Unifying the *that*-trace and anti-*that*-trace effects

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Abstract

This article proposes a unified analysis of the *that*-trace and anti-*that*-trace effects in English. Unification of these two seemingly diametrically opposed effects remains an outstanding problem in the literature. Assuming that CP can be split or not and an antilocality condition, a novel analysis is set out consisting of a number of postulates that have theoretical implications for phase theory, the mechanics of successive cyclicity, and the distinction between final and intermediate landing sites.

Keywords:

1   Introduction

The English *that*-trace effect is a well-known and long-standing problem. Numerous analyses have been proposed since it was first observed by Perlmutter (1968, 1971) but no consensus seems to have been reached. It is also well-known, though seldom more than mentioned in *that*-trace analyses, that English short subject relative clauses do not exhibit the *that*-trace effect *and* that they exhibit a reverse or anti-*that*-trace effect. The anti-*that*-trace effect is thus doubly unexpected from the perspective of the *that*-trace effect, and vice versa. The co-existence in English of these two seemingly mutually incompatible and diametrically opposed effects is a serious outstanding

puzzle (Pesetsky, 2015). The aim of this article is to propose a unified account of both the *that*-trace and anti-*that*-trace effects.[1]

In this paper it is argued that the anti-*that*-trace effect results straightforwardly from an anti-locality condition. Assuming such a condition to be correct, it is then shown that, when the *that*-trace effect paradigm is considered, we are led to several interesting theoretical postulates concerning the mechanics of phases, successive cyclicity, and a distinction between final and intermediate landing sites.

With the advent of Minimalism and the abandonment of the Empty Category Principle (ECP), anti-locality and economy accounts of the *that*-trace effect have been gaining currency in the literature (e.g., Erlewine, 2014; Ishii, 1999, 2004; Pesetsky & Torrego, 2001, 2007; Roussou, 1994, 2002). The present work continues this trend.

The structure of this paper is as follows: in section 2, the *that*-trace and anti-*that*-trace effects are introduced and their similarities and differences are evaluated. In section 3, a novel and unified analysis of these effects is proposed and a number of postulates concerning phases and successive cyclicity are formulated. Section 4 discusses the nature of the adverb effect, which is well-known to alleviate *that*-trace violations, and shows how the present analysis successfully captures it. Section 5 explores the implications of the analysis developed in section 3 for phase theory and successive cyclic movement. Section 6 concludes.

2   The *that*-trace and anti-*that*-trace effects

Let us start by illustrating the *that*-trace and anti-*that*-trace effects.

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[1] These phenomena are part of the much wider issue of (the typology of) subject extraction, but this falls beyond the scope of the present paper.

The complementiser *that* is generally optional in finite declarative clauses.

(1)   a.   You said John saw Mary.

        b.   You said that John saw Mary.

This optionality is preserved under long-distance *wh*-extraction.

(2)   a.   Who did you say John saw *t*?

        b.   Who did you say that John saw *t*?

Crucially, however, this optionality disappears in cases of long-distance *wh*-extraction of subjects.

(3)   a.   Who did you say *t* saw Mary?

        b.   *Who did you say that *t* saw Mary?

The presence of *that* in (3b) results in ungrammaticality.[2] This is the *that*-trace effect (Perlmutter, 1968, 1971).

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[2] This is apparently not true for all English speakers (see Chomsky & Lasnik, 1977; Pesetsky, 1982; Sobin, 1987, 2002, 2009) and variation has been reported in Norwegian varieties as well (Lohndal, 2009). However, experimental evidence from English suggests that the *relative* (if not the absolute) judgements are robust (Chacón, Fetters, Kandel, Pelzl, & Phillips, n.d.; Cowart, 1997, 2003), i.e. examples like (3b) are consistently judged to be significantly worse than examples like (3a). Attributing variability in judgements to experimental noise rather than to different underlying grammars seems more desirable given the non-trivial acquisition problem posed by the *that*-trace effect (Chacón et al., n.d.; Phillips, 2013). That is not to say that the *that*-trace effect is present in all languages, i.e. there seems to be genuine parametric variation on this point (Chacón et al., n.d.; Maling & Zaenen, 1978; Rizzi, 1982). For there to be genuine parametric variation,

Turning now to the anti-*that*-trace effect, note that *that* is also generally optional in relative clause (RC) contexts.

(4)   a.   The woman [John saw *t*] was tall.

      b.   The woman [that John saw *t*] was tall.

The optionality in (4) also disappears in cases of short subject relativisation. However, in RC contexts, it is the absence of *that* which results in ungrammaticality.[3]

(5)   a.   *The man [*t* saw Mary] was short.

      b.   The man [that *t* saw Mary] was short.

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however, the Primary Linguistic Data must contain robust and salient cues for the setting of whichever parameter is ultimately responsible for the presence/absence of the *that*-trace effect. For those positing a parametric difference between different varieties of English, it is unclear what differences exist between English varieties that could lead an acquirer to set the relevant parameter(s) in one way in some varieties and in another in other varieties.

[3] There is a small class of exceptions. Consider (i):

(i)   There's a man sells bread at the market.

However, McCawley (1998: 460-463) observes that the contexts for such exceptions are 'existential' sentences (broadly construed) and that RCs in these contexts behave differently from normal restrictive RCs in a number of respects (e.g. extraction possibilities, co-occurrence with proper names, ability to insert parentheticals). He thus calls the RC-like structures in 'existential' contexts pseudo-relative clauses (see also, e.g. Cinque, 1995, chp 8; Koopman & Sportiche, 2014). See Doherty (1993, 2000) for a dissenting view.

This appears to be the reverse of the *that*-trace effect, hence the name anti-*that*-trace effect.

Numerous accounts of the *that*-trace effect have been proposed over the half-century since it was first described (Abe, 2015; Boeckx, 2008; Bošković, 1994, 1996, 1997; Bresnan, 1972, 1977; Brillman & Hirsch, 2015; Browning, 1996; Chomsky & Lasnik, 1977; Deal, 2015; Doherty, 1993, 2000; Erlewine, 2014; Ishii, 1999, 2004; Kandybowicz, 2009; Lohndal, 2009; Perlmutter, 1968, 1971; Pesetsky & Torrego, 2001, 2007; Pesetsky, 1982; N. Richards, 2001; Rizzi & Shlonsky, 2007; Rizzi, 1982, 2014; Roussou, 1994, 2002, 2010; Sobin, 1987, 2002; Taraldsen, 1978), but few have attempted a *unified* account of both the *that*-trace and anti-*that*-trace effects. One potential reason for this is that, as pointed out above, each effect is apparently doubly unexpected from the perspective of the other, thereby making a unified analysis very difficult to imagine.

Of course, the assumption is that these two effects should be unified. If one does not believe they should be, the whole problem of finding a unified account vanishes. However, a number of considerations suggest that a unified analysis is at least not implausible from the outset.

First, as the names of the effects suggest, both effects involve the presence/absence of *that* in finite subordinate clauses (note that short subject RCs may use a *wh*-relative pronoun instead of *that*). Admittedly, the subordinate clauses are of different types, i.e. RCs and verbal complement clauses. One could argue that *that* in these different clause types is not the same element. Indeed, in many languages, the morphological form of relative markers and clausal complementisers is different. Furthermore, subject relative markers may differ from non-subject relative markers. However, in English, the morphology does not motivate such distinctions. If we take

5

seriously the idea that UG is impoverished (Berwick & Chomsky, 2011; Biberauer & Roberts, 2015; Boeckx, 2014; Chomsky, 2005), distinctions made in one language cannot simply be used as arguments for those same distinctions in another. Instead, we must seriously consider the idea that different languages will make different grammatical distinctions based on the Primary Linguistic Data used during acquisition.

Second, both effects involve subject extraction. The optionality in the presence/absence of *that* present in complement clauses and RCs disappears in the context of subject extraction. Furthermore, the condition on optionality only affects the *that* which is local to the original extraction site of the subject. Other instances of *that* remain optional.

(6)   a.   Who did Bill think (that) you said *t* saw Mary?

       b.   *Who did Bill think (that) you said that *t* saw Mary?

This shows that the *that*-trace effect is not tied to subjects *per se*, but rather to the initial movement from subject position.

Third, whilst short subject RCs exhibit the anti-*that*-trace effect, long-distance subject RCs exhibit the *that*-trace effect (compare (7a,b) where there is no overt complementiser introducing the clause embedded inside the RC, with (7c,d) where the complementiser introducing the clause embedded inside the RC is overt). Furthermore, long-distance subject RCs do not exhibit an anti-*that*-trace effect (the *that* introducing the RC is optional, as (7a) and (7b) show).

(7)   a.   The man [**that** Bill said *t* saw Mary] was short.

       b.   The man [Bill said *t* saw Mary] was short.

       c.   *The man [**that** Bill said **that** *t* saw Mary] was short.

       d.   *The man [Bill said **that** *t* saw Mary] was short.

6

These facts show that the anti-*that*-trace effect is not related to relativisation *per se*, nor to relativisation of subjects *per se*. Instead, the anti-*that*-trace effect arises in cases of relativisation of the *highest* subject in a clause. In contrast, the *that*-trace effect arises in cases of extraction of a subject embedded in a clause. This is an important point: whilst both effects involve *that* and subject extraction, they differ in that the *that*-trace effect involves extraction across a clause boundary whilst the anti-*that*-trace effect does not. This generalisation does not seem to have received much consideration in the literature. It will be crucial to the analysis developed in what follows.

The striking similarities suggest that the two effects should be unified and the observation that the two effects differ in terms of whether a clause boundary is crossed or not suggests a way of approaching the problem. The major questions for a unified analysis of the *that*-trace and anti-*that*-trace effects are thus: (i) why do both effects involve the presence/absence of *that*? (ii) why do these effects only arise local to the original extraction site? (iii) why do these effects differ in terms of whether a clause boundary is crossed or not? These questions will guide our investigation.

3 An analysis

The structure of this section is as follows: Section 3.1 will make some remarks on previous accounts of the *that*-trace effect and obstacles to a unified account of *that*-trace and anti-*that*-trace effects. Section 3.2 will lay out my assumptions about clause structure. Section 3.3 presents a hypothesis based on an intuitive analysis of the anti-*that*-trace effect, and Section 3.4 is an exploration of the consequences of this hypothesis when applied to the *that*-trace paradigm. Section 3.5 is a summary of the major findings.

3.1 Some remarks on previous accounts

The literature on the *that*-trace effect is vast and it would be beyond the scope of this paper to provide a comprehensive review (see Pesetsky, 2015 for an overview). Instead, I will suggest some reasons why previous approaches do not lend themselves to a unified analysis of the *that*-trace and anti-*that*-trace effects (admittedly this is not their primary goal).

The vast majority of *that*-trace analyses assume a single C head, i.e. the C domain is not split. This applies not just to proposals pre-dating Rizzi's (1997) seminal paper, but also to many proposals since (Brillman & Hirsch, 2015; Erlewine, 2014; Ishii, 1999, 2004; Pesetsky & Torrego, 2001, 2007; Roussou, 1994, 2002, 2010), although there are some notable (albeit unsurprising) exceptions (Rizzi & Shlonsky, 2007; Rizzi, 2014). Economy plays a significant role in minimalist accounts of the *that*-trace effect. Although the details and implementation vary, there is something of a consensus that the presence of *that* renders movement of a *wh*-subject uneconomical in some way.

If there is only one C head, it is very difficult to imagine how an Economy-based approach can account for both the *that*-trace and anti-*that*-trace effects in a unified way. Whilst it is conceivable that C may have multiple exponents depending on its featural specification, and that these may impact on a *wh*-subject's extraction possibilities, it is no longer clear that we are dealing with the 'same' derivations. If this is the case, Economy has no role to play. The same problem arises on a strongly lexicalist approach, since in these cases we would presumably be dealing with different numerations. For this reason, it seems more promising to pursue the intuition underlying Economy-based proposals, but to allow CP to be split, as has been independently proposed, so as to capture both the *that*-trace and anti-*that*-trace effects in a unified way.

8

Another hurdle to a unified analysis relates to the major concern of many of the previous approaches. Approaches based on the Nominative Island Condition (for example, Pesetsky, 1982; Taraldsen, 1978) and the Empty Category Principle (for example, Doherty, 1993, 2000; Rizzi, 1982) both focussed on the licensing conditions of the empty subject element in SpecTP. As pointed out above, however, there is a significant difference between the *that*-trace and anti-*that*-trace effects in terms of whether a clause boundary is crossed or not. By focussing on the licensing of the empty subject in SpecTP, attention is diverted away from what happens to the *wh*-extracted subject after moving from this position. A similar objection could be mounted against a Subject Criterion approach (Rizzi & Shlonsky, 2007; Rizzi, 2014). According to such approaches, the *that*-trace effect arises because of a special property of SpecTP, namely the hypothesis that it is a criterial position. As will be seen, we will argue that the *that*-trace and anti-*that*-trace effects have more to do with a distinction between final and intermediate landing sites in the C domain than with any special property of SpecTP.[4]

Overall the tendency seems to have been to ignore or set aside the anti-*that*-trace effect as an outstanding problem or curiosity (Chomsky & Lasnik's (1977) well-known *that*-trace filter simply includes an exception clause for it). Where the anti-*that*-trace effect has been considered in more detail, the tendency has been to give *that* in RCs (or possibly only *that* in short subject RCs) a different analysis from the one given to *that* elsewhere

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[4] For arguments on the need to distinguish intermediate and final landing sites, see, for example, N. Richards (2001), Sheehan & Hinzen (2011) and Georgi (2014). There are also explicit arguments in the recent literature that final and intermediate landing sites are not distinct (see Van Urk & Richards, 2015; Van Urk, 2015 on Dinka).

(for example, Doherty, 1993, 2000; Rizzi & Shlonsky, 2007; Roussou, 2002, 2010). Whilst this is certainly a possibility (and highly plausible for languages that make a lexical distinction in such cases), if we take the syncretism in English complementisers seriously (see, for example, Baunaz & Lander, submitted; Baunaz, 2014) from an acquisition perspective, it is not so clear that having different analyses is *a priori* plausible for English. Furthermore, it would leave unexplained the striking similarities between the two effects pointed out above.

3.2   Assumptions concerning clause structure

Before turning to the analysis proper, it is necessary to clarify and justify my assumptions concerning clause structure.

For RCs, I adopt the Matching Analysis following Salzmann (2006). According to this analysis, the RC head, i.e. the nominal modified by the RC, is external to the RC itself. The RC head is matched by a copy inside the RC itself. The RC-internal copy moves to the edge of the RC, thereby creating a predicate (Heim & Kratzer, 1998). The RC predicate is then predicated of the RC head (only the RC-external copy of the RC head is pronounced). Traces are used throughout.

(8)   the man that John saw

[$_{DP}$ the [$_{NP}$ [man]$_k$ [$_{CP}$ [man]$_i$ that [$_{TP}$ John saw t$_i$]]]]

As will be seen, our analysis of the *that*-trace and anti-*that*-trace effects takes place entirely inside CP. Consequently, I will remain agnostic concerning exactly how the predication relation of the Matching Analysis is to be captured syntactically.[5] Furthermore, for simplicity, only the CP structure of RCs will be illustrated in what follows.

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[5] See Williams (1980), Bowers (1993), Den Dikken (2006) *inter alia*, for proposals concerning how predication is represented syntactically.

Although *that*-clauses and *that*-RCs often seem to be in free variation with Ø-clauses and Ø-RCs respectively, there are a number of contexts beyond the *that*-trace and anti-*that*-trace paradigms where such free variation is suspended. Such evidence has been used by various authors to argue that Ø-clauses and Ø-RCs contain less syntactic structure than their *that*-counterparts (Bošković, 1994, 1996, 1997; Doherty, 1993, 2000; Grimshaw, 1997; Weisler, 1980). This claim is illustrated below using fronting since it applies to both complement clauses and RCs.[6]

Starting with *that*-clauses, observe that they allow adverbial fronting, as in (9). Fronted adverbials cannot appear to the left of *that* with an embedded construal, as in (10). (9) and (10) are from Doherty (2000: 15):

(9)　　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.

(10)　　a.　　*She prayed *next Wednesday* that the check would arrive.

　　　　b.　　*We concluded *in the future* that he should be closely watched.

　　　　c.　　*We maintain *in Dublin* that good coffee is hard to find.

　　　　d.　　*John claims *during the party* that Ted squirted water at Eric.

These data suggest that *that* delimits the left-edge of the embedded clause.

That-RCs also allow fronted material such as fronted adverbials, topicalisation and negative preposing. (11) is from Bianchi (1999: 177).

(11)　　a.　　This is the kind of car that [for my son] I wouldn't even have
　　　　　　　considered buying.

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[6] Other contexts include sentential subjects (where *that* is obligatory) (see, e.g., Stowell, 1981) and slifting (where Ø is obligatory) (Ross, 1973). I will not discuss these contexts here.

b. [(?)]I saw a dress that [under no circumstances] would I have considered buying for my daughter.[7]

Such material cannot appear to the left of *that* with embedded construal, again suggesting that *that* delimits the left edge of the RC.

(12) a. *This is the kind of car [for my son] that I wouldn't even have considered buying.

b. *I saw a dress [under no circumstances] that would I have considered buying for my daughter.

Note also that (11b) involves negative preposing and subject-auxiliary inversion. This suggests that there is a functional head in the C domain lower than *that*.

Let us now turn to Ø-clauses. Doherty (2000: 16) claims that fronted adverbials in *that*-less finite declarative clauses are "robustly ungrammatical" (see also Pesetsky & Torrego, 2001; Rizzi, 1997, 2014).[8] Consider the following, adapted from (9) and (10).

(13) 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.

The same contrast holds for RCs: Ø-RCs are incompatible with fronted adverbials, topicalisation and negative preposing (Bianchi, 1999: 177).

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[7] Bianchi marks (11b) with a ?; I, and others I have consulted, find (11b) fully grammatical.

[8] Whilst I believe there is a contrast, with the appropriate intonation I feel it may be possible to interpret the fronted adverbials in (13) with the embedded clause (see also Sobin, 1987). The contrast is stronger with RCs (see fn 9).

(14)   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.

The differences between *that*-clauses and *that*-RCs on the one hand, and Ø-

clauses and Ø-RCs on the other, strongly suggests that *that* and Ø are not

simply phonological variants of the same head. If they were, we would expect

(9) and (11) to pattern with (13) and (14), with *that* delimiting the left edge in

the former and Ø delimiting it in the latter. Instead, we find that Ø-clauses and

Ø-RCs seem to contain less syntactic structure than *that*-clauses and *that*-

RCs respectively. More specifically, Ø-clauses and Ø-RCs do not contain

enough syntactic structure in their left peripheries to host fronted adverbial

material.[9]

     But what does having less syntactic structure mean exactly? One

possibility is that Ø-clauses and Ø-RCs are truncated versions of their *that*-

counterparts. A number of authors have argued that Ø-clauses and Ø-RCs

are actually TPs (= IPs) whilst their *that*-counterparts are CPs (Bošković,

1994, 1996, 1997; Doherty, 1993, 2000; Grimshaw, 1997; Ishii, 2004;

Weisler, 1980). However, if CP can be split into at least Force and Fin (Rizzi,

1997), it is possible that a clause could be truncated without lacking a C

domain entirely. In other words, Ø-clauses and Ø-RCs could be FinPs (rather

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[9] If it is the case that (14) is ungrammatical whilst (13) is degraded but

grammatical, this could be due to the idea that Ø-clauses and Ø-RCs only

have one available position in their left periphery. In Ø-RCs, this would

necessarily be occupied by a copy of the RC head, thereby preventing any

additional fronted material. In Ø-clauses, however, this position is available

for fronted adverbials in principle if not always in practice.

than TPs), whilst their *that*-counterparts could be ForcePs, as illustrated in (15).

(15)   a. $[_{\text{ForceP}}$ Force $[_{\text{FinP}}$ Fin $[_{\text{TP}}$ T …]]]   (*that*-clauses and *that*-RCs)

       b. $[_{\text{FinP}}$ Fin $[_{\text{TP}}$ T …]]   (Ø-clauses and Ø-RCs)

Analysing Ø-clauses and Ø-RCs as having a truncated C domain rather than no C domain at all seems preferable given the observation that *that*-RCs and Ø-RCs exhibit no discernible interpretive difference (Doherty, 1993, 2000), i.e. both must involve A̅-movement to the C domain thereby creating an A̅-chain in the RC (Chomsky, 1977). This is interpreted as lambda abstraction and turns a proposition into a predicate (Heim & Kratzer, 1998). If Ø-RCs were TPs, there would be no available target for A̅-movement and hence no clausal predicate could be formed.[10]

However, another possibility is that Ø-clauses and Ø-RCs are full CPs just like their *that*-counterparts, only the former project less syntactic structure than the latter. This can be understood in terms of Giorgi & Pianesi's (1997) Feature Scattering. Applied to the C domain, this proposal says that the features of the C domain may be located on a single (syncretic) syntactic

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[10] There are alternative proposals in the literature, however. Doherty (1993, 2000) proposes that Ø-RCs do not involve A̅-movement and instead have a base-generated null variable directly A̅-bound by the RC head. This A̅-binding, however, mimics A̅-movement in being sensitive to subjacency and being potentially unbounded. It thus seems uneconomical to have two separate methods for forming A̅-chains. Bošković (1994, 1996, 1997) proposes that Ø-RCs involves the relative operator adjoining to IP (=TP). This creates an A̅-chain via movement but makes a distinction between an adjoined position and a specifier position (although Bošković argues that such a distinction may be independently necessary to account for the absence of resumption in Ø-RCs).

head or scattered across a number of heads (always in a strict functional sequence as revealed by work in the cartographic enterprise). In other words, the CP may be split or unsplit, with a split CP projecting more syntactic structure than an unsplit CP. According to this, the CP of Ø-clauses and Ø-RCs would be unsplit, whilst the CP of their *that*-counterparts would be split, as illustrated in (16).

(16)   a.   [ForceP Force [FinP Fin [TP T …]]]   (*that*-clauses and *that*-RCs)

       b.   [CP C   [TP T …]]]   (Ø-clauses and Ø-RCs)

     Cartographic considerations seem to favour the syncretism approach over the truncation approach. Research in syntactic cartography has revealed that relativisation targets a high position in the split CP, typically labelled Force (Rizzi, 1997). Therefore, in Ø-RCs, the left peripheral head targeted by relativisation must contain properties/features associated with Force. Since Ø-RCs have only a single left peripheral head (as shown above), this head must be syncretic, i.e. it must contain the properties/features of the entire C domain. If Ø-RCs were FinPs and lacked a Force projection entirely, we would have to say that relativisation in English can target either Force or Fin, the latter being unexpected from a cartographic perspective. Consequently, I will adopt the structures in (16) in what follows.[11]

     To summarise, *that*-clauses and *that*-RCs involve split CPs (split into at least Force and Fin projections) whilst Ø-clauses and Ø-RCs involve unsplit CPs.

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[11] This not to say a truncation approach is inconceivable. For example, we could say that, rather than specifically targeting Force (or a head with the Force feature/property), relativisation targets the highest head in a given domain, whatever that head may be, analogous to the dynamic view of phases (Bobaljik & Wurmbrand, 2005; Bošković, 2014; Harwood, 2015).

3.3 The anti-*that*-trace effect

With our assumptions concerning clause structure in place, we turn now to the analysis of the *that*-trace and anti-*that*-trace effects. In a break from tradition, let us first consider the anti-*that*-trace effect. Short subject *that*-RCs have the following structure (for simplicity, I show the subject originating in SpecTP. Recall that only the structure of the RC itself is shown):

(17)   The man [**that** saw me] was tall.

[ForceP [DP **man**]ᵢ [Force' Force=**that** [FinP Fin=Ø [TP tᵢ [T' T saw me]]]]]
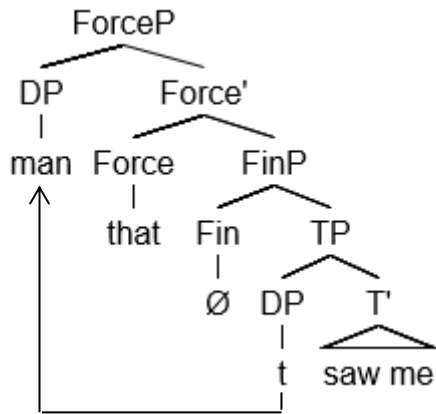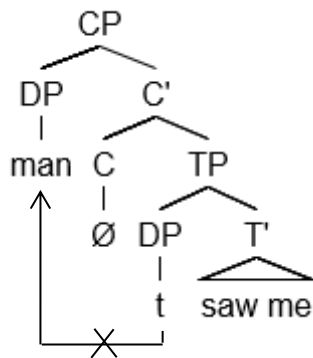

In (17), the subject *man* moves from SpecTP (the canonical subject position) to SpecForceP. This establishes the Ā-dependency (the operator-variable relation) required in RCs (Chomsky, 1977).

Now consider the structure of the ungrammatical short subject Ø-RC (recall that C is a syncretic head combining properties of both Force and Fin):

(18)   *The man [Ø saw me] was tall.

*[CP [DP **man**]ᵢ [C' C=Ø [TP tᵢ [T' T saw me]]]]

(18) exhibits the anti-*that*-trace effect. The subject *man* moves from SpecTP to SpecCP to establish the Ā-dependency but the result is ungrammatical. Why should this be? We will simply postulate that movement from SpecTP to SpecCP is banned, a type of anti-local movement (see also Erlewine, 2014, 2015).[12]

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[12] Erlewine (2014, 2015) provides the following definitions:

(i)   Spec-to-Spec Anti-Locality:

        Ā-movement of a phrase from the Specifier of XP must cross a

        maximal projection other than XP.

(ii)   Definition: crossing

        Movement from position α to position β *crosses* ɣ if and only if ɣ

        dominates α but does not dominate β.

This type of anti-locality is different from other anti-locality proposals in the literature, for example, Abels (2003, 2012a) and Grohmann (2000). As an anonymous reviewer notes, (i) remains a stipulation awaiting a more principled explanation (e.g. Why this configuration? Why the restriction to Ā-movement?). Douglas (2015) attempts to derive (at least some instances of) Spec-to-Spec Anti-Locality from labelling. In brief, the subject and T project a φ label (see Chomsky, 2013). C's complement is thus φ. Attempting to move the subject (which contains those same φ-features) to SpecCP gives the

(19)   Movement from SpecTP to SpecCP is prohibited.

(19) specifically rules out movement to SpecCP *from SpecTP*, it does not rule out movement from another position such as SpecvP (hence the reason for calling (19) a type of anti-local movement). The ban in (19) thus captures the fact that the anti-*that*-trace effect only applies to highest subjects. Other RCs do not involve such anti-local movement. The structures for a direct object *that*-RC and Ø-RC are shown below (I assume that internal arguments transit through SpecvP, i.e. the left edge of the v phase domain, on their way to the C domain, as shown in the labelled bracketing).

(20)   The man [**that** John saw] was tall.

[ForceP [DP **man**]ᵢ [Force' Force=that [FinP Fin=Ø [TP John [T' T [vP **t**ᵢ saw **t**ᵢ]]]]]]

(21)   The man [Ø John saw] was tall.

[CP [DP **man**]ᵢ [C' C=Ø [TP John [T' T [vP **t**ᵢ saw **t**ᵢ]]]]]
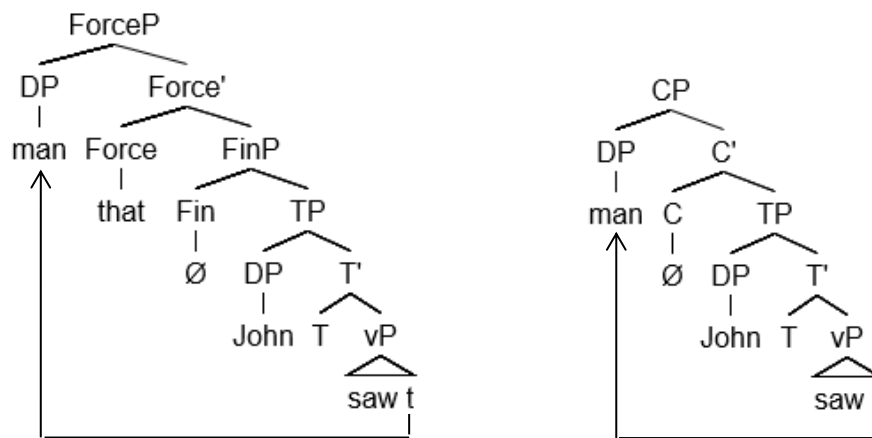
Note that the *wh*-extracted RC head does not move out of the RC, i.e. no clause boundary is crossed.

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impression that φ is both C's complement and C's specifier, hence it looks as if there is a 'derived' Comp-to-Spec anti-locality violation, where Comp-to-Spec anti-locality reduces to Economy (Abels, 2003, 2012a).

Before moving on to the *that*-trace effect, a word on *wh*-RCs, i.e. RCs introduced by a *wh*-relative pronoun, is in order. *Wh*-RCs and *that*-RCs pattern alike (and unlike Ø-RCs) in that both permit fronted material in the RC (such material follows the *wh*-relative pronoun), as in (22).[13]

(22)   I saw a dress which [under no circumstances] would I have
        considered buying for my daughter

This suggests that *that*-RCs and *wh*-RCs both contain split CPs. This correctly predicts that short subject *wh*-RCs are possible.

(23)   a.   the man who saw me

        b.   the house which collapsed

However, as is well-known, *wh*-relative pronouns and *that* cannot co-occur.

(24)   a.   *the man who that saw me

        b.   *the man who that John saw

(25)   a.   *the house which that collapsed

        b.   *the house which that John destroyed

These examples exhibit the so-called Doubly Filled COMP effect (Chomsky & Lasnik, 1977). More generally, it seems to be impossible for both the specifier

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[13] They can also extrapose, as in (i) and stack, as in (ii).

(i)   a.   ?*I met the man at a party last night you were about to marry.

        b.   I met the man at a party last night that/who you were about to
                marry.

(ii)   a.   *I met the man you wanted to marry Sue likes.

        b.   I met the man you wanted to marry that/who Sue likes.

However, see Bhatt (2015: 738) for counter-examples showing extraposability and stackability of Ø-RCs (these remain dispreferred relative to non-Ø-RC examples though). Thanks to an anonymous reviewer for pointing this out.

and head of a projection to be overtly pronounced (for proposals on how to derive this, see, for example, Koopman, 2000; Neeleman & Van de Koot, 2006; Starke, 2004). This suggests that *wh*-RCs are ForcePs, and that the Force head is null as a result of the Doubly Filled COMP effect. Therefore, the presence of *that* or a *wh*-relative pronoun indicates that CP is split. If neither is present, this indicates that CP is not split.

Furthermore, although I am adopting the widespread idea that *that* is a complementiser in both RCs and complement clauses (Bhatt, 2002; Bianchi, 1999, 2000a, 2000b; De Vries, 2002; Kayne, 1994), my analysis would also be compatible with approaches where *that* is treated as a relative pronoun (Arsenijević, 2009; Kayne, 2014; Manzini, 2014). The crucial point for me is that *wh*-relative pronouns and *that* occupy the highest bit of structure in a *split* CP, i.e. Force or SpecForceP, whilst Ø spells out an *unsplit* C head.

3.4   The *that*-trace effect

If we assume that movement from SpecTP to SpecCP is prohibited (as stated in (19)), what does this tell us about (cross-clausal) extraction of a subject?

First, let us consider successful extraction of an embedded subject, which requires *that* to be absent. As argued above, the embedded clause thus lacks a ForceP. There are two possible derivations to consider.

(26)   Who did you say Ø saw me?

a.   **Who**$_i$ did you [$_{vP}$ t$_i$ say [$_{CP}$ C=Ø [$_{TP}$ t$_i$ [$_{T'}$ T saw me]]]]?

b.   *****Who**$_i$ did you [$_{vP}$ t$_i$ say [$_{CP}$ t$_i$ [$_{C'}$ C=Ø [$_{TP}$ t$_i$ [$_{T'}$ T saw me]]]]]?
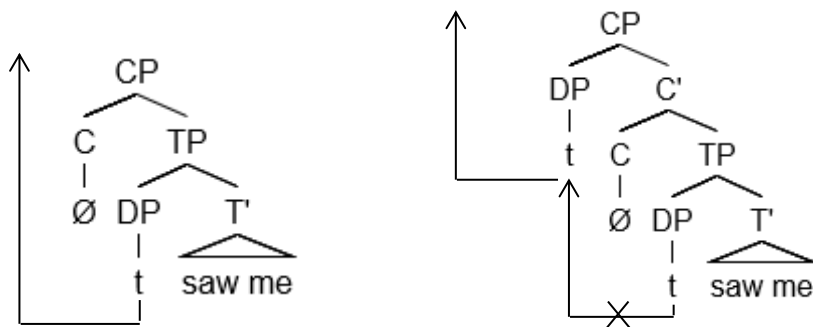
In (26a), the subject moves directly from the embedded SpecTP to the matrix SpecvP, SpecvP being the phase edge (Chomsky, 2000, 2001, 2004, 2008), without transiting through the edge of the embedded clause. In (26b), movement proceeds via the edge of the embedded clause, i.e. via SpecCP. Given our hypothesis that movement from SpecTP to SpecCP is prohibited, as stated in (19), we can rule out (26b). By process of elimination, (26a) is thus the correct derivation for successful extraction of embedded subjects. In other words, when CP is unsplit, extracting elements do not transit through the C domain. I will return to the escape hatch issue for split and unsplit CPs in section 5.2.

We now turn to unsuccessful extraction of an embedded subject. In such cases, *that* is present, i.e. the CP is split into (at least) Force and Fin.[14] There are three possible derivations to consider, all of which result in ungrammaticality.

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[14] As an anonymous reviewer points out, *that*-trace effects are also found in embedded interrogatives (insofar as extraction is allowed; compare (i) with (35)):

(i)   a.   ?Who do you wonder whether John saw?

       b.   *Who do you wonder whether left?

Unlike embedded declaratives, there is no option of complementiser-drop. In our terms, this means that embedded interrogatives *must* have a split CP, i.e. there is no option of having a syncretic C head (spelled out as Ø). In line with what has been said above, the presence of a phonologically overt element in the C-domain indicates that the C-domain is split. The same might also be said of *for*, which exhibits the *for*-trace effect (thanks to another anonymous reviewer):
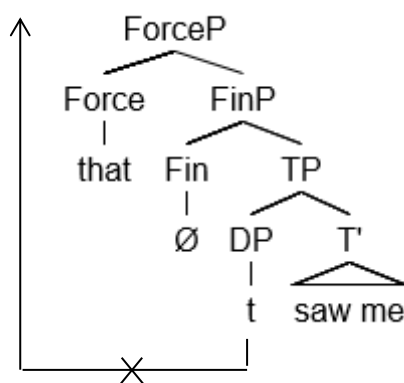
(ii)   *Which guest did Jamie want badly for to break the piñata?

The first is that a subject cannot move directly to matrix SpecvP across both FinP and ForceP. This is stated in (27) and exemplified in (28).

(27)   Movement to matrix SpecvP across both FinP *and* ForceP in one step is prohibited.

(28)   *Who did you say that saw me?

*Who$_i$ did you [$_{vP}$ t$_i$ say [$_{ForceP}$ Force=that [$_{FinP}$ Fin=Ø [$_{TP}$ t$_i$ [$_{T'}$ T saw me]]]]]?

```
              ForceP
             /      \
        Force        FinP
          |         /    \
        that     Fin      TP
                  |       /  \
                  Ø     DP    T'
                        |    /  \
                        t   saw me
```

The distance between embedded SpecTP and the matrix SpecvP is simply too great if there is a ForceP as well as a FinP in between. (27) also applies to non-subjects.

The second option that is ruled out is the availability of SpecForceP as an intermediate landing site. This is stated in (29) and exemplified in (30).

(29)   SpecForceP is not an available intermediate landing site.

(30)   *Who did you say **that** saw me?

*Who$_i$ did you [$_{vP}$ t$_i$ say [$_{ForceP}$ t$_i$ [$_{Force'}$ Force=that [$_{FinP}$ Fin=Ø [$_{TP}$ t$_i$ [$_{T'}$ T saw me]]]]]]?
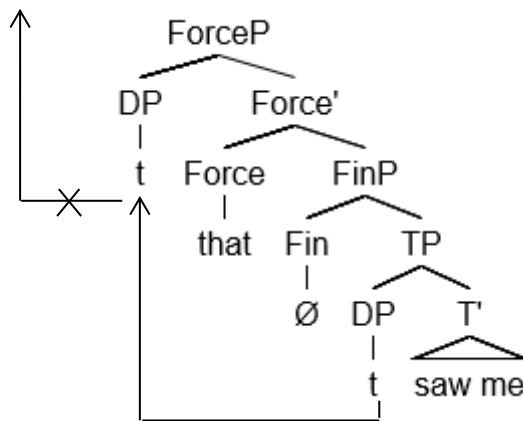
If SpecForceP were an available intermediate landing site, it should be possible for an extracted subject to move across FinP to SpecForceP, and then from SpecForceP to matrix SpecvP. Recall that there is nothing preventing a subject moving from SpecTP to SpecForceP (this was our derivation for short subject *that*-RCs). (29) also applies to non-subjects.

The postulate in (27) implies that movement via the edge of the embedded clause is required, and the postulate in (29) states that movement does not take place through SpecForceP. The third and final option left to us (and which results in ungrammaticality) is that movement proceeds through SpecFinP, as in (31).

(31)   *Who did you say **that** saw me?

*Who$_i$ did you [$_{vP}$ t$_i$ say [$_{ForceP}$ Force=that [$_{FinP}$ t$_i$ [$_{Fin'}$ Fin=Ø [$_{TP}$ t$_i$ [$_{T'}$ T saw me]]]]]]?

ForceP
Force   FinP
|
that   DP   Fin'
|
t   Fin   TP
|
Ø   DP   T'
|
t   saw me
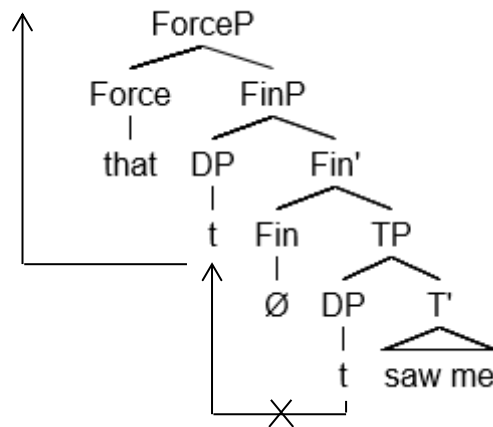
Why should this be ruled out? I propose that (31) is ruled out for the same reason as short subject Ø-RCs, namely they both involve anti-local movement. Recall that short subject Ø-RCs, as in (18) (repeated below as (32)), involve anti-local movement from SpecTP to SpecCP (where TP is the complement of C).

(32)   *The man [Ø saw me] was tall.

$*[_{CP} [_{DP} \textbf{man}]_i [_{C'} C=\varnothing [_{TP} t_i [_{T'} T \text{ saw me}]]]]$

Now note that (31) involves movement from SpecTP to SpecFinP (where TP is the complement of Fin). (31) and (32) are thus configurationally analogous in that both involve movement from SpecTP to the specifier of the head whose complement is TP (see also Erlewine, 2014, 2015).

Since non-subjects move to SpecFinP from a position lower than SpecTP, non-subjects can be extracted from *that*-clauses via SpecFinP without violating anti-locality.[15]

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[15] The *that*-trace effect would also not arise if the subject is extracted from a position other than SpecTP, as in the analysis of Italian in Rizzi (1982). The same can be observed in English contrasts like the following (Rizzi & Shlonsky, 2007: 126):

(i)   What do you think (that) there is in the box?

(33) Who did you say **that** John saw?

Who$_i$ did you [$_{vP}$ **t**$_i$ say [$_{ForceP}$ Force=that [$_{FinP}$ **t**$_i$ [$_{Fin'}$ Fin=Ø [$_{TP}$ John [$_{T'}$ T

[$_{vP}$ **t**$_i$ saw **t**$_i$]]]]]]]?
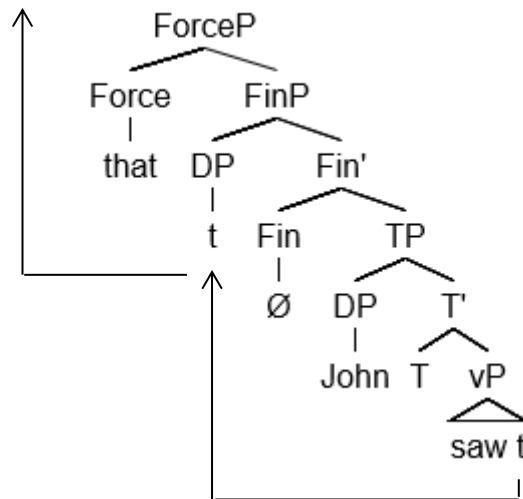
The generalisation that emerges is stated in (34).

(34)   *Wh*-extracted elements only transit through the C domain (more

specifically through SpecFinP) when CP is split. If CP is unsplit,

wh-extracted elements move across the C domain without transiting

through it.

We can now see that the *that*-trace effect arises when transition through or

across a CP-domain is at stake. In contrast, the anti-*that*-trace effect arises

when the CP-domain hosts the final landing site of Ā-movement.

Furthermore, the subject/object asymmetry of both effects arises primarily

from the ban on anti-local movement from SpecTP to SpecFinP/SpecCP.

An anonymous reviewer suggests that the analysis of (33) predicts that

extraction out of tensed *wh*-islands should also be grammatical, contrary to

fact.

(35)   a.   ?*What$_i$ did John wonder how Peter fixed t$_i$?

(ii)   What do you think (*that) is in the box?

b.   *How$_i$ did John wonder what Peter fixed t$_i$?

However, whilst these tensed *wh*-islands are configurationally analogous to (33) (perhaps identical, depending on what one believes about the final landing site of *wh*-phrases), a distinction arises when features are considered. For simplicity, if we assume that *how* and *what* occupy SpecForceP in the embedded clause and have [+wh] features, movement of a *wh*-phrase via SpecFinP will be configurationally licit but violate Relativised Minimality. [16] In (33), these [+wh] features are absent, thus there is no Relativised Minimality violation (see also Abels, 2012b).

An anonymous reviewer also asks how this analysis captures matrix subject questions, which exhibit 'vacuous movement' (or no movement) and no *do*-support (i.e. no (overt) T-to-C movement). In the literature, these have been linked to the *that*-trace effect (Koopman, 1983; Pesetsky & Torrego, 2001, 2007) or anti-*that*-trace effect (Roussou, 1994) in various ways. However, when we consider the distribution of these extraction strategies, it is not clear that matrix subject questions should be unified with the present analysis. Let us consider whether a particular strategy applies to the highest subject, all arguments except the highest subject, or all arguments. The results are summarised in the table and exemplified in (36) to (38).[17]

Strategy	Highest subject	All except highest	All

[16] I am ignoring several subtleties here, for example, using a D-linked *wh*-argument in (35a) improves acceptability:

(i)   ?Which car$_i$ did John wonder how Peter fixed t$_i$?

For a more detailed discussion of the argument vs. non-argument extraction asymmetries from *wh*-islands, see Rizzi (2001: 96-99).

[17] Note that, in the case of embedded *that*- and Ø-clauses, 'highest subject' refers to the highest subject in that embedded clause.

		subject	
that-RC	✓	✓	✓
Ø-clause	✓	✓	✓
Wh-movement; stressed *do*	✓	✓	✓
Ø-RC	*	✓	*
that-clause	*	✓	*
Wh-movement; unstressed *do*	*	✓	*
No movement; no *do*	✓	*	*

(36)   No asymmetry

    a.   *that*-RC

        i.   He is the man that saw me.

        ii.   He is the man that John saw.

    b.   Ø-clause

        i.   Who did you say saw me?

        ii.   Who did you say John saw?

    c.   *Wh*-movement; stressed *do*

        i.   Who *did* see me?

        ii.   Who *did* John see?

(37)   Asymmetry type I

    a.   Ø-RC

        i.   *He is the man saw me.

        ii.   He is the man John saw.

    b.   *that*-clause

        i.   *Who did you say that saw me?

        ii.   Who did you say that John saw?

    c.   *Wh*-movement; unstressed *do*

        i.   *Who did see me?

        ii.   Who did John see?

(38)   Asymmetry type II

    No movement; no *do*

    a.   Who saw me?

    b.   *John saw who?   (non-echo reading)

As can be seen, all arguments can be relativised using *that*-RCs, as in (36a), all arguments can be extracted out of Ø-clauses, as in (36b), and all arguments can be questioned by *wh*-movement with stressed *do*, as in (36c) (we could add the in-situ echo question strategy here too).

When a strategy does not apply to all arguments, we have a 'highest subject' vs. non-'highest subject' asymmetry. Crucially, however, there are different types of asymmetry. For type I, we have strategies that cannot apply to highest subjects. All arguments except the highest subject can be relativised using Ø-RCs, as in (37a), extracted out of *that*-clauses, as in (37b), and questioned by *wh*-movement with unstressed *do,* as in (37c). This is the sort of asymmetry that the present analysis deals with.

However, for type II, we have strategies that can only apply to highest subjects. In the case of matrix subject questions, the 'no movement with no *do*' strategy is specific to highest subjects, as in (38). English local relativisation and long-distance extraction do not exhibit a type II asymmetry, i.e. there is no RC-strategy specific to highest subjects nor is there any strategy for extraction out of embedded clauses which is specific to the highest subject of that embedded clause.

3.5   Summary

Starting with our anti-locality condition in (39), we derived (40a-b) and (41), as well as the generalisation in (42).

(39)   Movement from SpecTP to SpecFinP/SpecCP is prohibited.

(40)   a.   Movement to matrix SpecvP across both FinP *and* ForceP in one step is prohibited.

        b.   Movement across an unsplit CP is permitted.

(41)   SpecForceP is not an intermediate landing site.

(42)   *Wh*-extracted elements only transit through the C domain (more specifically through SpecFinP) when CP is split.

These postulates allow us to derive both the *that*-trace and anti-*that*-trace effects in a unified way. This works technically but a deeper, more principled explanation is desirable. We will thus attempt to derive these postulates (except (39)) in section 5. Before this, however, we will briefly consider the well-known adverb effect, a phenomenon whereby *that*-trace violations are alleviated.

4   The adverb effect

It is well-known that *that*-trace effects are alleviated in certain circumstances, most famously when an adverbial element intervenes between *that* and the position of the subject trace (Bresnan, 1977; Browning, 1987, 1996; Culicover, 1993; Erlewine, 2014, 2015; Fukui, 1993; Haegeman, 2003; Lohndal, 2009; Rizzi, 1997; Sobin, 2002). Crucially, the intervening adverb must be higher than the subject trace; adverbs lower than the subject trace do not alleviate the *that*-trace effect (Brillman & Hirsch, 2015; Rizzi, 1997: 311):

(43)   a.   *An amendment which they say that *t* will be law next year

        b.   An amendment which they say that, next year, *t* will be law

(44)   *Who did she say that *t* hardly speaks to her?

Furthermore, whilst fronted adverbials alleviate *that*-trace effects, fronted arguments (e.g. topics) do not (Rizzi, 1997: 310):

(45) a. *A man who I think that t knows this book very well

b. *A man who I think that, this book, t knows t very well

As Rizzi (2014), for example, points out, this difference between fronted adverbials and fronted arguments speaks against a linear-order- or PF-based approach to *that*-trace effects. The effect is syntactic.[18]

According to our analysis, the *that*-trace effect is the result of anti-local movement between SpecTP and SpecFinP, triggered by the presence of Force, i.e. *that*. Inserting material lower than SpecTP, for example, low adverbials, would thus do nothing to alleviate anti-local movement, as was seen in (43) and (44). But similarly, inserting material between FinP and ForceP would do nothing as movement from SpecTP to SpecFinP would still be anti-local. If topicalised or focussed arguments occupy a dedicated Topic or Focus position respectively located between Fin and Force (Rizzi, 1997), we have an account of why fronted arguments do not alleviate *that*-trace

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[18] The presence of *that*-trace effects at LF also strongly supports a syntactic treatment (see Kayne, 1981; Rizzi, 1982). The following examples of embedded multiple interrogatives exhibit a subject/object asymmetry (Kayne, 1981: 322):

(i) ?I know perfectly well which man said that he/I was in love with which girl.

(ii) *I know perfectly well which man said that which girl was in love with him/me.

Removing *that* from (ii), as in (iii), does seem to improve acceptability, though not fully.

(iii) ?I know perfectly well which man said which girl was in love with him/me.

effects, as was seen in (45). Instead, we predict that *that*-trace effects will only be alleviated by inserting material between TP and FinP, since only this will avoid movement from SpecTP to SpecFinP being anti-local. Crucially, the structure introducing such material must be optional, otherwise we would not expect any *that*-trace effects at all. This is summarised schematically below (Force is *that*; XP represents the inserted material):

(46)　a.　　　*[$_{ForceP}$ Force[**XP** [$_{FinP}$ *wh*-SUBJ Fin [$_{TP}$ *t* T …]]]] (anti-local)

　　　b.　　　*[$_{ForceP}$ Force [$_{FinP}$ *wh*-SUBJ Fin [$_{TP}$ *t* T [**XP** …]]]] (anti-local)

　　　c.　　　[$_{ForceP}$ Force [$_{FinP}$ *wh*-SUBJ Fin [**XP** [$_{TP}$ *t* T …]]]] (not anti-local)

(46a-b) involve anti-local movement from SpecTP to SpecFinP and hence exhibit the *that*-trace effect. In (46c), movement from SpecTP to SpecFinP is no longer anti-local and hence there is no *that*-trace effect.

　　　Haegeman (2003) convincingly shows that *that*-trace effects are only alleviated by locally fronted adverbials. Long-distance fronted adverbials behave more like fronted arguments in not being able to alleviate *that*-trace effects. This is illustrated in (47) (Haegeman, 2003: 644).

(47)　a.　　*This is the linguist who I think that *t* will get appointed in Geneva.

　　　b.　　This is the linguist who I think that **next year** *t* will get appointed in Geneva.

　　　c.　　*This is the linguist who I think that *t* expects that all his students will have a job.

　　　d.　　*This is the linguist who I think that **next year** *t* expects that all his students will have a job.

The locally fronted adverbial in (47b) alleviates the *that*-trace effect in (47a). However, the long-distance fronted adverbial in (47d) does not alleviate the *that*-trace effect in (47c).

Haegeman (2000, 2003) proposes that locally fronted (temporal) adverbials are 'scene-setters' whilst long-distance fronted adverbials are topics with respect to the higher clause. If long-distance fronted adverbials are in TopP, they fall under (46a) and no *that*-trace alleviation effects are expected, as desired. As for scene-setting locally fronted adverbials, the analysis developed here is only compatible with one of Haegeman's suggestions, namely the one where such adverbials are associated with the edge of IP (=TP) (Haegeman, 2002, 2003: 645). Let us therefore propose that locally fronted adverbials are introduced by ModP (Rizzi, 2001), which is otherwise absent, situated between FinP and TP, i.e. an instance of (46c). The insertion of ModP means that movement from SpecTP to SpecFinP is no longer anti-local, and the *that*-trace effect is consequently alleviated.[19]

The analysis here thus readily captures the adverb effect and also restricts the number of analytical possibilities, both theoretically desirable. It also highlights the fact that the analysis proposed here does not tie the *that*-trace effect to *that* and the subject trace. Rather the effect is the result of an anti-local movement between SpecTP and SpecFinP.

5　　Some theoretical implications

Recall our results from the end of section 3, repeated below.

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[19] As it stands, the account presented here predicts that the adverbial phrases that alleviate *that*-trace effects should also permit short subject Ø-RCs, i.e. (ii) should be more acceptable than (i).

(i)　　　*I'm going to fire the man gave you a hard time last year.

(ii)　　　*I'm going to fire the man last year gave you a hard time.

This prediction is not borne out, however. I do not have a satisfactory account of this at present.

(48) Movement from SpecTP to SpecFinP/SpecCP is prohibited.

(49) a. Movement to matrix SpecvP across both FinP *and* ForceP in one step is prohibited.

b. Movement across an unsplit CP is permitted.

(50) SpecForceP is not an intermediate landing site.

(51) *Wh*-extracted elements only transit through the C domain (more specifically through SpecFinP) when CP is split.

In this section we will consider these results from the perspective of phase theory. Phase theory is typically associated with skeletal phrase structures of the form C-T-v-V (Chomsky, 2000, 2001, 2004, 2008, 2013; Citko, 2014; Gallego, 2010, 2012; M. D. Richards, 2007). The cartographic enterprise, on the other hand, deals in much more fine-grained phrase structures. The problem of how phase theory and cartography fit together is a real one (Shlonsky, 2010) but they are not fundamentally incompatible (see, for example, Biberauer & Roberts, 2015; Chomsky, 2001; Rizzi, 2004b). Although a solution to this problem goes beyond the scope of this paper, our analysis suggests some possible avenues for exploration. For reasons of space, we will only briefly touch on two questions here, namely what counts as the phase head, and is the phase escape hatch part of the phase edge?

5.1 The phase head

According to phase theory, C (whether it stands for a single head or for a more fine-grained domain) is phasal. Given our analysis, we would thus expect both *that*-clauses and Ø-clauses to be phasal. Evidence that this is correct comes from reconstruction into intermediate positions.[20] Consider the following examples:

(52) *You told the girls$_i$ that/Ø Peter likes these pictures of each other$_i$.

─────────────────────

[20] Thanks to an anonymous reviewer for pointing this out.

(53)   Which pictures of each other$_i$ did you tell the girls$_i$ that/Ø Peter likes?

In (52), *each other* cannot be bound by *girls* across *Peter* (there is a Binding

Principle A violation). However, when *each other* is part of a *wh*-phrase that

undergoes successive cyclic movement, the result is grammatical, as in (53).

(53) thus suggests that the *wh*-phrase transits through an intermediate

position at the edge of the embedded clause.[21] In this position, *each other* is

c-commanded by *girls* but not by *Peter*, thereby satisfying Binding Principle A.

As (53) also shows, the embedded clause may be a *that*-clause or a Ø-

clause, suggesting that both types of embedded clause involve the *wh*-phrase

moving via the edge.

    But if the single syncretic C head of Ø-clauses is a phase head, our

analysis of the *that*-trace effect forces us to rethink the characterisation of the

phase edge and phase escape hatch.

5.2   The phase edge and phase escape hatch

    According to typical characterisations of phases, the phase escape

hatch is part of the phase edge. This is built into the definition of the Phase

Impenetrability Condition (PIC) (Chomsky, 2000: 108):

(54)   Phase Impenetrability Condition

        In a phase α with head H, the domain of H is not accessible to

        operations outside α, only H and its edge are accessible to such

        operations.

The *raison d'être* of the phase escape hatch is to allow extracting elements to

remain accessible, hence extracting elements must be part of the phase edge

by the definition in (54).

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[21] There are some proposals which propose to eliminate successive cyclic

movement through the C domain entirely (see Den Dikken, 2009, 2010;

Rackowski & Richards, 2005).

However, if the unsplit syncretic C head of Ø-clauses is phasal, (54) would lead us to expect that elements would have to transit through SpecCP. In the case of subjects, this would mean movement from SpecTP to SpecCP, which is anti-local. Instead, according to our analysis, extracting subjects move directly from SpecTP to the matrix SpecvP (see also Erlewine, 2014; Ishii, 1999, 2004). This implies that subjects, by virtue of being in SpecTP, are already in the phase escape hatch. This in turn suggests that non-subjects transit through the edge of TP in Ø-clauses as well. Assuming that the intermediate landing site of non-subjects is higher than (and asymmetrically c-commands) that of the subject, we have an account of the reconstruction effects into intermediate positions seen in (53). The conclusion is that the phase escape hatch is actually the specifier of the complement of the phase head, and not part of the phase edge at all. To summarise, in the case of Ø-clauses, C is the phase head and the phase escape hatch is the specifier of C's complement, i.e. SpecTP.

If we apply this to *that*-clauses where the CP is split, and assume that Force has phasal properties in a split CP (in line with Chomsky's (2000: 106ff) original intuition about phases being propositional, and/or perhaps as a result of Force being the highest head in an extended projection (Bošković, 2014)), we can capture the generalisation in (51). According to (51), *wh*-elements only transit through the C domain (more specifically, through SpecFinP) when the CP is split. In other words, successive cyclic movement transits through the specifier of the phase head Force's complement, i.e. SpecFinP.

We have arrived at a system where relativisation targets SpecForceP or SpecCP (where Force and C are phasal) but intermediate steps of successive cyclic Ā-movement target SpecFinP and SpecTP. In other words, there is a strict formal distinction between final and intermediate landing sites

(see also Georgi, 2014; N. Richards, 2001; Sheehan & Hinzen, 2011). Final landing sites for Ā-movement (criterial positions) are located in phase edges whilst intermediate landing sites (phase escape hatches) are located in the edge of the phase head's complement. This is schematically summarised in (55) where H is a phase head.

(55)   [$_{HP}$ SpecHP H [$_{XP}$ SpecXP X […

      a.   [$_{HP}$ **SpecHP H** [$_{XP}$ SpecXP X […   (phase edge)

      b.   [$_{HP}$ SpecHP H [$_{XP}$ **SpecXP** X […   (escape hatch)

      c.   [$_{HP}$ **SpecHP** H [$_{XP}$ SpecXP X […   (criterial position)

(55b) could be derived by combining Chomsky's (2000) idea that the complement of a phase head is spelled out upon completion of that phase with Fox & Pesetsky's (2005) proposal that spellout means linearisation.[22]

According to Fox & Pesetsky (and simplifying somewhat), an element, X, that is to move out of a linearised portion of structure must be at the leftmost edge of that structure. In this way, X is linearised so as to precede everything else in the linearised structure. Consequently, when X moves further, there will be no linear ordering contradictions. If X were not leftmost at the point of linearisation, X would be stated as following at least some element within the linearised structure. Consequently, when X moves further, it would be stated as both following and preceding at least one element. This results in an ordering contradiction and the derivation crashes.

This raises the question of what formally triggers movement of X to the edge of the phase head's complement, given that derivations cannot 'look ahead' and anticipate future problems such as linear ordering contradictions. One possibility is that the ability to 'project' an escape hatch is inherited

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[22] See Erlewine (2014) and Abe (2015) for alternative implementations of Fox & Pesetsky's idea in *that*-trace analyses.

(Chomsky, 2008; M. D. Richards, 2007) from the phase head. Such a mechanism would, however, be counter-cyclic and so does not remove the look-ahead problem entirely, as pointed out by two anonymous reviewers. There is also the more general question of whether intermediate movement steps are triggered by some requirement of the moving element itself (see Bošković, 2007) or by some requirement of the intermediate target (see, for example, Abels, 2012a; Van Urk & Richards, 2015 for recent defences of this view).

(55c), the idea that criterial positions are located in phase edges, seems to reflect more generally the discourse/information structural characterisation of heads within a split CP. On this account, heads like Force, Topic and Focus, which trigger criterial freezing effects (see Den Dikken, 2009; Rizzi & Shlonsky, 2007; Rizzi, 1997, 2006), are phase heads. Fin, however, is not (see also Totsuka (2014), who proposes that Force, Topic and a dedicated Rel(ative) head are phase heads whilst Fin is not).

5.3   Summary

We have explored several implications of our analysis for phase theory as applied to more cartographic phrase structures. Our account suggests a clear distinction between intermediate and final landing sites at least for Ā-movement. Final landing sites are criterial positions located in the phase edge, whilst intermediate landing sites (phase escape hatches) are located in the edge of the phase head's complement. The position of the escape hatch was derived from Fox & Pesetsky's (2005) cyclic linearisation combined with the idea that a phase head triggers spellout of the phase head's complement. Finally, we tentatively derived the anti-locality condition banning movement from SpecTP to SpecFinP/SpecCP by suggesting that labelling creates a

configuration virtually non-distinct from the one resulting in Comp-to-Spec anti-local movement, which is ruled out by Economy.

6   Conclusion

The major empirical contribution of this paper lies in the development of a unified analysis of both the *that*-trace and anti-*that*-trace effects, a long-standing and recalcitrant problem in the literature. The analysis is based on highly general principles, thereby lending it real explanatory depth. This is firmly within the minimalist spirit of seeking explanations at deeper levels of abstraction than those at which the problem is stated.

The *that*-trace and anti-*that*-trace effects arise from anti-locality combined with a split CP analysis of the differences between clauses with and without *that*. This led to a new perspective on the mechanics of phases and successive cyclicity. Our analysis suggests the escape hatch of a phase is actually lower than the phase head, which implies that the phase edge and phase escape hatch are completely distinct, contrary to standard assumptions.

In addition, given that the generalisations were framed in terms of phase theory, it would be desirable to investigate anti-locality effects in other phasal domains.

References

Abe, J. (2015). The EPP and subject extraction. *Lingua*, *159*, 1–17.

Abels, K. (2003). *Successive Cyclicity, Anti-locality, and Adposition Stranding*. Doctoral dissertation, University of Connecticut.

Abels, K. (2012a). *Phases: An essay on cyclicity in syntax*. Berlin: De Gruyter.

Abels, K. (2012b). The Italian Left Periphery: A View from Locality. *Linguistic Inquiry*, *43*(2), 229–254.

Arsenijević, B. (2009). Clausal complementation as relativization. *Lingua*, *119*(1), 39–50.

Baunaz, L. (2014). On the various sizes of complementizers. *Probus*, *0*(0). doi:10.1515/probus-2014-0001

Baunaz, L., & Lander, E. (n.d.). Syncretisms with the Complementizer: from Dem to the nominal core. *Syntax*.

Berwick, R. C., & Chomsky, N. (2011). The Biolinguistic Program: The Current State of its Evolution. In A. M. Di Sciullo & C. Boeckx (Eds.), *The Biolinguistic Enterprise: New Perspectives on the Evolution and Nature of the Human Language Faculty* (pp. 19–41). Oxford: Oxford University Press.

Bhatt, R. (2002). The raising analysis of relative clauses: Evidence from adjectival modification. *Natural Language Semantics*, *10*, 43–90.

Bhatt, R. (2015). Relative Clauses and Correlatives. In T. Kiss & A. Alexiadou (Eds.), *Syntax: Theory and Analysis Volume I* (pp. 708–749). Berlin: De Gruyter.

Bianchi, V. (1999). *Consequences of Antisymmetry: Headed Relative Clauses*. Berlin/New York: Mouton de Gruyter.

Bianchi, V. (2000a). Some Issues in the Syntax of Relative Determiners. In A. Alexiadou, P. Law, A. Meinunger, & C. Wilder (Eds.), *The Syntax of*

Relative Clauses (pp. 53–81). Amsterdam/Philadelphia: John Benjamins.

Bianchi, V. (2000b). The raising analysis of relative clauses: a reply to Borsley. *Linguistic Inquiry*, *31*(1), 123–140.

Biberauer, T., & Roberts, I. G. (2015). Rethinking Formal Hierarchies: A Proposed Unification. *Cambridge Occasional Papers in Linguistics*, *7*, 1–31.

Bobaljik, J. D., & Wurmbrand, S. (2005). The Domain of Agreement. *Natural Language & Linguistic Theory*, *23*(4), 809–865.

Boeckx, C. (2008). *Bare Syntax*. Oxford: Oxford University Press.

Boeckx, C. (2014). *Elementary Syntactic Structures: Prospects of a Feature-Free Syntax*. Cambridge: Cambridge University Press.

Bošković, Ž. (1994). Categorial Status of Null Operator Relatives and Finite Declarative Complements. *Language Research*, *30*(2), 387–417.

Bošković, Ž. (1996). Selection and the Categorial Status of Nonfinite Complements. *Natural Language & Linguistic Theory*, *14*(2), 269–304.

Bošković, Ž. (1997). *The Syntax of Nonfinite Complementation*. Cambridge, MA: MIT Press.

Bošković, Ž. (2007). On the Locality and Motivation of Move and Agree: An Even More Minimal Theory. *Linguistic Inquiry*, *38*(4), 589–644.

Bošković, Ž. (2014). Now I'm a Phase, Now I'm Not a Phase: On the Variability of Phases with Extraction and Ellipsis. *Linguistic Inquiry*, *45*(1), 27–89.

Bowers, J. (1993). The Syntax of Predication. *Linguistic Inquiry*, *24*(4), 591–656.

Bresnan, J. W. (1972). *Theory of Complementation in English Syntax*. Doctoral dissertation, MIT.

Bresnan, J. W. (1977). Variables in the theory of transformations. In P. W.

Culicover, T. Wasow, & A. Akmajian (Eds.), *Formal Syntax* (pp. 157–196). New York: Academic Press.

Brillman, R., & Hirsch, A. (2015). *An anti-locality account of English subject/non-subject asymmetries*. Handout, LSA Annual Meeting, Portland, Oregon.

Browning, M. A. (1987). *Null Operator Constructions*. PhD dissertation, MIT.

Browning, M. A. (1996). CP Recursion and that-t Effects. *Linguistic Inquiry*, *27*(2), 237–255.

Chacón, D. A., Fetters, M., Kandel, M., Pelzl, E., & Phillips, C. (n.d.). Indirect Learning and Language Variation: Reassessing the that-trace effect. *Journal of Linguistics*.

Chomsky, N. (1977). On Wh-Movement. In P. W. Culicover, T. Wasow, & A. Akmajian (Eds.), *Formal Syntax* (pp. 71–132). New York: Academic 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. (2004). Beyond Explanatory Adequacy. In A. Belletti (Ed.), *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3* (pp. 104–131). Oxford: Oxford University Press.

Chomsky, N. (2005). Three Factors in Language Design. *Linguistic Inquiry*, *36*(1), 1–22.

Chomsky, N. (2008). On Phases. In R. Freidin, C. P. Otero, & M. L. Zubizarreta (Eds.), *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud* (pp. 133–166). Cambridge, MA: MIT

Press.

Chomsky, N. (2013). Problems of projection. *Lingua*, *130*, 33–49.

Chomsky, N., & Lasnik, H. (1977). Filters and Control. *Linguistic Inquiry*, *8*(3), 425–504.

Cinque, G. (1995). *Italian syntax and Universal Grammar*. Cambridge: Cambridge University Press.

Citko, B. (2014). *Phase Theory: An Introduction*. Cambridge: Cambridge University Press.

Cowart, W. (1997). *Experimental Syntax: Applying Objective Methods to Sentence Judgments*. Thousand Oaks/London/New Delhi: SAGE Publications.

Cowart, W. (2003). *Detecting syntactic dialects: The that-trace phenomenon*. Paper presented at the 39th meeting of the Chicago Linguistic Society.

Culicover, P. W. (1993). Evidence against ECP Accounts of the that-t Effect. *Linguistic Inquiry*, *24*(3), 557–561.

De Vries, M. (2002). *The Syntax of Relativization*. Doctoral thesis, University of Amsterdam.

Deal, A. R. (2015). *TP is a phase in relative clauses*. Handout, WCCFL 33, Simon Fraser University.

Den Dikken, M. (2006). *Relators and Linkers: The Syntax of Predication, Predicate Inversion, and Copulas*. Cambridge, MA: MIT Press.

Den Dikken, M. (2009). *On the nature and distribution of successive cyclicity: Adjunction, resumption, and scope marking as the roads to success in long-distance relation building*. Ms., CUNY.

Den Dikken, M. (2010). Arguments for successive-cyclic movement through SpecCP: A critical review. *Linguistic Variation Yearbook*, *9*, 89–126.

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.

Douglas, J. A. (2015). *The That-Trace and Anti-That-Trace Effects: Unification and Theoretical Implications*. Paper presented at NELS 46, 16th-18th October, Concordia University.

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.

Fox, D., & Pesetsky, D. (2005). Cyclic Linearization of Syntactic Structure. *Theoretical Linguistics*, *31*, 1–45.

Fukui, N. (1993). A note on improper movement. *The Linguistic Review*, *10*(2), 111–126.

Gallego, Á. (2010). *Phase Theory*. Amsterdam/Philadelphia: John Benjamins.

Gallego, Á. (Ed.). (2012). *Phases*. Berlin: De Gruyter.

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.

Grohmann, K. K. (2000). *Prolific Peripheries: A Radical View from the Left*. Doctoral dissertation, University of Maryland, College Park.

Haegeman, L. (2000). Inversion, non-adjacent inversion and adjuncts in CP.

Transactions of the Philological Society, *98*, 121–160.

Haegeman, L. (2002). Sentence-medial NP-adjuncts in English. *Nordic Journal of Linguistics*, *25*, 79–108.

Haegeman, L. (2003). Notes on Long Adverbial Fronting in English and the Left Periphery. *Linguistic Inquiry*, *34*(4), 640–649.

Harwood, W. (2015). Being progressive is just a phase: celebrating the uniqueness of progressive aspect under a phase-based analysis. *Natural Language & Linguistic Theory*, *33*(2), 523–573.

Heim, I., & Kratzer, A. (1998). *Semantics in Generative Grammar*. Oxford: Blackwell.

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: Cascadilla Press.

Ishii, T. (2004). The Phase Impenetrability Condition, the Vacuous Movement Hypothesis and that-t effects. *Lingua*, *114*(2), 183–215.

Kandybowicz, J. (2009). Embracing edges: syntactic and phono-syntactic edge sensitivity in Nupe. *Natural Language & Linguistic Theory*, *27*, 305–344.

Kayne, R. S. (1981). Two notes on the NIC. In A. Belletti, L. Brandi, & L. Rizzi (Eds.), *Theory of markedness in generative grammar: Proceedings of the 1979 GLOW conference* (pp. 317–346). Pisa: Scuola Normale Superiore.

Kayne, R. S. (1994). *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.

Kayne, R. S. (2014). Why Isn't "this" a Complementizer? In P. Svenonius (Ed.), *Functional Structure from Top to Toe: The Cartography of Syntactic Structures, Volume 9* (pp. 188–231). Oxford: Oxford University Press.

Koopman, H. (1983). ECP Effects in Main Clauses. *Linguistic Inquiry*, *14*(2), 346–350.

Koopman, H. (2000). *The Syntax of Specifiers and Heads: Collected Essays of Hilda J. Koopman*. London: Routledge.

Koopman, H., & Sportiche, D. (2014). The que/qui Alternation: New Analytical Directions. In P. Svenonius (Ed.), *Functional Structure from Top to Toe: The Cartography of Syntactic Structures, Volume 9* (pp. 46–96). Oxford: Oxford University Press.

Lohndal, T. (2009). Comp-t Effects: Variation in the Position and Features of C. *Studia Linguistica*, *63*(2), 204–232.

Maling, J., & Zaenen, A. (1978). The Nonuniversality of a Surface Filter. *Linguistic Inquiry*, *9*(3), 475–497.

Manzini, M. R. (2014). The Romance k-Complementizers. In P. Svenonius (Ed.), *Functional Structure from Top to Toe: The Cartography of Syntactic Structures, Volume 9* (pp. 148–187). Oxford: Oxford University Press.

McCawley, J. D. (1998). *The Syntactic Phenomena of English. Second Edition*. Chicago: University of Chicago Press.

Neeleman, A., & Van de Koot, H. (2006). Syntactic Haplology. In M. Everaert & H. C. Van Riemsdijk (Eds.), *The Blackwell Companion to Syntax. Volume IV* (pp. 685–710). Oxford: Blackwell.

Perlmutter, D. M. (1968). *Deep and surface structure constraints in syntax*. Doctoral dissertation, MIT.

Perlmutter, D. M. (1971). *Deep and surface structure constraints in syntax*. New York: Holt, Rinehart and Winston.

Pesetsky, D. (1982). Complementizer-trace phenomena and the nominative island condition. *The Linguistic Review*, *1*, 297–343.

Pesetsky, D. (2015). *Complementizer-trace effects*. Ms., MIT.

Pesetsky, D., & Torrego, E. (2001). T-to-C Movement: Causes and Consequences. In M. Kenstowicz (Ed.), *Ken Hale: A Life in Language* (pp. 355–426). Cambridge, MA: MIT Press.

Pesetsky, D., & Torrego, E. (2007). The syntax of valuation and the interpretability of features. In S. Karimi, V. Samiian, & W. K. Wilkins (Eds.), *Phrasal and clausal architecture: Syntactic derivation and interpretation* (pp. 262–294). Amsterdam: John Benjamins.

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.

Rackowski, A., & Richards, N. (2005). Phase Edge and Extraction: A Tagalog Case Study. *Linguistic Inquiry*, *36*(4), 565–599.

Richards, M. D. (2007). On Feature Inheritance: An Argument from the Phase Impenetrability Condition. *Linguistic Inquiry*, *38*(3), 563–572.

Richards, N. (2001). *Movement in Language: Interactions and Architectures*. Oxford: Oxford University Press.

Rizzi, L. (1982). *Issues in Italian Syntax*. Dordrecht: Foris.

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. (2001). Relativized Minimality Effects. In M. Baltin & C. Collins (Eds.), *The Handbook of Contemporary Syntactic Theory* (pp. 89–110). Oxford: Blackwell.

Rizzi, L. (2004). On the Cartography of Syntactic Structures. In L. Rizzi (Ed.), *The Structure of CP and IP: The Cartography of Syntactic Structures, Volume 2* (pp. 3–15). Oxford: Oxford University Press.

Rizzi, L. (2006). On the form of chains: criterial positions and ECP effects. In L. L.-S. Cheng & N. Corver (Eds.), *WH-Movement: Moving On* (pp. 97–133). Cambridge, MA: MIT Press.

Rizzi, L. (2014). Some Consequences of Criterial Freezing: Asymmetries, Anti-adjacency, and Extraction from Cleft Sentences. In P. Svenonius (Ed.), *Functional Structure from Top to Toe: The Cartography of Syntactic Structures, Volume 9* (pp. 19–45). Oxford: Oxford University Press.

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.

Ross, J. R. (1973). Slifting. In M. Gross, M. Halle, & M.-P. Schützenberger (Eds.), *The Formal Analysis of Natural Languages* (pp. 133–169). The Hague: Mouton.

Roussou, A. (1994). *The Syntax of Complementisers*. Doctoral dissertation, UCL.

Roussou, A. (2002). C, T, and the subject: That-t phenomena revisited. *Lingua, 112*(1), 13–52.

Roussou, A. (2010). Subjects on the Edge. In E. P. Panagiotidis (Ed.), *The Complementizer Phase: Subjects and Operators* (pp. 76–116). Oxford: Oxford University Press.

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.

Shlonsky, U. (2010). The Cartographic Enterprise in Syntax. *Language and Linguistics Compass, 4*(6), 417–429.

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.

Sobin, N. (2009). Prestige Case Forms and the Comp-trace Effect. *Syntax*, *12*(1), 32–59.

Starke, M. (2004). On the Inexistence of Specifiers and the Nature of Heads. In A. Belletti (Ed.), *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3* (pp. 252–268). Oxford: Oxford University Press.

Stowell, T. (1981). *Origins of phrase structure*. Doctoral dissertation, MIT.

Taraldsen, K. T. (1978). *On the nominative island condition, vacuous application and the that-trace filter*. Ms., Indiana University Linguistics Club.

Totsuka, M. (2014). On Syntactic Distinctness and Phase Head in English Relative Clause. 文化, *77*(3/4), 74–88.

Van Urk, C. (2015). *A uniform syntax for phrasal movement: A case study of Dinka Bor*. Doctoral dissertation, MIT.

Van Urk, C., & Richards, N. (2015). Two Components of Long-Distance Extraction: Successive Cyclicity in Dinka. *Linguistic Inquiry*, *46*(1), 113–155.

Weisler, S. (1980). The Syntax of That-Less Relatives. *Linguistic Inquiry*, *11*(3), 624–631.

Williams, E. (1980). Predication. *Linguistic Inquiry*, *11*(1), 203–238.