- This suggests the following structure, where the Middle Subject relates to a CP element as a (Low) Applicative.

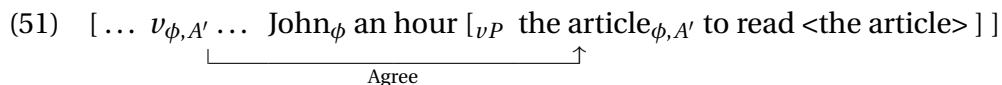


7.1 Why Composite Probes do not work

- Longenbaugh (2015) argues that TC works by **composite probing**, where ν comes imbued with both ϕ and \bar{A} features (adopting (van Urk, 2015)), and can value the features independently.
- Composite Probing is assumed to operate under a kind of **subset principle**, where an intervening element that bears a subset of the features of the probe can be bypassed if the lower argument can satisfy more of the probe's needs.



- This can be implemented in the TTC by allowing a composite probe on matrix ν to target the DP bearing ϕ and \bar{A} features in the lower clause.
 - In Longenbaugh's analysis, TCs are (normally) restructuring predicates, and so there is no CP layer – which would be an intervener for him.



- The problem with this is that we should expect (52) to be underivable, since the composite probe on ν will have to choose between an argument bearing just ϕ features, and one bearing just \bar{A} -features.

(52) What did John take an hour to read e ?

- Note that if we assume that *what* comes with both ϕ and \bar{A} features (as I think we have to derive why *Who did John give the book to* is grammatical, with *who* passing through spec- ν P), then we have to explain why (53) is good.

(53) The article took who an hour to read e ?

Appendix 2: Related constructions

1. Other light verbs

- Various other verbs can form TTC-like constructions

- (54)
- It cost me \$20 to print the handouts
 - They gave me an hour to read the article
 - I'll need an hour to read the article
 - There's still an hour to read the article

- To the extent that such verbs are related via lexical decomposition to each other and TAKE, then a unified analysis might be possible.

2. Other measure phrases

- While I've focussed on temporal phrases, other measure phrase are compatible as well. The only factor that seems to matter is that the measure phrase entail (or imply?) a telos.

- (55)
- It'll take a ton of water to sink the ship
 - It took 10 lbs to break the shelf
 - It took \$20 to get into the club

3. Purpose clauses

- There is a related construction which does not involve a measure phrase. I call this the *Causative-TTC*, as it appears to involve something like causative-y semantics, where the cause is the object of TAKE.
- (56) a. It took the death of her father for Mary to realize how much she loved him.
b. It'll take an earthquake to dislodge the boulder.
- The Causative-TTC does not permit an object gap, a Middle Subject or a High Subject.
4. Lastly, there is the Agentive TTC, in which the High Subject agentively sets aside time to complete the event. Note that the culmination of the event is not entailed with the Agentive TTC. These are Purpose Clauses.
- (57) John took a year to learn Spanish (but he still doesn't speak it).