

WHY THE NULL COMPLEMENTIZER IS SPECIAL IN COMPLEMENTIZER-TRACE EFFECTS*

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1 Introduction

Perlmutter (1968) observes that long-distance subject extraction in English must proceed across a null local complementizer, rather than the pronounced *that* variant (1).¹ Similar effects have since been identified in a range of languages, where local subject movement necessitates a change in complementizer morphology. I refer to such effects generally as *complementizer-trace effects*.

(1) **The *that*-trace effect (Perlmutter, 1968):**

- a. What did he say [_{CP} (that) Laura hid ___]?
- b. Who did he say [_{CP} (*that) ___ hid the rutabaga]?

As recently summarized by Pesetsky (to appear), the existence of such effects in a range of unrelated languages, together with a poverty of the stimulus argument, has led to a rich literature investigating the source of these effects in UG.

Languages differ in the details of the morphology involved in complementizer-trace effects. There are some patterns, such as the famous French *que/qui* alternation, where the alternation involves two distinct overt complementizer forms. Some languages exhibit the English pattern, where the presence of the complementizer is normally optional but the null variant must be used with local subject movement. Famous cases of this form include varieties of Arabic (Kenstowicz, 1983, 1989) and a subset of Scandinavian languages (see Lohndal, 2009 and references therein):

(2) **Levantine Arabic (Kenstowicz, 1983, 1989):**

- a. ʔayy fuṣṭaan Fariid kaal [_{CP} (innu) l-bint iṣṭarat ___]?
which dress Fariid said that the-girl bought
'Which dress did Fariid say that the girl bought?'

*This is a revised version of a squib I wrote and circulated in 2014. This work certainly would not exist without David Pesetsky's deep knowledge of and continued passion for extraction asymmetries of all sorts and his willingness to patiently entertain my crazy ideas. I also thank Ruth Brillman, Aron Hirsch, and Hadas Kotek for earlier discussion, as well as Jamie Douglas and Yusuke Imanishi for detailed comments on this revision. All errors are mine.

¹David Pesetsky (Facebook, January 31, 2016) notes that Fillmore (1963:221) also observes the effect in passing.

- b. ʔayy bint Fariid kaal [CP (*innu) ___ iʃtarat l-fuʃtaan]
 which girl Fariid said that bought the-dress
 ‘Which girl did Fariid say bought the dress?’

(3) **Swedish (exx Boef and Franco, 2012):**

- a. Jag känner mannen [RC (som) du hoppas [CP (att) Maria ska träffa ___ imorgon]].
 I know man.the som you hope that Mary will meet tomorrow
 ‘I know the man that you hope Mary will meet tomorrow.’
- b. Jag känner mannen [RC (som) du hoppas [CP (*att) ___ kommer hit]].
 I know man.the som you hope that comes here
 ‘I know the man that you hope will come here.’

In this paper I focus on such languages with complementizer-trace effects involving a choice between overt and null complementizer forms.² I present an account of such overt/null complementizer-trace effects which offers an explanation for the *direction* of this asymmetry: why it is the null variant that allows subject extraction rather than the pronounced variant. Long-distance movement generally must move successive-cyclically (Chomsky, 1973). Movement of a subject across an overt complementizer therefore cannot proceed in one-fell-swoop (4):

(4) **Movement across overt C must be successive-cyclic:**

- * ... [CP C [TP ___ ...]]
 ← × ————— C = *that* (1b) / *innu* (2b) / *att* (3b)

At the same time, movement from Spec,TP to Spec,CP will be ruled out by an *anti-locality* constraint (Erlewine, 2014, 2016) against movement between specifiers of successive maximal projections (5). Schemas (4) and (5) together explain the ungrammaticality of subject extraction across an overt complementizer. Evidence from adverb obviation effects and Yiddish non-subject complementizer-trace effects will support this anti-locality approach.

(5) **Movement from Spec,TP to Spec,CP is too short:**

- * ... [CP ___ C [TP ___ ...]]
 ← ————— × —————

I propose that the null complementizer still projects a CP but allows for subject extraction directly from Spec,TP (6). The availability of subject extraction directly from Spec,TP across an unpronounced complementizer (6) but not across an overt complementizer (4) is predicted by Fox and Pesetsky’s (2005) Cyclic Linearization view of phasal Spell-Out and successive-cyclicity.

(6) **Movement directly from Spec,TP over a null complementizer is possible:**

- ✓ ... [CP \emptyset_C [TP ___ ...]]
 ← —————

²I will not attempt to extend this account here to complementizer-trace effects involving two different complementizer forms, as with the French *que/qui* (Perlmutter, 1968) or Nupe *gànáń/’án* (Kandybowicz, 2006, 2009). I will not discuss languages without complementizer-trace effects, although see Rizzi and Shlonsky (2007) for some discussion of other strategies to avoid restrictions on subject extraction.

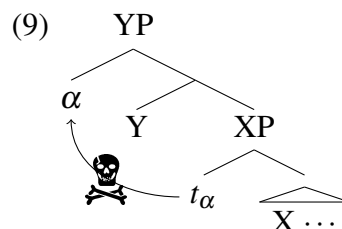
I will also not discuss relative clause edges, which often exhibit an anti-complementizer-trace effect. English relative clauses without relative pronouns allow both *that* and null complementizers except for local subject relatives which necessitate the use of *that* (Bresnan, 1972, a.o.). In Swedish and many other Scandinavian languages, a dedicated *som* complementizer is used at the top of relative clauses, as in (3), and this *som* is obligatory in local subject relatives but can be null otherwise (Taraldsen, 1986, a.o.).

2 An anti-locality account of complementizer-trace effects

I propose that the ungrammaticality of subject extraction across overt complementizers as in (1b/2b/3b) is because the movement of the subject from Spec,TP to the intermediate Spec,CP landing site is *too short*. Central to this account will be the *Spec-to-Spec Anti-Locality* constraint in (7), schematized in (9), which I proposed in Erlewine (2014, 2016). In particular, Spec-to-Spec Anti-Locality bans movement from Spec,TP to Spec,CP when CP immediately dominates TP.

- (7) **Spec-to-Spec Anti-Locality (Erlewine, 2014, 2016):**
 A-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

- (8) **Definition: crossing**
 Movement from position α to position β *crosses* γ if and only if γ dominates α but does not dominate β .



I originally proposed Spec-to-Spec Anti-Locality (7) based on the details of an extraction asymmetry in Kaqchikel (Mayan; Guatemala). As in many other Mayan languages, the extraction of transitive subjects in Kaqchikel triggers the use of a special form of the verb (10b), known as *Agent Focus* (AF). Movement of other arguments, such as the transitive object in (10c), does not trigger this morphological change.

(10) **An extraction asymmetry in Kaqchikel:**

- a. Baseline transitive clause:

Iwir xutěj ri wäy ri a Juan.
 Yesterday ate DEF tortilla DEF CL Juan
 ‘Yesterday Juan ate the tortilla.’

- b. Transitive subject extraction requires the Agent Focus (AF) verb form:

Achike *xutěj / ✓xtjö ri wäy?
 who ate / ate.AF DEF tortilla
 ‘Who ate the tortilla?’

- c. Non-subject extractions do not trigger AF:

Achike ✓xutěj / *xtjö ri a Juan?
 what ate / ate.AF DEF CL Juan
 ‘What did Juan eat?’

My account for the asymmetry in Kaqchikel hypothesizes that transitive subjects but not objects or intransitive subjects move to Spec,TP. In the case of transitive subject extraction, movement of the subject from Spec,TP to Spec,CP would violate Spec-to-Spec Anti-Locality (7), and therefore the Spec,TP position is skipped.³ The AF verb form is the reflex of this “skipping” strategy. Movement of other arguments originates from lower positions in the clause and therefore does not violate Spec-to-Spec Anti-Locality.

³In Erlewine (2016) I argue that Spec-to-Spec Anti-Locality is a violable constraint within an Optimality-Theoretic model of syntax. Here I propose to adopt Spec-to-Spec Anti-Locality (7) in English but as an inviolable principle of structure-building. Technically, we could imagine that the constraint may differ in its violability across languages, or we could describe it as consistently violable but with English having no relevant, higher-ranked constraints.

This approach is motivated by the fact that the introduction of additional material higher in the clause obviates AF. This is illustrated with the addition of a preverbal adverb in (11) and can also be shown with additional preverbal \bar{A} -operators. I assume in (11) that the presence of an intervening adverb corresponds to the addition of a functional projection (Browning, 1996, Cinque, 1999, a.o.).

(11) **Intervening adverb obviates AF (cf 10b):**

Achike **kanqtzij** \checkmark xutëj / *xtjö ri wäy?
 who actually ate / ate.AF the tortilla
 ‘Who actually ate the tortilla?’

Complementizer-trace effects are similarly obviated by the addition of high intervening material. As noted in Bresnan (1977) and later discussed in Culicover (1993), the addition of an adverb between *that* and the subject trace position obviates the English *that*-trace effect:⁴

(12) **Intervening adverbs obviate *that*-trace effects (exx Culicover, 1993):**

- a. This is the tree [_{RC} that I said [_{CP} that *(just yesterday) ___ had resisted my shovel]].
 b. Robin met the man [_{RC} {that/who} Leslie said
 [_{CP} that *(for all intents and purposes) ___ was the mayor of the city]].

Similar adverb obviation effects are also attested in Swedish. Recall from example (3) above that Swedish subject extraction across the overt complementizer *att* is generally ungrammatical. This effect disappears when a high adverb (here, negation) is introduced:

(13) **Adverb obviation in Swedish (Holmberg, 1986, reproduced in Lohndal, 2009):**

Vem är du glad [_{CP} att inte kunde komma]?
 who are you glad that not could come
 ‘Who are you glad couldn’t come?’

This pattern exhibits the signature of an anti-locality-driven interaction: the insertion of additional material makes a movement pathway possible which is otherwise unavailable.⁵ Movement of the subject from Spec,TP to the intermediate landing site, Spec,CP, would be *too close*, violating Spec-to-Spec Anti-Locality (14a). Again assuming that the intervening adverb contributes additional structure to the clausal spine, this now allows for movement from Spec,TP to Spec,CP to proceed without violating Spec-to-Spec Anti-Locality (14b).⁶

(14) **The anti-locality signature of *that*-trace effect obviation:**

- a. * ... [_{CP} ___ C [_{TP} ___ ...]] *violates Spec-to-Spec Anti-Locality!*
 b. \checkmark ... [_{CP} ___ C [_{AdvP} ... [_{TP} ___ ...]]]

⁴Yusuke Imanishi asks whether the overt complementizer *that* is obligatory in such cases. It seems that it is not. Pesetsky and Torrego (2001:note 37) discusses this fact, which is counter to the predictions of their theory.

⁵See Kandybowicz (2006) for a very different, alternative account based on intonational phrasing at PF. Culicover (1993), Browning (1996), and Rizzi (1997) also present approaches to the adverb obviation effect on English *that*-trace effects, but they do not offer a principled explanation for the direction of the overt/null complementizer asymmetry.

⁶It is important that empty “filler” projections cannot be built solely for the purposes of avoiding anti-locality violations. This is discussed in Erlewine (2016:475), where I propose that a projection XP cannot be projected if X does not contribute to the interfaces (PF and LF) and no phrase must be hosted as the specifier of XP.

This approach schematized in (14) is supported by the fact that the English *that*-trace effect is obviated only by the addition of structurally *high* adverbs, which increases the structural distance between Spec,TP and Spec,CP, not lower adverbs such as manner adverbs. This is noted by Rizzi (1997:311) who attributes the observation to Kinsuke Hasegawa. The contrast is illustrated here using a paradigm from Brillman and Hirsch (to appear):

(15) **Only higher adverbs obviate the *that*-trace effect (Brillman and Hirsch, to appear):**

- a. * Who did John say [CP ___ that [TP ___ ran to the store]]?
- b. Who did John say [CP ___ that [AdvP fortunately [TP ___ ran to the store]]]?
- c. * Who did John say [CP ___ that [TP ___ [AdvP quickly [vP ran to the store]]]]?

Another strategy for avoiding a *that*-trace effect violation is to skip the Spec,TP subject position and move directly from a predicate-internal position to Spec,CP. In English, this is possible in limited circumstances, using an expletive *there* to satisfy the EPP (Extra Peripheral Position⁷) requirement on TP. Extraction of the subject from predicate-internal position directly to Spec,CP is not at risk of violating anti-locality and therefore does not trigger a *that*-trace effect. The contrast in (16) serves to show that the *that*-trace effect is not simply sensitive to the extraction of local subjects, but rather specifically to extraction from the Spec,TP derived subject position.

(16) **Avoiding the anti-locality violation by skipping Spec,TP (Rizzi and Shlonsky, 2007):**

- a. * What do you think [CP ___ that [TP ___ is [Pred ___ in the box]]]?
- b. What do you think [CP ___ that [TP there is [Pred ___ in the box]]]?

Finally, the anti-locality approach here predicts that complementizer-trace effects should not be thought of as particularly affecting subjects, but rather as affecting the extraction of phrases *closest* to the edge of the clause. Evidence for this view comes from complementizer-trace effects in Yiddish (Diesing, 1990). (All Yiddish data here comes from Diesing (1990).) Yiddish allows for embedded V2 clauses with an overt *az* complementizer: in example (17), *az* is followed by ‘wine’ in the prefield position and the modal ‘can’ occupying the V2 position.

(17) **Yiddish embedded V2:**

Ir zolt visn zayn, mayne libe kinderlekh, [CP az vayn ken men makhn fun troybn oykh].
 you should know be my dear children that wine can one make from grapes also
 ‘You should know, my dear children, that one can make wine from grapes also.’

At first glance, it seems that Yiddish exhibits a complementizer-trace effect whereby non-subjects but not subjects can be extracted from embedded clauses with *az* (18):

(18) **A complementizer-trace effect in Yiddish:**⁸

- a. Vos hot er nit gevolt [CP ___ az [TP mir zoln leyenen ___]]?
 what has he not wanted that we should read
 ‘What did he not want us to read?’
- b. * Ver hot er moyre [CP ___ az [TP ___ vet kumen]]?
 who has he fear that will come
 Intended: ‘Who is he afraid will come?’

⁷See David Pesetsky (Facebook, August 6, 2015).

⁸I follow Diesing (1990) in analyzing the V2 verb in Infl and the prefield in Spec,IP, but label this projection TP for uniformity.

However, further data shows that what is banned is extraction from the prefield position immediately following the complementizer *az*. For example, object extraction is ungrammatical if it proceeds through the prefield position and leaves a gap (19) and subject extraction can be made grammatical by recruiting another constituent to occupy the prefield (20).

(19) **Ungrammatical object extraction from prefield:**

* Vos hot er nit gevolt [CP ___ az [TP ___ zoln mir leynen]]?
 what has he not wanted that should we read

Intended: ‘What did he not want us to read?’ (cf 18a)

(20) **Grammatical subject extraction with prefield object:**

Ver hot er nit gevolt [CP ___ az [TP [ot di bikher] zol ___ leynen]]?
 who has he not wanted that PRT the books should read

‘Who did he not want to read the books?’

As noted in Branigan (2005), these facts show that complementizer-trace effects should not in general be tied to properties of subjects such as nominative case, contra Pesetsky and Torrego (2001). In contrast, such interactions are predicted by the locality-sensitive approach to complementizer-trace effects presented here. For simplicity, in the remainder of this paper I will put aside these Yiddish embedded V2 facts and describe complementizer-trace effects in terms of subject vs non-subject extraction.

This anti-locality approach explains one-half of the complementizer-trace paradigm observed above: extraction of a Spec,TP subject through a close Spec,CP position is banned, while non-subject extraction is not restricted. The question that remains is why the use of the null complementizer straightforwardly allows for subject extraction. For this, I will now turn to Fox and Pesetsky’s (2005) Cyclic Linearization theory of successive-cyclic movement.

3 Why being unpronounced makes you special

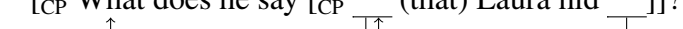
Fox and Pesetsky (2005) propose that linear order relations are established cyclicly, after the construction of each phase. Under their approach, the process of Spell-Out (including linearization) targets entire phases, rather than a distinct “Spell-Out domain.” Fox and Pesetsky (2005) use this model of linearization to derive the familiar requirement for movement to be successive-cyclic (Chomsky, 1973, 1977).

To illustrate, consider the derivation of the English example (1a) “*What did he say (that) Laura hid?*” We will consider two possible derivations of this question, one involving one-fell-swoop movement of the *wh*-phrase (21) and one involving successive-cyclic movement of the *wh*-phrase through the embedded CP edge (22).⁹ In each derivation, the linear order of terminals will be recorded when each CP phase is built. In the case of the one-fell-swoop derivation (21), at Spell-Out of the embedded clause, we will establish that *what* follows the terminals *that*, *Laura*, and *hid* (21a). However, at Spell-Out of the matrix clause, we will establish that *what* precedes these terminals, yielding an ordering contradiction.

⁹Here I focus on successive-cyclic movement through CP edges and ignore lower, clause-internal (vP) phase edges.

(21) **One-fell-swoop movement yields an ordering paradox:*** [_{CP} What did he say [_{CP} (that) Laura hid]]?
a. Linear order relations at embedded CP Spell-Out:*(that) < Laura < hid < what*b. Linear order relations at matrix CP Spell-Out:*what < did < he < say < CP*⇒ ordering paradox! (*what < (that) < Laura < hid < what*)

If the *wh*-phrase is instead first moved to the edge of the embedded CP as in (22), we avoid this ordering paradox. At Spell-Out of the embedded clause, *what* will be at the edge of the CP, so we record that *what* precedes all other material in the embedded CP (22a). Spell-Out of the matrix CP will not contradict these ordering relations established by Spell-Out of the embedded CP.¹⁰

(22) **Successive-cyclic movement avoids an ordering paradox:**√ [_{CP} What does he say [_{CP} (that) Laura hid]]?
a. Linear order relations at embedded CP Spell-Out:*what < (that) < Laura < hid*b. Linear order relations at matrix CP Spell-Out:*what < did < he < say < CP*

⇒ no ordering paradoxes

Fox and Pesetsky (2005) offer this Cyclic Linearization account as an explanation for Phase Impenetrability Effects on overt movement and show that it fares better empirically than simply stipulating that movement proceed through “phase edges.” For example, Fox and Pesetsky (2005) use this view to explain complex movement interactions where multiple constituents can move between phrases, but only in an order-preserving fashion. Under this Cyclic Linearization view of successive-cyclic movement, what is special about phase edges is that they are linearly leftmost in the phase, and therefore their further movement to the left will not contradict previous ordering relations.

Returning now to the case of complementizer-trace effects, this view of successive-cyclic movement predicts a principled difference between pronounced and unpronounced complementizers: with an unpronounced complementizer, the Spec,TP subject will be the leftmost pronounced element in the CP phase and therefore at the effective phase edge. Movement of the subject to the left, directly from Spec,TP position, will not produce any ordering paradoxes.

For concreteness, I illustrate the derivation of the English example (1b) with a null complementizer, the grammatical “*Who did he say hid the rutabaga?*”, below in (23). I assume here that the null complementizer is structurally present as a C head and projects a CP phase.¹¹ I propose that subjects in such cases move directly from Spec,TP across the null complementizer, without stopping in the local Spec,CP landing site. This movement in (23) will not violate any previous ordering relations, precisely because the complementizer is unpronounced and therefore does not participate in ordering relations.¹²

¹⁰For formal definitions of the “<” relation and related notions, see discussion in Fox and Pesetsky (2005) and in particular its appendix.

¹¹In footnote 6, I mentioned that empty “filler” projections cannot be constructed. Although the null complementizer is phonologically null, it contributes the semantics of declarative clause-typing and therefore satisfies the condition for projection discussed in footnote 6 above. I thank an anonymous reviewer for requesting clarification here.

(23) **One-fell-swoop movement of the subject over a null complementizer yields no paradox:**

✓ [_{CP} Who did he say [_{CP} \emptyset_C [_{TP} ___ hid the rutabaga]]]?
 ↑

a. Linear order relations at embedded CP Spell-Out:

who < hid < the rutabaga

b. Linear order relations at matrix CP Spell-Out:

who < did < he < say < CP

⇒ no ordering paradoxes

Movement of the subject over the null complementizer must proceed in one-fell-swoop as in (23). Recall that movement from Spec,TP to the local Spec,CP position without crossing additional maximal projections is banned by Spec-to-Spec Anti-Locality (7).

In contrast, moving the subject directly from Spec,TP across an overt complementizer will cause a linearization failure, explaining the ungrammaticality of (1b) with *that*. This derivation is illustrated in (24). At Spell-Out of the embedded CP, the linear order relation *that < who* will be fixed. However, at Spell-Out of the matrix CP, *who* will linearly precede the embedded CP, resulting in the ordering relation *who < that*. This yields an ordering paradox.

(24) **One-fell-swoop movement of the subject over *that* yields an ordering paradox:**

* [_{CP} Who did he say [_{CP} that [_{TP} ___ hid the rutabaga]]]?
 ↑

a. Linear order relations at embedded CP Spell-Out:

that < who < hid < the rutabaga

b. Linear order relations at matrix CP Spell-Out:

who < did < he < say < CP

⇒ ordering paradox! (*who < that < who*)

This predicts that it is impossible to extract the subject across an overt complementizer, unless movement from Spec,TP to Spec,CP can be made longer, for example by introducing higher adverbials as observed above in English (12,15) and in Swedish (13).

One variant of this proposal is to analyze complement clauses without overt complementizers as bare TPs rather than full CPs. This idea is proposed in Bošković (1997) and developed further in Ishii (2004). Ishii (2004) in particular argues that *that*-less clauses in English are not CPs and therefore not phases, allowing for non-successive-cyclic subject movement. A prediction of this account, though, is that movement generally will not be successive-cyclic through *that*-less clause edges, and therefore moved constituents will not reconstruct there for binding. This prediction is false, as verified by the fact that *himself* in (25) below can be bound by *John* equally well with and without an overt complementizer on the embedded clause.¹³

(25) [Which picture of himself_i] did Mary_j tell John_i [(that) she_j would buy ___]?

¹²Jamie Douglas asks whether this system requires look-ahead or early insertion of phonological forms. I do not think that it does. Formally, ordering relations with reference to the terminal node C will be produced at Spell-Out, but it is only when we (attempt to) pronounce the entire structure at PF that conflicting ordering requirements raise an issue. We can safely assume that ordering statements making reference to unpronounced terminals will then be pruned for the determination of the final total ordering.

¹³An alternative which avoids this problem could be to say that the bare TP then counts as a phase, or that the C and T heads are combined in such clauses into a single phase head CT. See Martinović (2015) for discussion of such a combined CT head.

4 Summary

I presented an account for complementizer-trace effects which trigger the use of a null complementizer in cases of subject extraction, including the English *that*-trace paradigm as well as similar effects in Levantine Arabic and some mainland Scandinavian languages, which also accounts for their adverb obviation effects. The proposal builds on my independently-motivated Spec-to-Spec Anti-Locality constraint which bans movement between specifiers of successive maximal projections (Erlewine, 2014, 2016). Specifically, this constraint bans movement from Spec,TP to Spec,CP, unless there is additional material projected between TP and CP. A subject in Spec,TP is therefore unable to be extracted successive-cyclically through its local Spec,CP.

I propose that in grammatical subject extractions across a null complementizer, the subject is extracted directly from Spec,TP, without stopping in its local Spec,CP. Under Fox and Pesetsky's (2005) Cyclic Linearization view of successive-cyclicity, such movement results in a linearization without contradictory word order relations and therefore will be grammatical, even though it does not proceed through the intermediate Spec,CP position. In contrast, if an overt complementizer were used, the derivation would yield an ordering paradox and be ungrammatical. What makes the null complementizer special is precisely that it does not have a phonological reflex and therefore does not participate in ordering relations.

The proposal also explains why complementizer-trace effects affect only the highest argument in the clause. This is generally the subject but not always, as we saw in the case of Yiddish. Being high in the clause makes subsequent movement to Spec,CP a potential anti-locality violation.

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