

**The *That*-Trace and Anti-*That*-Trace Effects:  
Unification and Theoretical Implications**

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## 1 Introduction

A unified analysis of the *that*-trace and anti-*that*-trace effects is a long-standing and difficult problem (see Pesetsky, 2015).

(1) ***That*-trace effect**  
Who did you say **\*that/∅** saw Mary?

(2) **Anti-*that*-trace effect**  
The man **that/\*∅** saw Mary just left.

Each effect is doubly unexpected from the perspective of the other.

But they share several similarities. Both effects:

- exhibit a subject/object asymmetry (arising with subject extraction).
- involve suspension of *that/∅* optionality.
- are manifested local to the subject's base position.

(3) The man **that/∅** you believe **that/∅** I said **\*that/∅** saw Mary just left.

The *that*-trace effect involves cross-clausal movement; the anti-*that*-trace effect does not.

## 2 Clause structure of *that*-clauses/RCs vs. ∅-clauses/RCs

**Claim:** *that*-clauses and *that*-relative clauses (RCs) project more syntactic structure in the C domain than their ∅-counterparts, i.e. *that* and ∅ are **not** phonological variants of the same head (cf. Bošković, 1994, 1996, 1997; Doherty, 1993, 2000; Grimshaw, 1997; Weisler, 1980).

### 2.1 *That*-clauses vs. ∅-clauses

- (4)
- a. She prayed **that** *next Wednesday* the check would arrive.
  - b. We concluded **that** *in the future* he should be closely watched.
  - c. We maintain **that** *in Dublin* good coffee is hard to find.
  - d. John claims **that** *during the party* Ted squirted water at Eric.
- (Doherty, 2000: 15)
- (5)
- a. \*She prayed *next Wednesday* the check would arrive.
  - b. \*We concluded *in the future* he should be closely watched.
  - c. \*We maintain *in Dublin* good coffee is hard to find.
  - d. \*John claims *during the party* Ted squirted water at Eric.

## 2.2 *That*-RCs vs. $\emptyset$ -RCs

- (6) a. This is the kind of car **that** [for my son] I wouldn't even have considered buying.  
 b. <sup>?</sup>I saw a dress **that** [under no circumstances] would I have considered buying for my daughter.

(Bianchi, 1999: 177)

- (7) a. \*This is the kind of car [for my son] I wouldn't even have considered buying.  
 b. \*I saw a dress [under no circumstances] would I have considered buying for my daughter.

## 2.3 Proposed structures

RCs are illustrated using the Matching Analysis (Citko, 2001; Munn, 1994; Salzmann, 2006).

*That*-clauses and *that*-RCs have a **split CP** (*that* spells out Force).<sup>1</sup>

- (8) **that-RC**  
 the car [**that** I bought]  
 the car [<sub>ForceP</sub> car<sub>i</sub> Force=**that** [<sub>FinP</sub> Fin= $\emptyset$  [<sub>TP</sub> I bought t<sub>i</sub>]]]
- (9) **that-clause**  
 You believe [**that** John saw Mary].  
 You believe [<sub>ForceP</sub> Force=**that** [<sub>FinP</sub> Fin= $\emptyset$  [<sub>TP</sub> John saw Mary]]]

$\emptyset$ -clauses and  $\emptyset$ -RCs have an **unsplit CP** ( $\emptyset$  spells out the single syncretic C head).

- (10)  **$\emptyset$ -RC**  
 the car [ $\emptyset$  I bought]  
 the car [<sub>CP</sub> car<sub>i</sub> C= $\emptyset$  [<sub>TP</sub> I bought t<sub>i</sub>]]]
- (11)  **$\emptyset$ -clause**  
 You believe [ $\emptyset$  John saw Mary].  
 You believe [<sub>CP</sub> C= $\emptyset$  [<sub>TP</sub> John saw Mary]]]

The English C domain can be split or unsplit (cf. Giorgi & Pianesi, 1997; Rizzi & Shlonsky, 2007; Rizzi, 1997). The presence of *that*, for example, is a cue that CP is split. Conversely, the absence of any overt complementiser or phrase in the C domain is a cue that CP is unsplit.

An alternative approach would be to treat  $\emptyset$ -clauses and  $\emptyset$ -RCs as truncated versions of their *that*-counterparts (Bošković, 1994, 1996, 1997; Doherty, 1993, 2000; Grimshaw, 1997; Weisler, 1980).

<sup>1</sup> This also holds of other embedded clauses with overt complementisers (e.g. *whether*- and *if*-clauses) and RCs with *wh*-relative pronouns.

However, the current approach allows us to maintain the idea that relativisation is associated with the properties of Force (see Rizzi, 1997, *et seq. a.o.*) whether they are on an independent Force head in a split CP or a syncretic C head in an unsplit CP.

### 3 Analysis

#### 3.1 Anti-*that*-trace effect

##### (12) *that*-RC

the man [<sub>RC</sub> that saw Mary]

the man [<sub>ForceP</sub> man<sub>i</sub> Force=*that* [<sub>FinP</sub> Fin= $\emptyset$  [<sub>TP</sub> t<sub>i</sub> saw Mary]]]



##### (13) $\emptyset$ -RC

\*the man [<sub>RC</sub>  $\emptyset$  saw Mary]

the man [<sub>CP</sub> man<sub>i</sub> C= $\emptyset$  [<sub>TP</sub> t<sub>i</sub> saw Mary]]



Movement from SpecTP to SpecCP is banned; it is anti-local.

##### (15) **Spec-to-Spec Anti-Locality (Erlewine, 2015)**

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

Non-subjects can move to SpecForceP or SpecCP in *that*-RCs and  $\emptyset$ -RCs respectively without violating anti-locality.

Anti-locality underlies the subject/object asymmetry.

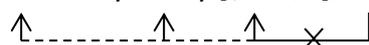
See section 4.3 for an attempt to derive this type of anti-locality.

#### 3.2 *That*-trace effect

##### (16) $\emptyset$ -clause

Who did you say  $\emptyset$  saw Mary?

a. Who<sub>i</sub> did you say [<sub>CP</sub> C= $\emptyset$  [<sub>TP</sub> t<sub>i</sub> saw Mary]]? (anti-locality violation)



b. Who<sub>i</sub> did you say [<sub>CP</sub> C= $\emptyset$  [<sub>TP</sub> t<sub>i</sub> saw Mary]]?

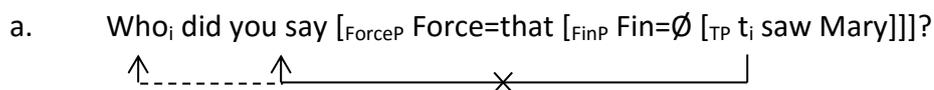


(cf. Erlewine, 2014; Ishii, 1999, 2004)

In  $\emptyset$ -clauses (where CP is unsplit), intermediate movement does not go via the C domain.

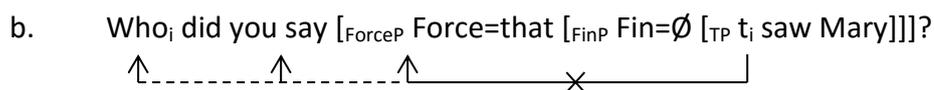
(17) **that-clause**

\*Who did you say **that** saw Mary?



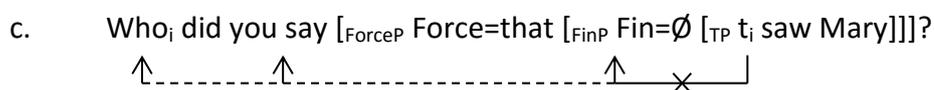
(17a) violates locality.

In *that*-clauses (where CP is split) intermediate movement must go via the C domain.



(17b) violates freezing.

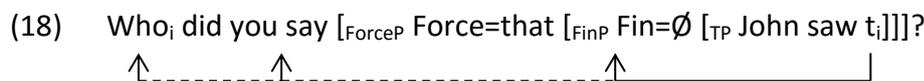
SpecForceP can be a *final* but not an *intermediate* landing site (recall (12)).



(17c) violates anti-locality.

If CP is split, successive cyclic movement goes via SpecFinP.

In cases of intermediate/cross-clausal movement from *that*-clauses (where CP is split), subjects will trigger an anti-locality violation, but non-subjects will not.



### 3.3 Summary

- Movement from SpecTP to SpecCP/SpecFinP is anti-local.
- When CP is unsplit (i.e. in ∅-clauses), intermediate movement does not go via the C domain.
- When CP is split (i.e. in *that*-clauses), intermediate movement must go via the C domain, more specifically via SpecFinP.
- SpecForceP/SpecCP are only available as *final* landing sites.

#### 4 Discussion and theoretical implications

What are the implications of this analysis for phase theory?

##### 4.1 Phase edge vs. phase escape hatch

Our results give rise to the following characterisation of the phase edge and phase escape hatch.

- (19) a. **Phase edge**  
 $[_{HP} \text{SpecHP } [_{H'} H [_{XP} \text{SpecXP } [_{X'} X \dots]]]]$   
 (final landing site; criterial position)
- b. **Phase escape hatch**  
 $[_{HP} \text{SpecHP } [_{H'} H [_{XP} \text{SpecXP } [_{X'} X \dots]]]]$   
 (intermediate landing site)

H = phase head; XP = the complement of H

This makes a strict distinction between final and intermediate landing sites (see also Georgi, 2014; Richards, 2001; Sheehan & Hinzen, 2011).

Assuming that C's phasal status is associated with the properties of Force (Chomsky, 2000), the phase head in a split CP would be Force. In an unsplit CP, the single syncretic C head is phasal.

- (20) **∅-clauses and ∅-RCs**  
 $[_{CP} \text{SpecCP } [_{C'} C [_{TP} \text{SpecTP } [_{T'} T \dots]]]]$
- (21) **that-clauses and that-RCs**  
 $[_{ForceP} \text{SpecForceP } [_{Force'} \text{Force } [_{FinP} \text{SpecFinP } [_{Fin'} \text{Fin} \dots]]]]$

	Phase edge	Phase head	Phase escape hatch
<b>∅-clauses and ∅-RCs</b>	SpecCP	C	SpecTP
<b>that-clauses and that-RCs</b>	SpecForceP	Force	SpecFinP

In ∅-RCs, subjects cannot get to SpecCP (the criterial position) without violating anti-locality. In *that*-clauses, subjects cannot get to SpecFinP (the phase escape hatch) without violating anti-locality.

Both *that*-clauses and ∅-clauses exhibit reconstruction into intermediate positions at their left edge.

- (23) a. \*You told the girls<sub>i</sub> **that/∅** Peter likes these pictures of each other<sub>i</sub>.  
 b. Which pictures of each other<sub>i</sub> did you tell the girls, **that/∅** Peter likes?

## 4.2 Deriving the position of the escape hatch

Completion of HP (where H is a phase head) triggers spellout of H's complement (Chomsky, 2000, 2001, et seq.).

Spellout means linearisation (Fox & Pesetsky, 2005).

Elements to undergo successive cyclic movement from within the complement of a phase head must be at the edge of the linearised/spelled out structure. This avoids linear ordering contradictions later in the derivation.<sup>2</sup>

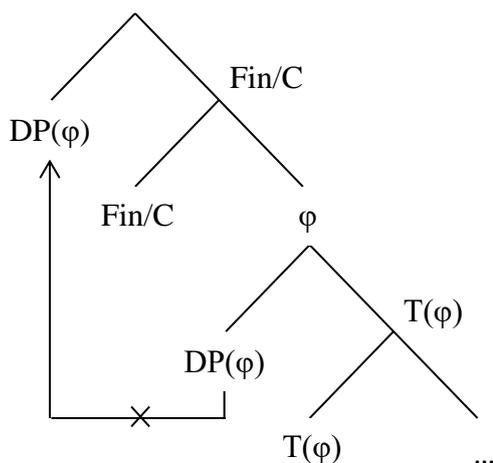
- (24) a. [FinP A X B]  
 b. [ForceP [FinP A X B]                    A > X > B  
 c. X ... [ForceP [FinP A t<sub>X</sub> B]            X > A > B                    X
- (25) a. [FinP A X B]  
 b. [ForceP [FinP X A t<sub>X</sub> B]                    X > A > B  
 c. X ... [ForceP [FinP t<sub>X</sub> A t<sub>X</sub> B]            X > A > B                    ✓

## 4.3 Deriving anti-locality

Adopting and adapting Chomsky's (2013, 2014) idea that two non-minimal projections can be labelled by shared features, TP is labelled  $\phi$ ,  $\phi$  being the features shared between the subject and T.

The complement of Fin (in a split CP) or C (in an unsplit CP) is thus  $\phi$ . Attempting to move the subject to SpecFinP/SpecCP would result in a configuration where the subject's  $\phi$  features are apparently in both the complement and the specifier of Fin/C.

(26) Anti-locality configuration

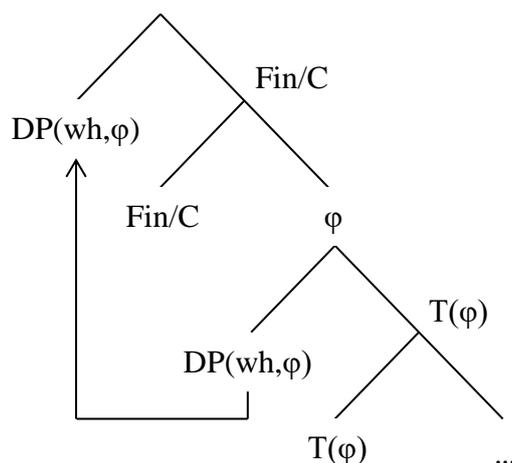


<sup>2</sup> Exactly how this is achieved without running into countercyclic/look-ahead problems is still not clear.

This is effectively a derived instance of Comp-to-Spec Anti-locality, which itself derives from Economy (Abels, 2003, 2012).<sup>3</sup>

**Potential problem:** Elements undergoing  $\bar{A}$ -movement are typically thought to have an  $\bar{A}$ -feature, e.g. [wh]. The element in 'SpecFinP/SpecCP' would thus have [wh,  $\phi$ ] features whilst Fin/C's complement would just have  $\phi$ . We might expect the system to be able to tell the difference, but seemingly it can't.

(27) Anti-locality configuration(?)



**Tentative solution:** (wh,  $\phi$ ) and  $\phi$  are non-identical, but speakers vary in whether they are deemed distinct or not.

- If (wh,  $\phi$ ) and  $\phi$  are deemed non-distinct (because  $\phi$  is a proper subset of (wh,  $\phi$ )), (27) will result in an anti-locality violation.
- If (wh,  $\phi$ ) and  $\phi$  are deemed distinct, (27) will not result in an anti-locality violation.

Perhaps (some of the) variability in *that*-trace judgements (Coward, 1997; Sobin, 1987, 2002) results from such differences in the calculus of (non-)distinctness.<sup>4</sup>

## 5 Conclusion

A novel and unified analysis of the *that*-trace and anti-*that*-trace effects has been proposed based on anti-locality, the split CP hypothesis and a strict distinction between final and intermediate landing sites couched in phase theoretic terms.

The system described here consists of the interaction of very general principles. Put simply, a child must learn that *that* indicates a split CP and  $\emptyset$  indicates an unsplit CP. The *that*-trace

<sup>3</sup> According to this, Spec-to-Spec Anti-locality as in (26) is related to proximity *and* agreement.

<sup>4</sup> If this is correct, the system as it stands would predict that speakers who tolerate *that*-trace violations would also tolerate short subject  $\emptyset$ -RCs. Note as well that variability in *that*-trace judgements may arise from other sources.

and anti-*that*-trace effects would then emerge without further ado. This is particularly welcome from an acquisition perspective (Phillips, 2013).

Given our analysis, we could expect to find anti-locality effects in other phasal domains, e.g. the v domain. Restrictions on recipient/goal extraction in double object constructions might thus be directly analogous. The characterisation of phases could also provide insight into topic, RC and *wh*-islands. This is work in progress.

## References

- Abels, K. (2003). *Successive Cyclicity, Anti-locality, and Adposition Stranding*. Doctoral dissertation, University of Connecticut.
- Abels, K. (2012). *Phases: An essay on cyclicity in syntax*. Berlin: De Gruyter.
- Bianchi, V. (1999). *Consequences of Antisymmetry: Headed Relative Clauses*. Berlin/New York: Mouton de Gruyter.
- Bošković, Ž. (1994). Categorical Status of Null Operator Relatives and Finite Declarative Complements. *Language Research*, 30(2), 387–417.
- Bošković, Ž. (1996). Selection and the Categorical Status of Nonfinite Complements. *Natural Language & Linguistic Theory*, 14(2), 269–304.
- Bošković, Ž. (1997). *The Syntax of Nonfinite Complementation*. Cambridge, MA: MIT Press.
- Chomsky, N. (2000). Minimalist Inquiries: The Framework. In R. Martin, D. Michaels, & J. Uriagereka (Eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik* (pp. 89–155). Cambridge, MA: MIT Press.
- Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.), *Ken Hale: A Life in Language* (pp. 1–52). Cambridge, MA: MIT Press.
- Chomsky, N. (2013). Problems of projection. *Lingua*, 130, 33–49.
- Chomsky, N. (2014). *Problems of Projection: Extensions*. Ms., MIT.
- Citko, B. (2001). Deletion Under Identity in Relative Clauses. In M. Kim & U. Strauss (Eds.), *Proceedings of NELS 31* (pp. 131–145).
- Cowart, W. (1997). *Experimental Syntax: Applying Objective Methods to Sentence Judgments*. Thousand Oaks/London/New Delhi: SAGE Publications.
- Doherty, C. (1993). *Clauses without that: The case for bare sentential complementation in English*. Doctoral dissertation, University of California, Santa Cruz.
- Doherty, C. (2000). *Clauses Without "That": The Case for Bare Sentential Complementation in English*. New York/London: Garland.
- Erlewine, M. Y. (2014). *Why the null complementizer is special in the English that-trace effect*. Ms., MIT.
- Erlewine, M. Y. (2015). *Anti-locality and Optimality in Kaqchikel Agent Focus*. Ms., MIT. To appear in *NLLT*.
- Fox, D., & Pesetsky, D. (2005). Cyclic Linearization of Syntactic Structure. *Theoretical Linguistics*, 31, 1–45.
- Georgi, D. (2014). *Opaque Interactions of Merge and Agree: On the Nature and Order of Elementary Operations*. Doctoral dissertation, Leipzig University.
- Giorgi, A., & Pianesi, F. (1997). *Tense and Aspect: From Semantics to Morphosyntax*. Oxford: Oxford University Press.
- Grimshaw, J. (1997). Projection, Heads, and Optimality. *Linguistic Inquiry*, 28(3), 373–422.
- Ishii, T. (1999). Cyclic Spell-Out and the That-t Effects. In S. Bird, A. Carnie, J. D. Haugen, & P. Norquest (Eds.), *WCCFL 18 Proceedings* (pp. 220–231). Somerville, MA: Cascadia Press.
- Ishii, T. (2004). The Phase Impenetrability Condition, the Vacuous Movement Hypothesis and that-t effects. *Lingua*, 114(2), 183–215.
- Munn, A. (1994). A Minimalist account of reconstruction asymmetries. In M. Gonzalez (Ed.), *Proceedings of NELS 24* (pp. 397–410).
- Pesetsky, D. (2015). *Complementizer-trace effects*. Ms., MIT. Available on Lingbuzz: <http://ling.auf.net/lingbuzz/002385>
- Phillips, C. (2013). On the nature of island constraints II: Language learning and innateness. In J. Sprouse & N. Hornstein (Eds.), *Experimental Syntax and Island Effects* (pp. 132–157). Cambridge: Cambridge University Press.
- Richards, N. (2001). *Movement in Language: Interactions and Architectures*. Oxford: Oxford University Press.
- Rizzi, L. (1997). The Fine Structure of the Left Periphery. In L. Haegeman (Ed.), *Elements of grammar* (pp. 281–337). Dordrecht: Kluwer Academic Publishers.
- Rizzi, L., & Shlonsky, U. (2007). Strategies of Subject Extraction. In U. Sauerland & H.-M. Gärtner (Eds.), *Interfaces + Recursion = Language?* (pp. 115–160). Berlin/New York: Mouton de Gruyter.
- Salzmann, M. (2006). *Resumptive Prolepsis: A study in indirect A'-dependencies*. Utrecht: LOT.
- Sheehan, M., & Hinzen, W. (2011). Moving towards the edge: the grammar of reference. *Linguistic Analysis*, 37, 405–458.
- Sobin, N. (1987). The Variable Status of Comp-Trace Phenomena. *Natural Language & Linguistic Theory*, 5(1), 33–60.
- Sobin, N. (2002). The Comp-Trace Effect, the Adverb Effect and Minimal CP. *Journal of Linguistics*, 38(3), 527–560.
- Weisler, S. (1980). The Syntax of That-Less Relatives. *Linguistic Inquiry*, 11(3), 624–631.