

Why the null complementizer is special in the English *that*-trace effect

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As first noted by Perlmutter (1968), long-distance subject extraction in English must proceed across a null local complementizer, rather than the pronounced *that* variant (1). While many proposals have been offered to explain this contrast—the English *that*-trace effect—none offer a principled explanation for why it is the null variant that allows subject extraction in (1b), rather than the pronounced *that* variant. (For reasons of space, I will not review them here.) Is this due to a principled difference between pronounced and unpronounced complementizers or simply an accident of the lexicon?

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

- a. What did he say (that) Laura hid ___?
- b. Who did he say (*that) ___ hid the rutabaga?

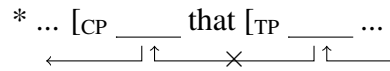
In this squib I present a brief proposal for the *that*-trace effect which explains the direction of this asymmetry. Long-distance movement generally must move successive-cyclically (Chomsky, 1973). Movement of the subject in (1b) with the overt complementizer *that* therefore cannot proceed in one-fell-swoop (2).

(2) **Movement across *that* must be successive-cyclic:**



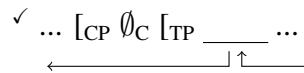
However, movement from Spec,TP to Spec,CP is ruled out by Erlewine's (to appear; 2014) anti-locality constraint against movement between specifiers of successive maximal projections (3).

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



I propose that the null complementizer—*because it is unpronounced*—allows for subject extraction directly from Spec,TP (4), explaining the grammaticality of (1b) with a null complementizer. The availability of subject extraction directly from Spec,TP across an unpronounced complementizer (4) but not across *that* (2) is predicted by Fox and Pesetsky’s (2005) Cyclic Linearization view of successive-cyclicity.

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

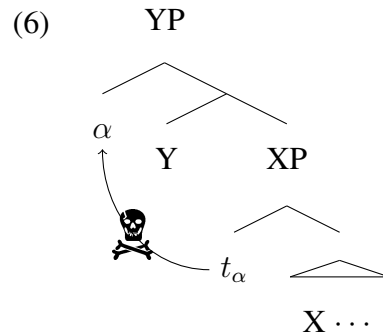


The *that*-trace effect as anti-locality

I propose that the ungrammaticality of (1b) with *that* is because the movement of the subject from Spec,TP to the intermediate Spec,CP landing site is *too short*. I adopt Erlewine’s (to appear; 2014) Spec-to-Spec Anti-Locality constraint in (5), schematized in (6) below. In particular, Spec-to-Spec Anti-Locality bans movement from Spec,TP to Spec,CP when CP immediately dominates TP.

(5) **Spec-to-Spec Anti-Locality (Erlewine, to appear, 2014):**

\bar{A} -movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.



(7) **Definition: crossing**

Movement from position α to position β *crosses* γ if and only if γ dominates α but does not dominate β .

Evidence for this view comes from the observation, due to Bresnan (1977), that the *that*-trace effect can be alleviated by the addition of an adverb between the *that* complementizer and the subject trace position.

(8) **Intervening adverbs mitigate *that*-trace effects (exx Culicover, 1993):**

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

The pattern exhibits the signature of an anti-locality-driven interaction: the insertion of additional material makes a movement pathway possible which is otherwise impossible. Movement of the subject from Spec,TP to the intermediate landing site, Spec,CP, would be *too close*, violating Spec-to-Spec Anti-Locality (9a). I assume that the presence of an intervening adverb corresponds to the addition of a functional projection (Browning, 1996; Cinque, 1999), allowing for this same movement to proceed without violating Spec-to-Spec Anti-Locality (9b).

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

- a. * ... [CP _____ that [TP _____ ... *violates Spec-to-Spec Anti-Locality!*
←—————|↑—————X—————|↑—————
- b. ✓ ... [CP _____ that [AdvP ... [TP _____ ...
←—————|↑—————|↑—————

This anti-locality approach explains one-half of the *that*-trace paradigm: extraction of subjects through a close Spec,CP position is banned, while no such restriction affects non-subject extraction. This dovetails with the observation that subject extraction is restricted cross-linguistically (see Rizzi and Shlonsky, 2007, for a summary). The question, then, 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.

Why being unpronounced makes you special

Fox and Pesetsky (2005) proposes that linear order relations are established cyclicly, after the construction of each phase. Fox and Pesetsky use this model of linearization to derive the familiar requirement for movement to be successive-cyclic (Chomsky, 1973).

To illustrate, consider the derivation of 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 (10) and one involving successive-cyclic movement of the *wh*-phrase through the embedded CP edge (11).¹ 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 (10), at spellout of the embedded clause, we will establish that *what* follows the terminals *that*, *Laura*, and *hid* (10a). However, at spellout of the matrix clause, we will establish that *what* precedes these terminals, yielding an ordering contradiction.

¹Here I focus on successive-cyclic movement through CP edges and ignore lower, clause-internal (vP) phase edges.

(10) **One-fell-swoop movement yields an ordering paradox:**

* [_{CP} What did he say [_{CP} (that) Laura hid ___]]?

↑ _____ ↓

a. Linear order relations at embedded CP spellout:

(that) < Laura < hid < what

b. Linear order relations at matrix CP spellout:

what < did < he < say < CP

⇒ ordering paradox! (*what < (that) < Laura < hid < what*)

If the *wh*-phrase is instead moved successive-cyclically as in (11), we avoid this ordering paradox. At spellout of the embedded clause, *what* will be at the edge of the CP, so we record that *what* precedes all of the other material in the embedded CP (11a). Spellout of the matrix CP will not contradict these ordering relations established by spellout of the embedded CP.²

(11) **Successive-cyclic movement avoids an ordering paradox:**

✓ [_{CP} What does he say [_{CP} ___ (that) Laura hid ___]]?

↑ _____ ↓ ↑ _____ ↓

a. Linear order relations at embedded CP spellout:

what < (that) < Laura < hid

b. Linear order relations at matrix CP spellout:

what < did < he < say < CP

⇒ no ordering paradoxes

Fox and Pesetsky (2005) uses 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-cyclicality,

²For formal definitions of the “<” relation and related notions, see discussion in Fox and Pesetsky (2005) and in particular its Appendix.

what is special about the edges of phases is that they are linearly leftmost in the spellout domain, and therefore their further movement to the left will not contradict previous ordering relations.

Returning now to the case of English *that*-trace effects, this view of successive-cyclicity predicts a principled difference between pronounced and unpronounced complementizers: with an unpronounced complementizer, the 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 for example (1b) with a null complementizer, the grammatical “*Who did he say hid the rutabaga?*”, below in (12). 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 (12) will not violate any previous ordering relations, precisely because the complementizer is unpronounced and therefore does not participate in ordering relations.

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

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

a. Linear order relations at embedded CP spellout:

who < hid < the rutabaga

b. Linear order relations at matrix CP spellout:


who < did < he < say < CP

⇒ no ordering paradoxes

Movement of the subject over the null complementizer must proceed in one-fell-swoop as in (12). 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 (5).

In contrast, moving the subject directly out Spec,TP across a *that* complementizer will cause a linearization failure, explaining the ungrammaticality of (1b) with *that*. This derivation is illustrated in (13). At spellout of the embedded CP, the linear order relation *that* < *who* will be fixed. However, at spellout of the matrix CP, *who* will linearly precede the embedded CP, resulting in the ordering relation *who* < *that*. This yields an ordering paradox.

(13) **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 spellout:

that < *who* < *hid* < *the rutabaga*

b. Linear order relations at matrix CP spellout:

who < *did* < *he* < *say* < CP

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

This predicts that it is impossible to extract the subject across an overt complementizer *that*, unless movement from Spec,TP to Spec,CP can be made longer, for example using intervening adverbs as observed above in (8).

Summary

I have derived the basic English *that*-trace paradigm in (1) with a principled explanation for the difference between pronounced and unpronounced complementizers. The proposal is built on Erlewine's (2014; to appear) independently-motivated anti-locality constraint which bans movement between specifiers of successive maximal projections. 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 therefore is 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 the overt complementizer *that* 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 this peculiar behavior—the *that*-trace effect—affects only subjects. The subject is exceptionally high in the clause, making its movement to intermediate Spec,CP position the target of anti-locality. When the complementizer is unpronounced, the subject will become leftmost in the CP spell-out domain, making it a candidate for non-successive-cyclic but grammatical movement.

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