On the timing of labeling: Deducing Comp-trace effects, the Subject Condition, the Adjunct Condition, and tucking in from labeling[*]

Željko Bošković
University of Connecticut

Abstract
The article provides a uniform account of a number of locality effects, in particular, the Subject Condition, the Adjunct Condition, Richards's (2001) tucking in effect, and the full Comp-trace paradigm, including (in addition to the basic cases) relative and extraposed clauses, the impossibility of short-subject topicalization, French *que-qui* alternation, and the effect of wh-movement on agreement in languages like Kinande. The account is based on a proposal that there is a difference in the timing of labeling between the basic case where a head and a phrase merge and the case where two phrases merge, as well as a particular labeling-based approach to antilocality, which has rather different empirical effects from the previous approaches to antilocality.

Keywords: adjunct condition, antilocality, labels, locality, phases, subject condition, *that*-trace effect, tucking in

1. Introduction

The goal of this article is to provide a uniform account of a number of locality effects, in particular: (a) the Subject Condition (1); (b) the Adjunct Condition (2); (c) the full Comp-trace paradigm, including the basic case in (3), with the improvement with intervening adverbs (4) and relative clauses (6), as well as the unacceptable null C case with extrapositions like (5), French *que-qui* alternation, and the effect of wh-movement on agreement in languages like Kinande, which will be discussed in some detail (with a comparison of subject wh-movement in Kinande and Kaqchikel as well as subject wh-movement and object wh-movement in Kinande); (d) the impossibility of short-subject topicalization (8) and zero-subject relatives (7); and (e) Richards's (2001) tucking in effect.

(1)   *?*Who did* [*friends of t*] *see Mary?*
(2)   *?*What did you fall asleep* [*after Peter had bought t*]?
(3)   **Who do you think that t will leave Mary?*
(4)   *Who do you think that under no circumstances t would leave Mary?*
(5)   **Who is it likely t likes Mary?*
(6)   *the stone that t broke the window*
(7)   **John picked up the stone t broke window.*
(8)   **John, t likes Mary.*

It will be shown that all these cases can be accounted for in a unified manner in the labeling framework, given the proposal made here that there is a difference in the timing of labeling between the basic case where a head and a phrase merge and the case where two phrases merge, and a particular labeling-based approach to antilocality. I will first discuss the ingredients of the analysis, namely antilocality and the labeling framework (Chomsky 2013, 2014; see also Collins 2014;

Epstein et al. 2014; Rizzi 2013; Saito 2014; Shlonsky 2015, among others), and then turn to the account of the cases noted above.

2. Ingredients
2.1. Antilocality
It is standardly assumed that there is an upper bound on movement—movement cannot be too long. A number of authors have argued that movement also cannot be too short. (The ban on movement that is too short is referred to as antilocality in Grohmann 2003). There is a battery of arguments for antilocality in the literature, some of the relevant works being Bošković (1994, 1997, 2005, 2014), Saito and Murasugi (1999), Ishii (1999), Abels (2003), Grohmann (2003), Ticio (2005), Boeckx (2005), Jeong (2006). These works do not all adopt the same definition of antilocality (see Grohmann 2011 for an overview). Thus, Bošković (2005, 2014) argues that Move must cross at least one full phrase (not just a segment). One of the effects of this definition of antilocality is that it blocks complement-to-Spec movement, which deduces Abels's (2003) generalization that complements of phasal heads cannot move, one of the arguments for antilocality offered in the literature. Another argument, from Bošković (2013b), concerns the unacceptability of extraction of NP-adjuncts, noted by a number of authors (e.g. Huang 1982; Chomsky 1986; Culicover and Rochement 1992) and illustrated by (9). Assuming that these adjuncts are NP-adjoined and that DP is a phase, the derivation in (9) is ruled out by antilocality (movement to SpecDP, required by the PIC, crosses only a segment; the reader is referred to the works cited above for a number of additional arguments for antilocality).

(9) *From where$_i$ did John meet [$_{DP}$ t_i [$_{NP}$ [$_{NP}$ girls] t_i]]?

In this article I will argue for a particular view of antilocality that is adjusted to Chomsky's (2013) system, which allows unlabeled projections.

2.2. Labelling
Chomsky (2013) proposes a theory of labeling where in the case where a head and a phrase merge, the head projects (more precisely, provides the label for the resulting object).[1] Chomsky suggests two ways of implementing labeling in the case where non-minimal projections (i.e. phrases) are merged: through prominent feature sharing or traces, where traces are basically ignored for the purpose of labeling. (10) illustrates the former: when *what* is merged with interrogative C (actually CP) both the wh-phrase and the CP have the Q-feature; what is projected (i.e. determines the label of the resulting object) then is the Q-feature.[2]

(10) I wonder [$_{CP}$ what$_i$ [$_{C'}$ C [John bought t_i]]]

The latter case is illustrated by (11), with the relevant part of the derivation given in (12).

(11) What$_i$ do you think [$_{CP}$ t'$_i$ [$_{C'}$ that [John bought t_i]]]?
(12) v [$_{VP}$ think [$_?$ what [$_{CP}$ that [John bought t_i]]]]

The timing of labeling here has rather interesting consequences for antilocality, a <u>derivational</u> ban on movement that is too short, which I continue to assume: Move must cross at least one phrase. Chomsky assumes that there is no feature sharing between the intermediate, declarative complementizer *that* and the wh-phrase that passes through its edge in (11) (which essentially follows Bošković 2002, 2007, 2008). Consequently, labeling through feature sharing is not an option here. The embedded clause then cannot be labeled at the point of movement of *what* to its edge, as indicated in (12) by using ?-notation. When v is merged, *what* moves away. The element merged with the CP now being a trace, it is ignored for the purpose of labeling, hence ? is labeled as CP after movement of *what*. Only at this point the status of t'$_i$ in (11) can be determined as the Spec of CP. At the point of movement (i.e. (12)), ? is not a CP, it is simply undetermined regarding the issue in question. Since there is no labeling before movement, at the point of movement there is no crossing of a CP phrase even if *that* projects after wh-movement, with t'$_i$ in SpecCP.

To make the issue clearer, I adopt the following definition of antilocality (cf. Bošković in press), adjusted to the framework that allows unlabeled objects, the intuitive idea here being that movement does not cross B if it involves merger with B. (In effect, (13) requires crossing of a labeled projection.)

(13) Antilocality: Movement of A targeting B must cross a projection distinct from B (where unlabeled projections are not distinct from labeled projections).

Antilocality is still satisfied in (12) because the movement that targets vP crosses VP. Were VP to be missing in (12), movement of *what* to vP would violate antilocality. Note that I assume that labeling can take place as soon as it can be accomplished (this will be refined below), otherwise it would not be possible to label structures where both relevant elements move.

Bošković (in press) shows that this approach to labeling/antilocality deduces the Complex NP Constraint, i.e. the ban on extraction out of NPs headed by nouns modified by clauses. Bošković (in press) takes Chomsky's proposal that vP functions as a phase as indicating that the highest projection in a thematic domain functions as a phase. He argues that there is no theta-marking nP in the traditional Noun Phrase (TNP) of the object nominal in (14) (and more generally complex NPs), which makes NP the highest thematic projection here, hence a phase. As a result, movement in (14) must target the edge of CP and the edge of NP. Since there is no feature-sharing between *that* and the wh-phrase that merges with it, the object that is created by their merger is not labeled at the point it is created. In the next step, *rumors* merges with this object, the resulting object being labeled as NP via the base-step of the labeling algorithm (the head-phrase merger case). The wh-phrase then merges with the NP. This movement, however, violates antilocality.[3]

(14)   ??*What$_i$ did you hear t$_i$ [$_{NP}$ rumors [$_?$ t$_i$ that [$_{IP}$ John bought t$_i$]]]?*

At any rate, what is important for our purposes is that under the conception of antilocality argued for here movement must cross a labeled projection (though we will see in section 4 that this is not always enough).[4]

I will show that the labeling system and antilocality enable us to deduce a number of locality effects, providing a unified treatment for all of them. An important ingredient of the account will be

the proposal that labeling via the base step of the algorithm (when a head and a phrase are merged) can be done immediately, while labeling in the case of a merger of two non-minimal projections takes place when the structure is sent to the interfaces.

In Chomsky (2013), labeling in the cases where a head and a phrase are merged (*the base step*) is done rather differently from the cases where two phrases undergo merger: labeling of the base step occurs via minimal search (MS), the same operation as Agree Closest, a syntactic mechanism falling under minimal computation. MS does not determine the label when two phrases merge. Given the difference, I argue for a timing difference in labeling. I will refer to the proposal below as TOL (timing of labeling). Since the labeling of the base step is done through essentially a syntactic mechanism, it takes place when the relevant configuration is created. Labeling in the case of merger of two phrases occurs when the relevant structure is sent to the interfaces, given Chomsky's assumption that unlabeled objects are uninterpretable. The issue will be discussed more extensively in section 6, where it is noted that without TOL, it is not even possible to determine the points of spell out (basically, phase determination requires TOL); section 6 will also provide another way of deducing TOL, where labeling in the case of a head-complement merger takes place for a strictly syntactic reason, namely, subcategorization, the underlying assumption being that satisfying subcategorization requires that the element with the requirement to take a complement project (otherwise, there would be no head-complement relation here), see here Chomsky (2000).[5] Pending this discussion, the reader can simply take TOL at face value. The following sections will be devoted to providing arguments for TOL; in particular, I will show that TOL enables us to deduce in a unified manner a number of previously unrelated locality effects, given the labeling approach to antilocality. Thus, section 3 will show that the labeling system based on these two mechanisms deduces CED effects, i.e. both the Subject Condition and the Adjunct Condition. Section 4 shows that the labeling system in question also deduces Richards's (2001) tucking in effect, and section 5 shows that the same holds for the full range of Comp-trace effects and a number of related phenomena, like the effect that wh-movement has on agreement in languages like Kinande. Section 6, which is also the conclusion, returns to the issue of the theoretical underpinnings of TOL.

3. CED effects
3.1. The Subject Condition
The system provides a rather natural account of the traditional Subject Condition, i.e. the ban on extraction out of subjects located in SpecIP.[6] The ban is illustrated by (15).

(15)   *I wonder who$_i$ [friends of t$_i$] left.

Since subjects are phases (being DPs, and DP are phases), whatever moves out of a subject must first move to its edge. Both the merger of *who* with the subject DP and the merger of the subject DP with the IP involve merger of two phrases. Given TOL, the result of the mergers is labeled only when the structure is sent to the interfaces, not at the point of merger (the subject is given in italics).[7]

(16)   … [$_{?2}$ [$_{?1}$ *who [$_{DP}$ subject]]* [$_{IP}$ I…[$_{vP}$

The next step involves merger with C, with C, a head, projecting. The wh-phrase then targets CP. The movement violates antilocality (i.e. (13)). After the movement, ?1 is labeled as DP and ?2 as IP (through feature sharing), but that is too late to save the derivation.

(17)   …[$_{CP}$ C [$_{?2}$ *[$_{?1}$ who [$_{DP}$ subject]]* [$_{IP}$ I…[$_{vP}$

The ban on extraction out of subjects is thus deduced.[8]

3.2. The Adjunct Condition
The analysis is extendable to the ban on extraction out of adjuncts, illustrated by (2), if adjuncts are adjoined to complements of phasal heads, i.e. VP and IP. (18) gives the structure for the former case. Given TOL, since adjunct merger involves merger of two maximal projections, its result is not labeled upon merger.[9] (For ease of exposition, all labels in this section will be given at the left edge of the brackets.)

(18)   [[[… $_{VP}$] K $_{?}$] $_{vP}$]

Assuming adjuncts are phases (CPs, DPs, or PPs, all of which have been argued to be phases, see Bošković 2014, in press and references therein), movement out of an adjunct, given in italics in (19), has to target the adjunct, resulting in an unlabeled object for reasons discussed above. Further movement has to target vP, which violates antilocality.

(19)   [[[… $_{VP}$] *[wh-phrase [K(adjunct)]$_{?}$]* $_{?}$] $_{vP}$]

A question, however, arises regarding wh-adjuncts, as in (20).

(20)   *How did John leave?*

A number of authors have argued that wh-adjuncts that are located in SpecCP are actually base-generated in that position (see e.g. Law 1994; Uriagereka 1988), and Stepanov (2001) argues that wh-adjuncts are merged differently from their non-wh-counterparts due to the presence of the Q-morpheme, which can be implemented as merging them with the Q. In either case, the problem noted above regarding (17) would not arise in (20) (in the latter case, the adjunct would always cross the QP which is created by the Q-adjunct merger).

Both of these approaches assume that wh-adjuncts and their non-wh-counterparts are not base-generated in the same position. On a more speculatory note, this (i.e. assuming such a difference) in itself opens up another possibility, which is that wh-adjuncts are generated as adjuncts, but not as adjuncts to complements of phasal heads, which would allow them to extract.[10]

4. Tucking in

Based on a variety of cases, Richards (2001) shows that in multiple-specifier constructions, after one specifier is created the second specifier has to be created below the exisiting specifier, tucking in under it, not on top of the existing specifier.

Consider (21), a multiple wh-fronting construction from Bulgarian, a language which places all fronted wh-phrases in SpecCP (see Rudin 1988; for ease of exposition I will assume that the embedded CP is the only intermediate phase in this example, which means that movement to the matrix clause must proceed via the embedded clause SpecCP).

(21)   a. *Koj$_i$ kogo$_j$ misliš*   [$_{CP}$ t_i t_j *če* [$_{IP}$ t_i *e   udaril* t_j]]?
           who whom think-2s   that   has hit
           'Who do you think hit whom?'
         b. cf. **Kogo koj misliš* [*če e udaril*]?

The subject wh-phrase is higher than the object wh-phrase prior to undergoing movement. As a result, the subject wh-phrase must move first to the embedded clause SpecCP (this is the standard account which basically treats ordering of fronted wh-phrases in Bulgarian as a Superiority effect). An additional CP-Spec is then created by movement of *kogo* 'whom'. Richards (2001) argues that the additional Spec is created below the original Spec, i.e. by tucking in under the original Spec. As a result, *koj* is still higher than *kogo* prior to movement to the matrix clause. *Koj* then must move first to the matrix SpecCP, with *kogo* tucking in under it. The ordering of fronted wh-phrases in Bulgarian thus illustrates Richards's tucking-in effect.

Richards's tucking in can also be deduced from the labeling system, in particular, it follows quite straightforwardly without any additional assumptions from the current, labeling-based conception of antilocality and TOL.

Consider again (21) in light of the current system. As discussed above, *koj* moves first, merging with the CP headed by *that*. Since, as discussed above, the relevant elements are not involved in feature-sharing, the result of the merger is not labeled (recall that labeling is possible here only after the wh-phrase moves away). We then have (22) prior to the movement of *kogo*. Notice now that given the conception of antilocality from (13), *kogo* can move to the edge of the CP in question only be merging below *koj*, i.e. by merging with the CP. Merging with the *koj*+CP object is not an option here. Since this object is not labeled merger with this object inevitably violates (13): unlabeled projections being non-distinct from labeled projections, movement to ? in (22) would not involve crossing a projection distinct from ?, hence it would violate (13). This yields Richards's tucking in effect. The current labeling system in fact provides a new perspective on the tucking in effect. (13) forces movement to target a labeled category: any movement to an unlabeled object will violate (13). In other words, only labeled categories can be targets of movement given (13). In fact, the problem with movements that do not observe the tucking in effect is that they target unlabeled categories.[11]

(22)   [$_?$ *koj* [$_{CP}$ *če* [$_{IP}$ …*kogo*..]]]?

Consider now the tucking in effect in the matrix clause of (21), or more generally for simple questions like (23). Here, since the relevant C is interrogative, the wh-phrase does undergo feature-

sharing with the CP that it merges with. While in (22) the CP cannot be labeled until *koj* moves away, this is not the case in (23).

(23)   a. *Koj$_i$ kogo$_j$ t$_i$ e   udaril t$_j$?*
           who whom   has hit
          'Who hit whom?'
        b. cf. **Kogo koj e udaril?*

Recall now the proposal made above: labeling via the base step of the algorithm (when a head and a phrase are merged) can be done immediately while labeling in the case of a merger of two non-minimal projections takes place when the structure is sent to the interfaces. This means that the result of merger of C and the IP can be labeled immediately (at the point of merger), while the result of merger of the CP and *koj* cannot be labeled immediately. As a result, (23) has the following structure prior to the movement of *kogo*.

(24)   [$_?$ *koj* [$_{CP}$ C-Q [$_{IP}$ …*kogo*…]]]?

The only way *kogo* can move to a labeled category, which is necessary not to violate (13), is if it targets CP, yielding Richards's tucking-in effect for this case too. As far as I can tell, other cases of tucking in that Richards discussed can also be handled in this manner. I conclude therefore that under the view of labeling and antilocality adopted here, Richards's tucking in effect follows from the labeling mechanism.

The upshot of the above discussion is that the current system yields the requirement that only labeled categories can be targets of movement, which has the status of a theorem—the requirement follows from antilocality, in particular, the labeling-based conception of antilocality adopted here. "Violations" of the tucking in effect involve movement to an unlabeled category. In fact, given TOL, only movement to an object formed by a head-complement merger has a shot at not violating (13): movement to an object formed by a merger of two phrases (i.e. a traditional phrase with a Spec) inevitably violates (13).

It is worth emphasizing the twist that what appeared to be an innocent re-formulation of antilocality within the labeling system brings in here. Antilocality was originally proposed to ban movements that are too short (see Bošković 1994). Under the current, labeling-based conception of antilocality, even long movements can get "caught" by antilocality: no matter how many phrases movement crosses it will violate antilocality if it targets an unlabeled category. In this respect, the current labeling-based conception of antilocality is very different from all the previous ones. As discussed above, this is desirable: by imposing the requirement that movement targets only labeled categories (which has the status of a theorem), the labeling-based conception of antilocality deduces Richards's tucking in effect.

5. Local subject movements
I now turn to various types of local subject movements, which exhibit rather interesting patterns crosslinguistically. What I refer to as local subject movement here is movement from SpecTP to the CP that immediately dominates the TP in question. In many cases such movement is clearly

blocked. However, there are cases where it seems to be allowed. I am not aware of any attempts at a uniform account of <u>all</u> the relevant cases (see for example (3)-(8)). In this section I will show that given TOL, the labeling system can provide a uniform account of the rather complex paradigm pertaining to the domain of local subject movement. However, given the complexity of the patterns in question, some issues will need to be left unresolved or without proper independent support, which I hope to return to in future work.

A number of works have shown that subject movement to SpecCP cannot proceed via SpecTP (see Bošković 2008; Erlewine 2014; Holmberg and Hróarsdóttir 2003; Rizzi 1990; Rizzi and Shlonsky 2007, among many others for various languages). Thus, in many languages, like Kinande, verbal morphology that arises as a result of agreement between T and the subject located in its Spec cannot be present when the subject undergoes wh-movement, which is standardly taken to indicate that wh-subjects do not move via SpecTP, hence they do not license the usual agreement morphology that occurs with subjects located in SpecTP. The effect is illustrated by the following Kinande paradigm, where the usual subject-agreement morphology from (25a) cannot be present under wh-movement (25b). (It is not possible to simply drop the agreement morphology; rather, a different morphological marker appears on the verb, as in (25c). A labeling-based account of this will be provided in section 5.5.2.)

(25) a. *Kambale* **a.***langira* *Marya.*
Kambale AGR.saw Mary
b. **Iyondi yo* **a.***langira Marya.*
who C AGR.saw Mary
c. *Iyondi yo* **u.***langira* *Marya.*
who C ANTI-AGR.saw Mary
(Schneider-Zioga 1995)

Another argument to this effect is provided by several varieties of Italian. Thus, Brandi and Cordin (1989) show that Trentino and Florentino have different agreement with postverbal and preverbal subjects. Wh-movement of subjects is necessarily accompanied by postverbal agreement. The relevant pattern is illustrated below with Florentino.

(26) a. *Le ragazze l' hanno telefonato.*
the girls CL.3PL has.3PL phoned
(Campos 1997)
b. *Gl'- ha telefonato delle ragazze*
CL.3M.SG has.3M.SG telephoned some girls
`Some girls have telephoned.'
c. *Quante ragazze gli ha parlato con te?*
how-many girls CL.3M.SG has.3M.SG spoken with you
`How many girls talked to you?'
d. **Quante ragazze le hanno parlato con te?*
how-many girls CL.3F.PL has.3F.PL spoken with you
(Brandi and Cordin 1989)

8

Consider also Icelandic (27). (27a) shows that an intervening experiencer blocks agreement with a nominative object, hence the obligatory singular on the matrix verb in (27a). An NP trace does not exhibit this blocking effect, as shown by (27b). However, the blocking effect is still present in (27c,d). If the experiencer in (27c-d) could undergo the same kind of movement to SpecTP it undergoes in (27a) before undergoing wh-movement, the experiencer blocking effect should be voided in (27c-d) since the intervening element would be an NP-trace, just as in (27b). The Icelandic paradigm in question thus also indicates that wh-movement via SpecTP is not possible.

(27) a. *Það   virðist/*virðast einhverjum manni   [hestarnir   vera seinir].*
       EXPL seems/seem   some   man.DAT the.horses.NOM be   slow
      'It seems to some man that the horses are slow.'
   b. *Mér   virðast t_{NP} [hestarnir   vera seinir].*
      me.DAT seem.PL   the.horses.NOM be   slow
   c. *Hvaða manni   veist þú   að virðist/*virðast t_{wh} [hestarnir   vera seinir]?*
      which man.DAT know you that seems/seem   the.horses be   slow
       'To which man do you know that the horses seem to be slow?'
       (Holmberg & Hróarsdóttir 2003)
   d. *Hverjum mundi/??mundu   hafa virst t_{wh} [hestarnir   vera seinir]?*
      who.DAT would.3SG/would.3PL have seemed   the.horses.NOM be   slow
       'To whom would it have seemed that the horses are slow?'
       (Nomura 2005)

What the above discussion indicates is that the configuration in (28), stated in the traditional obligatory labeling system, should be disallowed.

(28)   [$_{CP}$ wh$_i$ [$_{IP}$ t$_i$]]

This in fact follows straightforwardly from the labeling system argued for here, given TOL and the labeling-based approach to antilocality. Given TOL, merger of the wh-phrase and TP does not result in immediate labeling in (29). The object in question is then merged with C (interrogative or non-interrogative; recall that the effect in question is found with both interrogative and non-interrogative Cs). The resulting object is labeled as CP via the base step of the labeling algorithm. The wh-phrase then merges with the CP. The movement, however, does not cross a labeled projection, violating antilocality, i.e. (13).

(29)   [$_?$ wh$_i$ [$_{CP}$ [$_?$ t$_i$ [$_{IP}$]]]]

5.1. The that-trace effect
The account can be extended to a number of other local subject movements, including the traditional *that*-trace effect, illustrated by (30).[12] Movement from the IP-edge to the CP-edge in (30) also involves the configuration in (29), hence it violates antilocality (see (31)).[13]

(30)   *Who$_i$ do you think that t$_i$ left Mary?

(31)   Who$_i$ do you think [$_?$ t$_i$ [$_{CP}$ that [$_?$ t$_i$ [$_{IP}$ left Mary]]]]?

The antilocality account also captures the well-known improvement in (32). Browning (1996) and Watanabe (1993) argue that such cases involve CP-recursion while Culicover (1992) argues that they involve a PolP; what is important for our purposes is that there is a phrase between IP and CP, hence movement of the subject from IP to the highest CP, which functions as a phase (assuming that the highest clausal projection functions as a phase, as in Bošković 2014 (see also Bošković in press; Wurmbrand 2014), does not violate antilocality. (All this extends to the (improvement of) Comp-trace effects with other complementizers, see Culicover 1992; note also that the rescuing effect here does not depend on inversion, see Browning 1996).[14]

(32)   Leslie is the person who I said [$_?$ t$_i$ that [$_{CP/PolP}$ at no time [$_?$ t$_i$ [$_{IP}$ considered running for
        public office]]]]
        (Browning 1996)

What about cases like (34), which do not exhibit a Comp-trace effect?

(34)   Who do you think t left Mary?

There are several possibilities for analyzing such cases given the proposals that were independently made in the literature for embedded non-interrogative clauses which are not introduced by *that* in English. Thus, such cases can be treated as in Rizzi (2006), namely as involving truncation of the CP+IP structure (confined to clauses with non-overt subjects (IP-internally) in the V-complement position). The issue that arose in (30) then would not arise in (34) since the relevant structure is missing.

A number of authors have argued that *that*-less embedded clauses in English are quite generally IPs, even in simple examples like *John believes Mary left* (see Bošković 1997 and references therein). The IP analysis (with a similar restriction regarding the distribution of the option in question) would also easily capture (34).[15][16]

Pesetsky's (1992) account on which *that*-less embedded clauses are CPs headed by a null C that undergoes movement to V opens up another avenue for analyzing (34). There are a number of well-documented cases where head-movement voids locality violations, in particular, by voiding the phasehood of the phrase whose head undergoes movement (see den Dikken 2007; Gallego and Uriagereka 2007; Bošković 2013a, in press for various approaches to the issue). For example, Galician has a rather interesting phenomenon of D-to-V incorporation which voids islandhood effects (see Uriagereka 1988, Bošković 2013a). To illustrate, Galician disallows movement from definite NPs (35a). However, the violation is voided when D incorporates into the verb (35b). Bošković (in press) argues that the source of the definiteness effect is that movement cannot proceed through the Spec of definite DPs. The problem with (35a) is then that v cannot attract the wh-phrase without violating the PIC. As for (35b), Bošković (in press) argues that movement of the phasal head voids the phasehood of DP, as a result of which v can attract the wh-phrase without violating the PIC.[17]

(35) a. *e   de   quén$_i$ viche   [$_{DP}$ o   retrato t$_i$]?
       and of   who saw(you)   the portrait
   b. *e   de quén$_j$ viche-lo$_i$ [$_{DP}$ t$_i$ retrato t$_j$]?
       and of whom saw(you)-the   portrait
       'so, who have you seen the portrait of?'
       (Uriagereka 1988)

The phase-voiding effect of head movement provides a straightforward account of (34) under Pesetsky's (1992) null C incorporation analysis. The incorporation voids the phasehood of the CP hence movement need not proceed through the edge of CP in (34). As a result, the problem that arose in (30) does not arise in (34). (Pesetsky's analysis thus enables us to provide a uniform treatment of the contrast in (30)/(34) and the contrast in (35), where head movement voids the phasehood of CP in (34) and the phasehood of DP in (35b)).[18]

    Another alternative is provided by Bošković's (2011) account of the contrast between (30) and (34), which is based on Chomsky and Lasnik's (1977) proposal that (37a) is derived from (36) via deletion of *that*, as in (37b).

(36)   *Mary thinks that John left.*
(37)   a. *Mary thinks John left.*
       b. *Mary thinks ~~that~~ John left.*

There is a long-standing line of research going back to Chomsky (1972) where movement out of an island leads to *-marking of the island, with the locality violation being repaired if the *-marked element is deleted in PF, as in Ross's (1969) cases where movement out of an island is repaired if the island is elided, illustrated by (38) (see Merchant 2001; Lasnik 2001; Hornstein et al. 2003; Fox and Lasnik 2003; among many others, for this line of research).

(38) a. *Ben will be happy if Mary fires one of the students, but she didn't know which student$_i$ Ben will be happy [if she fires t$_i$]*.
   b. *Ben will be happy if Mary fires one of the students, but she didn't know which student$_i$ ~~Ben will be happy [if she fires t$_i$]~~*.

Working within this line of research, Bošković (2013a) argues that with PIC/antilocality violations with phase XP, what is *-marked is the head of the phase. (Bošković 2013a treats (35) in this manner too; see Bošković 2013a; Riqueros 2013; Talić 2014 for evidence for this position).

    Consider in this light (30). As discussed above, movement of the subject to SpecCP induces an antilocality violation, which under the proposal made in Bošković (2013a) leads to the *-marking of the head of the relevant phase, namely *that*.

(39) *Who$_i$ do you think [$_?$ t$_i$ [$_{CP}$ that* [$_?$ t$_i$ [$_{IP}$ left Mary]]]]?

In (30), the *-marked element remains in the final PF representation, inducing a violation. However, in (34), the *-marked element is deleted in PF (under Chomsky and Lasnik's 1977 analysis of *that-*

less clauses), which removes the locality violation. Under this analysis, which follows Bošković (2011, 2013a), the contrast between (30) and (34) receives the same treatment as the contrast in (38).[19]

There are thus several ways of analyzing (34); I leave teasing them apart for future research.

5.2. Extraposition

The current analysis also provides a new perspective on a curious property of extraposed clauses like (40) which has resisted a satisfactory account.

(40)   *It is likely/appears (that) John bought a house.*

While these extraposed clauses allow object extraction they disallow subject extraction, as noted in Kayne (1984), Stowell (1981), Bošković and Lasnik (2003): compare in this respect object extraction cases in (41)/(43) and subject extraction cases in (42)/(44) (the examples are taken from Bošković and Lasnik 2003:538).[20] Adjuncts pattern with objects, as in (45)-(46) (see Bošković and Lasnik 2003).

(41)   *What is it likely (that) John will read?*
(42)   **Who is it likely will read the book?*
(43)   *Who does it appear that Mary likes?*
(44)   *?*Who does it appear likes Mary?*
(45)   *How is it likely* [*(that) John fixed the car t*]?
(46)   *How does it appear* [*(that) John fixed the car t*]?

A number of authors have argued that extraposed clauses are not complements but VP-Specs/adjuncts (e.g. Reinhart 1980; Stowell 1981; Bošković 2002, in press). Recall now that the options appealed to above regarding (34) are restricted to clauses in the V-complement position (truncation/bare IPs being possible only in this position).[21] This means that the clause in (47) must be a CP. As a result, the problem that arose in (30) also arises here: the construction is ruled out by antilocality because movement from the IP edge to the CP edge does not cross a labeled projection.[22]

(47)   **Who does it appear t likes Mary?*

Traditionally, overt C and null C were assumed to differ with respect to their locality-licensing properties: thus, in the Government and Binding framework it was often assumed that null C counts as a proper governor while complementizer *that* does not. Capturing the obvious phonological difference between the two in a principled way in syntactic terms, which is needed under this analysis, has proven rather tricky, given that syntax should not even know about the phonological realization of particular lexical items. The issue does not arise under the current analysis. In fact, under the current analysis, in examples like (47) we are dealing with a Comp-trace effect with a null C. There is then no need to posit any difference between *that* and the null C with respect to

syntactic locality under the current analysis; they both raise a locality problem for subject wh-movement.

5.3. The ban on short subject topicalization

The above account also captures the ban on short-subject topicalization in English, i.e. the impossibility of the local topicalization option for the subject in (48).

(48)   *I think that John$_i$, [$_{IP}$ t_i likes Mary].

Lasnik and Saito (1992) provide a number of arguments that local/vacuous subject topicalization is not possible. To cite only one argument here, they note that if short subject topicalization were allowed we would expect that, as in (49), *John* and *himself* can be coindexed in (50), which is not the case.

(49)   *John$_i$ thinks that himself$_i$ Peter likes.*
(50)   **John$_i$ thinks that himself$_i$ likes Peter.*

The account of the impossibility of subject extraction from the context in (29) can be straightforwardly extended to the ban on short subject topicalization. Given TOL, when *John* merges with IP the resulting object cannot be labeled immediately. The head that hosts topicalization then enters the structure. When the subject moves to merge with the head in question the movement violates antilocality for the same reason it does in (29).

(51)   *I think that John$_i$ [$_?$ t_i [$_{IP}$ likes Mary]].

5.4. The ban on short subject zero relatives

The above account provides a new perspective on the distribution of *that* in relative clauses. A well-known puzzle with relative clauses is that they do not display the *that*-trace effect.[23]

(52)   *the stone* Op$_i$ *that t$_i$ broke the window*

From the current perspective, the key to the lack of the *that*-trace effect in relative clauses lies in the optionality of *that* in (53)-(54).

(53)   *the stone that Mary threw*
(54)   *the stone Mary threw*

Kayne (1984) (see also Bošković 1997) observes the contrast in (55) regarding the possibility of a resumptive pronoun, which would be surprising if the relative operator were located in the same position in both constructions.

(55)   a. *The book* Op *I was wondering whether I would get it in the mail.*
         b. *The book* Op *that I was wondering whether I would get it in the mail.*

I will therefore assume that the relative Op is not located in the same position in relative clauses with and without *that*. In (54), the relative operator is located in the Spec of a relative-clause dedicated projection, which I will refer to as RelP, which is obligatory in all relative clauses. The CP headed by *that*, on the other hand, is present optionally; it is present when *that* is present (with Op in its Spec under the assumption that Op must move to the edge of the relative clause). (53)-(54) then have the structures in (56)-(57) respectively.[24]

(56)   *the stone* [$_{CP}$ Op$_i$ *that* [$_{RelP}$ [*Mary threw t$_i$*]]]

(57)   *the stone* [$_{RelP}$ Op$_i$ [*Mary threw t$_i$*]]

This immediately explains the lack of the *that*-trace effect in (52). As before, subject merger with IP does not result in immediate labeling. However, in contrast to (30), movement of the subject to the Spec of *that* does not violate antilocality in (58). In fact, the RelP rescues the derivation from the *that*-trace/antilocality effect here in the same way that the CP/the intervening adverb do in (32).

(58)   *the stone* [$_{CP}$ Op$_i$ *that* [$_{RelP}$ [$_?$ t$_i$ [$_{IP}$ *broke the window*]]]]

Evidence for this analysis is provided by the impossibility of short zero-subject relatives, noted by Bresnan (1972). While *that* is optional with object relatives under consideration, it is obligatory with subject relatives.

(59)   *John picked up the stone that broke the window.*

(60)   **John picked up the stone broke the window.*

This follows straightforwardly under the current analysis. In contrast to (58), where the operator moves to CP (which is a phase here), in (61), the operator can only move to SpecRelP (which is a phase here as the highest clausal projection). This movement, however, violates antilocality.

(61)   **the stone* [$_{RelP}$ Op$_i$ [$_?$ t$_i$ [$_{IP}$ *broke the window*]]]

Under this analysis, zero subject relatives are expected to be possible in languages where subject movement to IP is not obligatory (where *that* is not obligatory in the first place). Pesetsky (1982) and Bošković (1997) show that this is indeed the case, as illustrated by (62).

(62)   *Chi'e faccenda Op$_i$ tocca a noi t$_i$.*
        'This is a matter (that) does not concern us.'
        (15th century Italian, Rizzi 1990)

5.5. Agreement under wh-movement

5.5.1. Kaqchikel. The account of the English paradigm discussed above gets an interesting confirmation from a Kaqchikel paradigm discussed in Erlewine (2014). Erlewine observes that there is different morphology in Kaqchikel depending on whether or not subject moves to SpecIP. As in a

number of other languages, a subject moving to SpecCP is not allowed to pass through SpecIP (i.e. the usual morphology that accompanies subjects that move to SpecIP cannot be present in that case), which can be captured as discussed above. Significantly, Erlewine shows that when there is a phrase between IP and CP, a wh-subject can pass through SpecIP on its way to SpecCP (i.e. the morphology that accompanies subject movement to SpecIP is then present). This is exactly what is expected. Due to the presence of this phrase, as in (32) and in contrast to (29), subject movement from IP to CP does not violate antilocality in (63).[25]

(63)   [$_{?(CP)}$ wh$_i$ [$_{CP}$ [$_{FP}$ [$_{?(IP)}$ t$_i$ [$_{IP}$ …]]]]]

Consider the relevant Kaqchikel paradigm (all the data below are taken from Erlewine 2014; the subject is underlined). (64a) illustrates the usual morphology that accompanies subject movement to SpecIP (following Aissen 1999, Erlewine argues that SpecIP is linearized to the right in Kaqchikel).[26] This morphology is not possible under wh-movement of the subject, as in (64b). Instead, the so-called agent-focus affix (AF), given in bold letters, appears. AF is not possible with object wh-movement (64c) or long-distance subject-movement; it occurs only with the local step of subject movement to SpecCP (even in long-distance questions, see (64d)). Interestingly, just like adding an adverb above IP rescues *that*-trace violations in English, adding an adverb in Kaqchikel makes available the appearance of the usual verbal morphology under wh-movement, the AF morphology not being available in this case (64e). These facts can be accounted for just like the local-subject movement data from English discussed above. A subject moved to SpecIP undergoes feature-sharing with I, which results in the labeling of the object created by the subject-IP merger. However, this happens only when the structure is sent to the interfaces. As a result, if the subject that merges with IP moves to merge with CP right above it, antilocality is violated (no labeled projection is crossed). The problem does not arise in (64e) since the presence of the adverb introduces additional structure as a result of which subject that merges with IP can move to merge with CP and still cross a labeled projection.[27]

(64) a. *Iwir   x-Ø-u-téj   ri   wäy   ri a Juan.*
            yesterday   COM-B$_{3sg}$-A$_{3sg}$-eat   the   tortilla Juan
            `Yesterday, Juan ate the tortilla.'

      b. *Achike*   *x-Ø-u téj   /ˊx-Ø-tj-öˊˊ   re   wäy?*
            who   COM-B$_{3sg}$-A$_{3sg}$-eat   /COM-B$_{3sg}$-eat-**AF**   the   tortilla
            `Who ate the tortilla?'

      c. *Achike ˊx-Ø-u téj   /*x-Ø-tj-öˊˊ   ri a Juan?*
            what   COM-B$_{3sg}$-A$_{3sg}$-eat   / COM-B$_{3sg}$-eat-**AF**   Juan
            `What did Juan eat?'

      d. *Achike n- Ø-a-b'ij   rat [chin *x-oj-r-tz'ët   /ˊx-oj-tz'et-öˊˊ   roj]?*
            who   INC-B$_{3sg}$- A$_{2sg}$-think 2sg that   COM-B$_{1pl}$-A$_{3sg}$-see /COM-B$_{1pl}$-see-AF 1pl
            'Who do you think saw us?'

      e. *Achike*   *kanqtzij   x-Ø-u téj   /*x-Ø-tj-öˊˊ   re   wäy?*
            who   actually   COM-B$_{3sg}$-A$_{3sg}$-eat /COM-B$_{3sg}$-eat-**AF**the   tortilla

`Who actually ate the tortilla?'

The data in (65) provide further confirmation. Wh-phrases and indefinites have the same form in Kaqchikel. Erlewine shows that they are both licensed by movement to projections above IP, the indefinite-licensing projection, referred to below as QP, being lower than CP. Consider then (65b). If object is the indefinite, it will move to QP, which is located right above IP. As a result, the subject can move to IP and then to CP without violating antilocality. The usual verbal morphology is then possible on this reading in (65b). On other hand, on the unavailable "who-did-someone-see" reading, the object moves to CP and the subject moves to QP. Since QP is right above IP, subject movement to IP and then to QP violates antilocality, hence the ungrammaticality of (65b) on the reading in question. As before, the AF can save the derivation in question, hence this reading is available in (65a).

(65)   a.   *Achike k'o   x- Ø-tz'et- ö'?*
                    Who   ∃   COM-B$_{3sg}$-see-**AF**
                    ✓'who did someone see?'
                    *`Who saw someone?'

        b.   *Achike k'o   x- Ø-utz' ët?*
                    Who   ∃   COM-B$_{3sg}$-A$_{3sg}$-see
                    *`Who did someone see?'
                    ✓'Who saw someone?'

Now, there was an implicit assumption above that, except in the case of *that*-relatives and constructions with pre-IP adverbs, English has only a single CP projection above IP; in other words, CP is not always split. Kaqchikel provides a confirmation of this; CP cannot always be split (more precisely, uniformly split) in Kaqchikel either, otherwise subject movement through IP would not be only selectively available. The conclusion from the above discussion is that there is no uniform split CP field that is present either crosslinguistically or in all constructions of a single language.[28] This is in fact not a surprising conclusion, given that even superficially, the left-periphery shows quite a bit of variation crosslinguistically.

    There is, however, one point that still needs to be captured regarding Kaqchikel. The usual subject morphology requires movement to SpecIP. However, when the subject fails to move to SpecIP the usual subject morphology is not simply dropped: it is replaced by AF. Furthermore, the AF morphology appears only as last resort, to save the derivation where subject movement to SpecIP fails to occur for independent reasons. Why is that the case? A proposal made in Chomsky (2014) can be productively applied here. Chomsky (2014) restates the traditional EPP effect as a labeling effect. He suggests that languages differ regarding whether or not T is strong enough to label on its own. English T is not strong enough to label on its own, hence the subject needs to move to TP to strengthen it for labeling. On the other hand, in Italian T can label on its own, hence subject movement to TP is not necessary.[29]

    Kaqchikel should then be like English, requiring movement to TP to strengthen T for labeling. I suggest therefore that AF is inserted as last resort to enable T to label when subject

movement to SpecTP fails to take place.[30] This is the reason why AF occurs only in these contexts. However, given the obvious difference between English and Italian in the richness of subject agreement morphology, Chomsky ties the difference in the strength of T between English and Italian to the richness of agreement morphology. The analysis just suggested treats Kaqchikel and English in the same way although, in contrast to English, Kaqchikel has rich verbal morphology. There is, however another way of looking at the English/Italian/Kaqchikel paradigms in question where the issue in question does not arise.

Let us assume that, as in Italian, the usual morphology in Kaqchikel is enough to strengthen T for labeling. However, this morphology can only be licensed if the subject is located in SpecTP.[31] As a result, if the subject does not move to SpecTP, the morphology cannot be present, hence T is then like in English: it is weak and cannot label on its own. This is what rules out constructions where the agreement morphology is simply dropped in the absence of movement to SpecTP. As already proposed above, the AF-insertion can still be considered a last-resort strategy to strengthen T for labeling.[32] This explains the complementary distribution between the usual subject morphology and AF. When the usual subject morphology is present, which is possible any time subject moves to SpecTP, T is strong enough to label, hence there is no need for AF-insertion. When such morphology is not present, T cannot label hence AF is inserted to strengthen it. AF-insertion basically turns English-style, morphologically poor T into Italian-style, morphologically rich T. This analysis thus captures both the fact that verbal morphology cannot be simply dropped when the subject fails to move to SpecTP in Kaqchikel, as well as the last-resort nature of AF. It should, however, be noted that Kaqchikel is not quite like either English or Italian in Chomsky's analysis of these two languages: Kaqchikel T is strong enough to label on its own, as expected given its morphological richness. In this respect, it is like Italian, not like English T. However, the relevant morphology can only be licensed in Kaqchikel when subject moves to SpecTP.[33] The motivation for the presence of the subject in SpecTP is thus different in Kaqchikel and English. In English, the subject moves there for labeling reasons, while in Kaqchikel the subject needs to be present there for morphology-licensing. In this respect, AF is more like subject movement in English. The AF-insertion takes place strictly for labeling reasons, just like subject movement in English. However, while this is always required in English (except in one context, where English uses a similar mechanism to AF, see section 5.8.), it is required in Kaqchikel only in one, well-defined context.

5.5.2. Kinande
5.5.2.1. Subject agreement. The above account of Kaqchikel can also be extended to Kinande: the usual morphology in Kinande is enough to strengthen T, enabling it to label (cf. (25a)). However, this morphology can only be licensed if the subject is located in SpecTP.[34] As a result, if the subject does not move to SpecTP, the morphology cannot be present, hence T is then like English: it is weak and cannot label on its own. This is what rules out constructions where the agreement morphology is simply dropped in the absence of movement to SpecTP (compare *Iyondi yo langara Marya* with (25c)). What happens in such contexts is that what is traditionally referred to as anti-agreement (AA) morphology is inserted (cf. (25c)). I suggest that, like AF in Kaqchikel, AA is inserted as last resort to enable T to label when subject movement to SpecTP fails to take place, which means that the usual subject agreement morphology is not licensed in such cases. This is then

the reason why AA occurs only in these contexts. As in the case of Kaqchikel AF, this account explains the complementary distribution between the usual subject morphology and AA in Kinande. When the usual subject morphology is present, which is possible any time subject moves to SpecTP, T is strong enough to label, hence there is no need for AA-insertion.

There is, however, a difference between Kaqchikel and Kinande. In contrast to Kaqchikel (cf. (64d)), long-distance contexts do not require AA-morphology in Kinande (I omit the agreement between the wh-phrase and the complementizer where this information is not relevant).

(66)   [CP *iyondi* [C'   *yo*   [*Kambale   a-alengekanaya*   [CP *ng'   a-kahuka ebiken*]]]]
        who   that   Kambale   AGR-thought   C   AGR-cook yams
        'Who did Kambale think is cooking yams?'
        (Schneider-Zioga 2007)

Following Schneider-Zioga (2007), I suggest that the reason for this is that what occurs in the embedded SpecTP in (66), which also licenses the usual morphology, is *pro*.[35] In other words, *pro* here functions as a resumptive, with the wh-phrase base-generated in the matrix SpecCP.[36]

(67)   [CP *iyondi* [C' *yo* [*Kambale a-alengekanaya* [CP *ng' **pro** a-kahuka ebiken*]]]]

That this is an option in Kinande is confirmed by the fact that such constructions behave in all relevant respects just like constructions in which an object wh-phrase is present in SpecCP and associated with a resumptive clitic: like the resumptive clitic construction, the resumptive *pro* construction is island-insensitive (see (68) for the object+resumptive case and (69) for the subject+*pro* case) and does not induce WCO effects (see (70).

(68) a. **ekihi** *kyo*   *Yosefu a-kabula*   [*iyondi nga   y'   u-ka-**ki**-gula*]
        what that   Jospeh AGR-wonder   who   if   that   ANTI.AGR-tense-CL-buy
        'What does Joseph wonder who is buying it?'
     b. *ebaruha*   **yahi**   *yo*   *w-asiga*   [*isi-wu-li   w-asoma-**yo***]
        letter   which that   you-left   NEG-you-be   you-read-CL
        'Which article did you leave before you read it?'
        (Schneider-Zioga 2007)
(69) a. [**yondi**$_k$ *yo*   *Yosefu a-kabula*   [*ekihi*$_j$ *nga   ky'*   **pro**$_k$ *a-kalangira   t*$_j$]
        who   that   Joseph AGR-wonder   what   if   that   AGR-sees
        'Who does Joseph wonder what (he) sees?'
     b. *omukali*   **ndi**$_k$ *yo w-asiga*   [**pro**$_k$ *isy-a-lyagua*]
        woman   who   that you-leave   NEG-AGR-spoke
        'Which woman did you leave before (she) spoke?'
        (Schneider-Zioga 2007)
(70) a. **iyondi**$_i$ *yo   mama wiwe*$_i$ *a-kalengekanaya ati   omugalimu a-a-**mu**-nzire   kutsibu*
        who   that mother his   AGR-thinks   that teacher   AGR-PAST-CL-loves   best
        'Who$_i$ does his$_i$ mother think that the teacher loves him the best?'
     b. **iyondi**$_j$ *yo   mama*   *wiwe*$_j$ *a-kalengekanaya   ati*   **pro**$_j$ *a-anzire   ebitabu*
        who   that mother   his   AGR-thinks   that   AGR-loves   books

18

'Who$_j$ does his$_j$ mother think loves books?'
(Schneider-Zioga 2007)

I suggest that the reason why the *pro*-as-a-resumptive strategy is not an option in (25b) (if it were, regular morphology rather than AA would occur here) is the well-known ban on local subject resumptives, i.e. the ban on a resumptive pronoun in SpecTP that is associated with a wh-phrase in the SpecCP of the same clause (see Aoun and Li 1990; Boeckx 2003:83-91; Borer 1984; McCloskey 1991; Bošković 2009, among others).[37]

There is also an alternative explanation. More generally, as noted in note 36, all movement in Kinande is clause-bounded; Kinande uses a variety of resumptive strategies (*pro* in an A-position, or a null Operator in an agreeing SpecCP which is co-indexed with a higher clause Operator) to establish long-distance dependencies. We are thus simply dealing here with an independent property of Kinande and the often-noted last-resort nature of resumptivization, which is used when movement is not an option (movement is an option in Kinande in a single-clause environment, but not in long-distance contexts).

The null operator strategy is illustrated by (71).

(71)   *Ekihi   kyo   wasiga   [$_{island}$ embere Marya aminye [nga kyo   wasoma __]]*
          what   wh.AGR   you.leave   before M   knew   C   wh.AGR you.read
          `What did you leave before Mary knew you had read?'
          (Schneider-Zioga 2009)

Here, a null Operator is moved to the embedded SpecCP (notice that we are dealing here with an agreeing C), and coindexed with the wh-phrase in the matrix SpecCP, voiding the adjunct island effect. Schneider-Zioga (2009) shows that even in non-island examples like (72), the fronted element cannot be reconstructed into the embedded clause to license the bound variable reading, which confirms that there is no long-distance movement taking place here, in accordance with the clause-bounded nature of movement in Kinande.[38]

(72) **ekitabu kiwe**$_{k/*j}$ *kyo   ngalengekanaya* [$_{CP}$ *nga.kyo* [**obuli mukolo**]$_j$ *akasoma _
kangikangi*].
          book   his   wh.AGR I.think   C.wh.AGR every student   read   regularly
          '(It is) His$_{k/*j}$ book that I think [every student]$_j$ reads regularly.'
          (Schneider-Zioga 2009)

In this respect, consider also the AA-examples in (73), involving an adjunct island. The examples in question do not involve standard agreement, hence no *pro* in the SpecTP of the most embedded clause (in contrast to (69b)), which has AA-morphology in (73).

(73) a.*omukali   ndi   yo   wasiga* [$_{island}$ *embere ___ wabuga*]
          woman   who   wh.AGR   you.left   before   spoke
          'Which woman did you leave before (she) spoke?'
      b. *omukali ndi   yo   wasiga* [$_{island}$ *embere Kambale anasi* [$_{CP}$ *ko   yo   ___ wabuga*]]
          woman who   wh.AGR you.left   before K   knew   that wh.AGR   spoke
          'Which woman did you leave before Kambale knew that (she) spoke?'

19

(Schneider-Zioga 2009)

(73a) is ruled out due to a locality effect. However, (73b) is acceptable. The only difference between (73a) and (73b) is that the theta-position of the wh-phrase is separated from the adjunct boundary by an agreeing CP in (73b). (73b) can then be derived as follows: a null Operator is base-generated in the most embedded CP, and undergoes movement to the local SpecCP (without moving to SpecTP), with the AA inserted to strengthen T. (The null element in question can be the same null element as the one located in SpecTP in e.g. (66)/(67), i.e. this may simply be *pro* moving to SpecCP. I will refer to such *pro* as null operator for ease of exposition). The operator is coindexed with the wh-phrase that is base-generated in the matrix SpecCP. Superficially, the AA-morphology is not just last resort in Kinande, since nothing here prevents the option of having *pro* in SpecTP and regular agreement in the most embedded clause; i.e. this option is in principle available (cf. for example (69b). But not for the numeration in question: (73b) contains an agreeing C that requires an operator (a wh-phrase or a null element co-indexed with a wh-phrase) in its SpecCP. Since the only element that can undergo movement to the embedded SpecCP is the subject, local subject movement to SpecCP is then forced here, which disallows regular subject agreement morphology. The AA-morphology then only appears not to be last resort in Kinande: while there are cases where regular subject-agreement morphology and the AA-morphology alternate, such cases have different Cs: the AA-morphology is possible only in the context of an agreeing C, which requires movement to SpecCP; furthermore, it is the only option in such cases.[39]

5.5.2.2. Object agreement. Kinande is interesting in another respect. Chomsky (2014) suggests more or less uniform treatment of T and V when it comes to labeling. Interestingly, Kinande objects (in ditransitive and ECM environments, see Bošković 2008, Schneider-Zioga 1995 and the discussion below) also obligatorily trigger agreement, which is also not possible under wh-movement. However, with object wh-movement, this agreement is simply dropped, which suggests that T and V should not be treated in the same way when it comes to labeling.

Bošković (2008) suggests an analysis of Kinande where the object in the environments in question in Kinande must undergo object shift in order to be Case-marked, agreement being a reflex of this movement. Under Bošković's (2008) analysis, these objects can actually be case-marked as long as they c-command the verb (at one point during the derivation, see also the discussion below); movement to SpecCP also suffices for this purpose. If object shift targets SpecVP, as suggested in Chomsky (2014), an object cannot undergo object shift and then proceed with wh-movement since the next step of movement would need to target vP, violating antilocality.[40] Wh-movement via the object shift position is then not an option, hence the impossibility of agreement in wh-contexts (the agreement morphology being licensed by the element in the object-shift position, on a par with TP).

Under this analysis, T and V are not treated uniformly with respect to labeling. While T needs to be phi-strengthened for labeling, this is not the case with V (when object agreement occurs, this is a result of a case-licensing movement, see the discussion below); this is why some subject agreement morphology is always obligatory with T, even in wh-contexts where the wh-subject is prevented from moving to SpecTP for independent reasons, which is not the case with object agreement morphology. At any rate, the Kinande facts in question indicate that T and V should not be treated in the same way when it comes to labeling.

Another important point about Kinande is that objects in simple transitives in Kinande do not trigger object agreement morphology, only objects in ECM configurations do.[41] As discussed in Bošković (2008), what is important here is that objects in simple transitive constructions c-command the verb even without movement. In other words, the descriptive generalization is that accusative-marked elements must c-command the case-marking verb: they trigger object agreement (hence move to SpecVP) <u>only</u> if other independently required operations do not put them in a position where they c-command the verb (wh-movement or lexical insertion itself in the case of direct objects). This can be straightforwardly accommodated under the approach to case-licensing argued for in Bošković (2007, 2008), where the DP needs to c-command the verb. More importantly for our current purposes, this also confirms that object-agreement morphology should not be tied to labeling and should be treated differently from subject-agreement morphology.

The above discussion also argues against Chomsky's position that object NP moves to SpecVP from the V-complement position, movement which would be disallowed by antilocality.[42] Kinande in fact tells us when movement to SpecVP takes place (given its overt morphological reflex). It takes place in ECM constructions like (74) (see also note 41), but not in simple transitives like (75) and not in wh ECM constructions like (76).[43]

(74)   *John believes Mary to know French.*
(75)   *John likes Mary.*
(76)   *Who$_i$ do you believe t$_i$ to know French?*

The upshot of the above discussion is that Kinande is important in that the subject/object agreement facts of Kinande argue against a uniform treatment of T/V and movement to SpecTP/SpecVP of the kind proposed in Chomsky (2014).

5.6. French <u>que</u>-<u>qui</u> alternation

I now turn to the French *que-qui* alternation, where *qui* occurs under subject wh-movement. A well-known aspect of this alternation is that *qui* occurs only with local subject movement.

(77)   a.   **Quelle étudiante crois-tu [t' que [t va partir]]?*
              'Which student do you believe that is going to leave?'
        b.   *Quelle étudiante crois-tu [t' qui [t va partir]]?*
              'Which student do you believe QUI is going to leave?'
        c.   *Quelle étudiante crois-tu [t' que [Marie va aider t]]?*
              `Which student do you believe that Marie is going to help?'
        d.   **Quelle étudiante crois-tu [t' qui [Marie va aider t]]?*
              'Which student do you believe QUI Marie is going to help?'
              (Rizzi and Shlonsky 2007)

The distribution of *qui* is in this respect very similar to AF in Kaqchikel, which also only occurs with local subject questions. In light of this similarity I suggest treating the two in the same way.

Taraldsen (2001) makes a very interesting proposal to treat *qui* as *que+il*, which is further expanded on in Rizzi and Shlonsky (2007), who also argue that this *il* (referred to below as *–il*) is

not quite the same as regular 3p.sg expletive *il*.[44] The analysis raises a number of interesting questions, I simply refer the reader to Taraldsen (2001) and Rizzi and Shlonsky (2007) for relevant discussion. What is important for our purposes is that we are dealing here with insertion of a pronominal element, which takes place if something goes wrong with local subject wh-movement (i.e. in the configuration in (29), which, as discussed above, is disallowed). Insertion of this *-il* thus has a last resort flavor; it can be considered to be a rescue strategy for local subject wh-movement constructions. In this respect, this *-il*-insertion in fact works in exactly the same way as AF-insertion in Kaqchikel. The above account of Kaqchikel can then be extended to French, with a small difference in that French T can be treated exactly like English T when it comes to labeling (given the relative poverty of French verbal morphology). As in Chomsky's (2014) proposal regarding English, French T is too weak to label. Normally, the subject moves to merge with it to strengthen it for labeling purposes. In a local subject wh-movement context (see (29)), such movement is not possible since, as discussed above, subject movement to SpecCP then violates antilocality.[45] In other words, wh-subjects cannot pass through SpecTP on their way to SpecCP. The latter movement cannot be avoided; without it we would get a PIC violation. The former movement can be avoided if the language has another way of strengthening T for labeling (in more traditional terms, satisfying its EPP requirement). The suggestion is then that this is precisely what this *-il* insertion accomplishes. It is then treated in the same way as Kaqchikel AF-insertion. It is a last-resort strategy which takes place to strengthen T in the contexts where the subject is independently prevented from moving to SpecTP.

5.7. Some alternatives

In this section I note several recent alternatives to the proposed account of local subject wh-movement constructions.

Consider first Chomsky's (2014) account of the *that*-trace effect in English. As discussed above, Chomsky argues that T is too weak to label in English when it merges with vP (or whatever its complement is, given split Infl; recall also that I use interchangeably terms I(P) and T(P)). The subject then must move to SpecTP for labeling purposes (under (phi) feature sharing between the subject and T). Since T is too weak to label, if the subject were to move away there could be no labeling (given that traces are ignored for the purpose of labeling). This is the source of the *that*-trace effect: In constructions like (3), the subject must move to SpecCP given that CP is a phase; since traces are ignored for the purpose of labeling and T itself is too weak to label, TP cannot be labeled in such constructions.

What about *Who do you think left*? Chomsky argues that in such examples C transfers all of its features to T, including the phasehood property. In clauses with a null complementizer, *that* is actually deleted: when this occurs, TP becomes a phase. Subject can now move away from SpecTP because the label that was created for the subject-TP merger can be now preserved, the crucial assumption here being that once a phase is completed, all labels are set hence movement away will not "delabel" the relevant object, i.e. in the case at hand, movement of the subject will not "de-label" TP.

Under the phase-labeling approach, we may expect labeling to be set only for what is actually sent to spell-out (i.e. the interfaces) under Chomsky's interpretation-based approach to labels, hence not for the phasal-edge area. However, Chomsky's analysis of *Who do you think left*

then would not work without additional assumptions (see here Chomsky 2014). Even putting this issue aside, a more important problem is that Chomsky's (2014) analysis appears to leave a number of constructions discussed above unaccounted for. Under this analysis, subject wh-movement via SpecTP should be possible only when there is no CP. This, however, cannot be right given the data discussed above: we have seen that if there is another projection between TP and CP, subject movement via SpecTP is possible (i.e. we have seen a number of cases of this type).

Another, independent issue with Chomsky's analysis should be noted. If all labeling is done only at the phasal level, many constructions where both relevant elements move would be left unlabeled.

Rizzi (2006, 2013) also proposes rather interesting analyses where subject cannot move to SpecCP from SpecIP. In fact, he proposes an even stricter account where subject that moves to SpecIP can no longer move at all since he considers SpecIP a Criterial Freezing Position, from which no movement is possible (see Rizzi this volume for an account of this). This analysis has the same problem as Chomsky's analysis regarding constructions where subject wh-movement apparently does proceed via IP.

5.8. Short subject questions
The grammaticality of simple English wh-questions like (78) now becomes puzzling. Given the above discussion, such examples cannot be derived by having the wh-phrase move to SpecIP and then to SpecCP since this derivation would violate antilocality.

(78)   *Who left?*

There are in fact a number of proposals in the literature to derive (78) without involving wh-movement via SpecIP. Thus, a number of authors have argued that the wh-subject in such constructions in facts stays in SpecIP, an account that is fully compatible with the system argued for here.

There are, however, some arguments against this analysis (for relevant discussion, see also Agbayani 2000; An 2007; Boeckx 2003; Pesetsky and Torrego 2001; among others). Consider for example the distribution of the *hell*-phrases (cf. Ginzburg and Sag 2000; Pesetsky and Torrego 2001). If the data in (79)-(81) are taken to indicate that *the hell* can only occur with wh-phrases in SpecCP, it then follows that the subject wh-phrase in (82) must be located in SpecCP, not SpecIP.

(79)   *Who bought what?*
(80)   *What the hell did John buy?*
(81)   **Who bought what the hell?*
(82)   *Who the hell arrested Mary?*

While the argument is rather tempting, it might not be completely conclusive, since one could try to argue that for some reason, *hell*-phrases are not possible with wh-phrases located within vP. There are, however, other arguments that the wh-phrase does not remain in SpecIP in subject questions. Thus, Mizuguchi (2014) observes that if that were the case, we would expect (83) to be ambiguous, on a par with (84), which is not the case.[46]

(83)   *Who loves everyone?*   (who>everyone; *everyone>who)
(84)   *Someone loves everyone.*   (someone >everyone; everyone>someone)

Furthermore, the West Ulster English (WUE) data in (85)-(86), noted by McCloskey (2000), provide a rather conclusive argument that subject wh-phrases do not stay in SpecIP (or even move through SpecIP).

(85)   *Who$_i$ was arrested all t$_i$ in Duke Street?*
(86)   **They$_i$ were arrested all t$_i$ last night.*

While, in contrast to Standard English, WUE allows Q-float under wh-movement, just like standard English, WUE disallows (86). The ungrammaticality of (86) indicates that a subject located in SpecIP cannot float a quantifier in the postverbal position in passives. It must then be the case that *who* in (85) is not located in SpecIP; if that were the case, (85) should be ungrammatical on a par with (86) since subjects located in SpecIP cannot float a quantifier in this context. This example in fact also rules out the derivation where *who* in (85) moves to SpecCP via SpecTP. If that were the case, the quantifier in (85) would still be floated under movement to SpecIP, which (86) indicates is not possible. In fact, we have seen above that this derivation would anyway be ruled out by antilocality, on a par with a host of similar cases. Based on the above considerations, McCloskey (2000) in fact argues that *who* in (85) moves to SpecCP without moving to SpecIP. The reasoning seems sound; notice also that the derivation in question conforms with antilocality. But what happens with the usual requirement for the subject to move to SpecIP in English in such constructions?

I will take the above data to provide clear motivation that local subject wh-questions in English are derived through direct movement to SpecCP and give two suggestions why the subject-movement-to-SpecIP requirement is apparently voided in this context (for alternative accounts, see McCloskey 2000 and Bošković 2004).

5.8.1. Q in T. Chomsky (2008, 2013) argues that there is C-T association through which the heads in question share features. This means that when there is a Q-feature in C, there is also a Q-feature in T. Assume that this is indeed the case. I also suggest that, like AF in Kaqchikel and *–il* in French, the Q-feature strengthens T so that T can label. Given that labeling is the reason for the movement of the subject to SpecTP, there is then no need for the subject to move to SpecTP in this context; the subject can move directly to SpecCP.[47] Notice that under this account, the voiding of the traditional EPP requirement in English is confined to a +wh-CP context, i.e. to constructions where TP is immediately dominated by an interrogative CP. As a result, as desired, the account does not extend to other short subject A'-movement contexts discussed above, namely short subject topicalization, short-subject relativization, and the *that*-trace effect.

5.8.2. T-to-C. There is an alternative analysis where the *wh*-subject in (78) also moves directly to SpecCP, without movement through SpecTP. English matrix wh-questions involve T-to-C movement.[48] This is the case in (78) too. (Under the analysis about to be proposed, the T-to-C

24

movement from usual questions would also take place in embedded wh-subject questions as last resort since that would be the only way to ensure proper labeling). T-to-C movement eliminates the problem that arises due to the inability of T to label on its own. Once T moves away, given that traces are ignored for the purpose of labeling, the result of the T+vP merger is labeled by vP (this would give us two vacuous vP projections; as far as I can tell, no obvious problems arise because of this; notice also that if, as several works have suggested (see e.g. Koopman 2006), the subject must be located in the Spec of a projection that has T in its head position in order to get case, this does happen under the analysis currently under consideration).[49] Notice that this analysis is again specific to +Wh-CP environments, i.e. contexts where TP is immediately dominated by a +wh-CP hence it does not extend to other constructions involving short subject movement discussed above, namely, short-subject topicalization, short-subject relativization, and the *that*-trace effect, where subject movement through SpecTP still must take place.

6. Conclusion

The article has provided a uniform account of a number of locality effects, in particular, the Subject Condition, the Adjunct Condition, Richards's (2001) tucking in effect, and the full Comp-trace paradigm, including (in addition to the basic case and its improvement with intervening adverbs) relative and extraposed clauses, the impossibility of short-subject topicalization, French *que-qui* alternation, and the effect of subject wh-movement on agreement in languages like Kinande. It should, however, be noted that in spite of the wide coverage, the system argued for here does not purport to offer a comprehensive theory of all of locality of movement—there are certainly cases that are not covered by the current analysis (though the reader is referred to Bošković in press for an account of a generalized version of the Complex NP Constraint which extends to all complements of all lexical heads which is also crucially based on the approach to antilocality argued for here).[50] The account proposed here is based on the (somewhat modified) labeling framework of Chomsky (2013, 2014) and a labeling-based approach to antilocality, which treats it as a derivational constraint on movement steps that essentially requires movement to cross a labeled category (another way to think of this is that antilocality is defined on phrases, as in Bošković (2005, 2014), but that unlabeled elements do not count as phrases), and also bans movement from targeting unlabeled categories. The guiding intuition of the previous works on islands (e.g. Chomsky's 1986 *Barriers*), and more generally locality trouble makers, is that they are in a sense strong, with something about their strength blocking movement. The current approach is different in this respect: what makes something impenetrable is that it is underdetermined (due to the lack of a label, which makes movement from (some) islands too short). In other words, the problem with the relevant contexts is not that movement out of them is too long, as has been standardly assumed, but that it is too short.[51]

While a number of other proposals were made in the course of the discussion, one proposal needs to be emphasized: the account of the phenomena discussed in the article is crucially based on the proposal that there is a difference in the timing of labeling between the basic case where a head and a phrase merge (the base step) and the case where two phrases merge, where the former takes place in the course of the derivation and the latter takes place as part of the spell-out operation. As discussed in section 2.2., in Chomsky (2013), the label in the former case is determined rather differently from the latter case: in the former case the label is determined via minimal search (MS),

the same operation as Agree Closest, a syntactic mechanism falling under minimal computation. Since the labeling of the base step is done through essentially a syntactic mechanism, I have argued that it takes place when the relevant configuration is created. On the other hand, labeling in the case of merger of two phrases occurs when the relevant structure is sent to the interfaces, given Chomsky's assumption that unlabeled objects are uninterpretable. It should, however, be noted that the latter assumption is not obvious, i.e. it is not obvious that labels are indeed needed for interpretation. Furthermore, at least with respect to the phenomena discussed here, nothing would go wrong in the syntax itself if the result of merger of two phrases is never labeled. If labels were not to be needed for interpretation (contra Chomsky 2013; for relevant discussion, see also Chametzky 2000; Collins 2002; Seely 2006; Hornstein 2009; Hornstein and Nunes 2008), such cases then would not need to be labeled at all. If the current discussion is on the right track, the result of head-complement merger still needs to be labeled. However, if labels are not needed for interpretation, the labeling here would then need to take place for a strictly syntactic reason. It seems plausible that in this case labeling may be required by subcategorization, i.e. that satisfying subcategorization requires that the element with the requirement to take a complement project (i.e. determine the label of the resulting object), otherwise, there would be no head-complement relation here; see in this respect Chomsky (2000).[52]

There may even be a more pressing reason for immediate labeling for the head-complement case. Phases are taken to determine the point of spell out, i.e. when the structure is sent to the interfaces. If labeling occurs strictly for interpretive reasons we would expect it to occur at this point. But a serious chicken-or-the-egg style question then arises: as discussed in Bošković (in preparation), phasehood determination requires labeling, i.e. phases do not really exist prior to labeling: to know whether something is a phase we need to know its label (see Bošković in preparation for evidence that unlabeled elements cannot be phases; it is shown in that work that the well-known ban on movement out of moved elements can be deduced given that unlabeled objects cannot be phases). Since phases determine the points of spell out, without any labeling structure cannot be sent to the interfaces, which in turn is necessary for labeling under a purely interpretative approach to labeling. The problem does not arise if head-complement merger is labeled immediately since this is actually all that is needed to determine points of spell out.

The upshot of the above discussion is that there is need to label (in the syntax) the result of head-complement merger even independently of Chomsky's (2013, 2014) considerations.

[1]For relevant discussion of labeling pre-dating Chomsky (2013), see Chametzky (2000), Collins (2002), Seely (2006), Hornstein (2009), and Hornstein and Nunes (2008).
[2]Like Chomsky (2013), I will continue using CP and SpecCP for such cases for ease of exposition.
[3]See Bošković (in press) for discussion of the full paradigm regarding extraction out of traditional Noun Phrases as well as its consequences for extraction out of other domains and the theory of phases more generally.
[4]Erlewine (2014) defines antilocality as simply stating that A'-movement from SpecXP must cross a phrase other than XP. This is basically the result of the above discussion, though only for successive-cyclic movement (this will be revised below), and not confined to A'-movement. The labeling framework also

makes possible a more natural statement of the condition; in fact, we are still basically capturing here the intuition from Bošković's (2005, 2014) that movement must cross a phrase, unlabeled projections not being counted as phrases due to their underdetermined status. We will, however, see in section 4 that in some cases the current labeling approach to antilocality significantly departs from the previous approaches in that it rules out certain movements that would be considered long enough under all earlier approaches to antilocality.

[5] The more specific requirement regarding the kind of a complement can actually be satisfied even if the complement itself is unlabeled, see Collins (2002).

[6] For recent perspectives on the CED, see also Boeckx (2008) and Müller (2010).

[7] Klaus Abels (p.c.) notes an alternative derivation where the subject DP from (16) moves alone from the edge of vP to TP, followed by movement of *who* to SpecCP. (Note that I assume split IP, as a result of which subject A-movement does not violate antilocality. There are many arguments in the literature that there is additional structure between vP and TP, e.g. concerning languages which have intermediate verb movement where the verb is lower than the finite verb in Romance, which is located in T, but higher than in English, where it is located in v (Belletti 1990; Stjepanović 1999; Cinque 1999; Bošković 2001), languages like Icelandic which quite clearly have two distinct subject positions above the subject theta-position (see Bobaljik and Jonas 1996), and the distribution of floating quantifiers, which also requires richer clausal structure (Bošković 2004)). Abels's derivation represents a more general issue for the labeling-framework (not just the analysis proposed here), since in the labeling framework *DP subject* in (16) is a maximal projection even after *who* merges with it. There are several ways of ruling out this derivation (while in this case such a derivation needs to be excluded, in work in preparation I argue that such derivations should not be excluded in principle (for relevant discussion see also Ott in press), i.e. I argue that there are acceptable instances of such derivations that involve traditional X'-movement). One possibility is that we are dealing here with a semantic issue since the base-subject position ends up being occupied by different elements at different points of the derivation, first by *[who [friends of who]]* and then by *who* (note that *who* would label the element in the edge of vP in (16) after *friends of who* (*subject* from (16)) moves away). Intuitively, we would then be dealing here with the subject theta-role being assigned to two different elements at different points of the derivation. (Note also that, given split Infl, I will interchangeably use the terms I(P) and T(P), with the understanding that TP is not the first/only projection in the inflectional domain of the clause.)

[8] For extraction out of ECM subjects, see note 40. Note that the problem noted above regarding extraction from subjects located in SpecIP does not arise with extraction from subjects that remain at the vP edge. Stepanov (2007) claims that such extraction is indeed allowed. There is, however, some controversy regarding whether extraction out of subjects in SpecvP is possible; thus, Uriagereka (2012) claims that it isn't. Such extraction can be either allowed or disallowed in the current system depending on how several additional issues that are involved in such extraction are resolved.

It should also be noted that Chomsky (2008) discusses some examples where extraction from subjects is allowed in English. While the grammaticality status of those cases is somewhat controversial (see e.g. the references in Gallego and Uriagereka 2006), their defining property is that they involve passive/ergative subjects and that the moved element must be a PP, P-stranding being disallowed, as discussed in Broekhuis (2005), Gallego and Uriagereka (2006), and Lohndal (2007), who quite convincingly argue based on these properties (and additional evidence) that the examples in question do not involve extraction from either the surface or the base subject position, giving them a derivation that makes them irrelevant for our current concerns (see also Boeckx 2008).

[9] It should be noted that, following Hornstein and Nunes (2008) and Hunter (2010), Bošković (in press) argues that adjunction does not require labeling for interpretation, which under Chomsky (2013) means that the result of adjunction is not labeled at all. (In fact, Bošković in press suggests that not labeling should be taken as the defining property of what is referred to as adjunction, segmentation being dispensable). In other words, under this treatment of adjunction TOL is actually irrelevant here; labeling is not simply delayed with adjuncts, it does not take place at all (at any rate, under more traditional assumptions about adjunction, changing "projection" in (13) to "category" would actually make crossing a segment irrelevant when it comes to antilocality).

[10] In fact, something along these lines could be used for Truswell's (2011) observation that some adjuncts allow extraction. This can be captured in the current system if these adjuncts are not adjoined to complements of phasal heads. E.g., if an adjunct is adjoined to vP instead of VP, extraction out of it will not

be banned. A broader question, however, remains: Why are most adjuncts adjoined to complements of phasal heads? Why do most but not all adjuncts disallow extraction is really a question for everyone, the current account merely states it in a particular way.

[11] It is worth noting here that Yoo (2015) proposes that only labeled categories can be targets of movement as a matter of a principle. The current discussion deduces the requirement, turning it into a theorem. By doing so, it also side steps a potential problem. The requirement in question should hold only for internal merge; it should not hold for external merge, otherwise phrases targeted for successive-cyclic movement, like the embedded CP in (11), could not undergo further merger; i.e. the CP in question could not be merged with the V. While simply requiring that merge targets only labeled categories would face the issue of how to confine the requirement only to internal merge, to the extent that (anti)locality considerations are independently relevant only to internal merge, the issue does not arise under the current deduction of the requirement.

[12] Starting with Perlmutter (1971), the *that*-trace effect has generated a great deal of interest, particularly within the Government and Binding framework (see e.g. Chomsky 1981, 1986; Kayne 1984; Lasnik and Saito 1984, 1992; Pesetsky 1981; Rizzi 1990). While the phenomenon was generally ignored in early Minimalism, probably because it was considered too hard to explain, minimalist accounts of the *that*-trace effect have begun to emerge more recently (see e.g. Boeckx 2008, Branigan 2005, Buesa García 2011, Hoge 2001, Ishii 2004, Kim 2008, Lohndal 2009, Mizuguchi 2008, Nunes in preparation, Pesetsky and Torrego 2001, Richards 2001, Rizzi and Shlonsky 2007, Roussou 2002, Szczegielniak 1999).

[13] See also Erlewine (2014) and Brillman and Hirsch (2014) for an antilocality account of the *that*-trace effect and the improvement in (32) (the antilocality account of the *that*-trace effect goes back to Bošković 1997 and Ishii 1999).

[14] There is a controversy regarding whether non-adverbial topics can rescue *that*-trace effects, see Culicover (1992) and Browning (1996). Notice that not all subject extractions discussed in this article can be improved with adverb insertion. I leave open why this is the case (presumably, in some cases we could be dealing with an intervention effect (where equidistance with the adverb, i.e. closeness to the adverb, could be relevant); note also that multiple topics are disallowed); it is also possible that prosodic considerations are relevant in some cases (PF has in fact been implicated even in the *that*-trace effect, see de Chene 1995; Kandybowicz 2006, 2008).

[15] One potentially relevant phenomenon from the perspective of the truncation and the bare IP analysis is the impossibility of embedded topicalization in the absence of *that*. If topicalization targets the CP field, the lack of a CP field would lead to the impossibility of embedded topicalization. These analyses thus capture the ungrammaticality of (ib). (Bošković 1997 in fact gives the unacceptability of (ib) as one of the arguments for the bare IP analysis, and Rizzi 2006 also gives it as supporting evidence for his truncation analysis).

(i) a. *John didn't believe that Mary, Bill kissed.*
   b. **John didn't believe Mary, Bill kissed.*

[16] Extraction out of subjects needs to be reconsidered under the IP analysis.

(i)?*Who$_i$ do you think [$_{CP}$ that [$_{IP}$ [friends of t$_i$] left]]?*

(ii) ??*Who$_i$ do you think [$_{IP}$ [friends of t$_i$] left]?*

(i) can be handled as in section 3.1. Regarding (ii), as noted in Bošković (1992), extraction from subjects of *that*-less clauses is better than extraction from subjects of clauses headed by *that*. It is, however, still degraded. If we put aside the contrast and assume (ii) still needs to be ruled out, the question is why it is degraded if the embedded clause is an IP. (The following discussion may also be relevant to extraction out of ECM subjects, but see here note 40.) Its unacceptability actually follows straightforwardly from the current system given Hiraiwa's (2005) claim that the edge of the edge of phase XP is not at the edge of XP for the purpose of the PIC, i.e. it is not accessible from outside of the XP, which Bošković (in press) formalizes by requiring Y to merge with a projection of phasal head X to count as the edge of XP. Since the edge of the edge of phase XP does not merge with a projection of X, it is not at the edge of XP. As discussed above, Bošković (2014) argues that the highest clausal projection counts as the phase (see also Bošković in press; Wurmbrand 2014). If CP is missing in (ii), this makes IP a phase. Movement from IP is then possible only from the edge of IP, given the PIC. However, the element moving out of the subject in (ii), which moves to the edge of the subject as discussed above, is at the edge-of-the-edge configuration with respect to IP (since it does not merge with a projection of I), which means it is not accessible from outside of the IP. To be accessible from outside of the IP, it first needs to move to the edge of the IP, either by adjoining to it or by

moving to a higher IP-Spec. This movement, however, violates antilocality (i.e. (13)).(For ease of exposition, the parenthesis in (iii) indicate what the relevant labels would be when the structure is sent to the interfaces. Note also that under this analysis, (i) and (ii) are not ruled out in exactly the same way, which may be desirable given that they do not display exactly the same degree of deviance.)

(iii) …[$_{?(IP)}$ who [$_{?(IP)}$ [$_{?(DP)}$ t [$_{DP}$ subject]] [$_{IP}$ I…

[17]It is standardly assumed that there are a number of projections below DP in (35), which I ignore here. (Bošković in press actually assumes that NP is a phase, see that work for an approach to the PIC where the PIC is not violated here in spite of the phasehood of the NP.) See den Dikken (2007), Gallego and Uriagereka (2007), Bošković (2013a, in press), and Wurmbrand (2013) for a number of additional cases of this type and Bošković (in press) for discussion of restrictions on where the effect in question occurs. (Bošković in press argues that the effect occurs only when a phasal head moves to a phasal head (in the cases under consideration, C and D move to the V+v complex, which contains the phasal head v). Bošković (in press) also shows that the Complex NP Constraint effect from (14) is voided in languages that have N-to-D movement like Setswana, another instantiation of the effect in question. (Note that for Bošković (in press), the-phasehood-voiding movement of a phasal head cannot turn a higher non-phase into a phase; for den Dikken (2007) and Gallego and Uriagereka (2007) it can, but not in this case due to V-to-v movement.)

[18]Under this analysis, *??who do you think friends of t left* can be accounted for in the same way as under the IP analysis (see note 16): If the embedded CP cannot be a phase, IP is the highest clausal projection that can be a phase, hence should count as the phase under this analysis.

[19]Notice that in contrast to the *that*-trace effect, with movement out of a subject in SpecIP two phases are implicated in the violation, since the initial position of movement has the DP phase as its sister and the final position the CP phase. Riqueros (2013) argues on independent grounds that in such situations it is the lower phase that is *-marked (basically what is *-marked is the first phase that c-commands the launching site of movement). This means that in the case of extraction out of subjects, what is *-marked is the DP phase, hence deletion of *that* does not improve such constructions.

[20]While Kayne (1984), Stowell (1981), and Bošković and Lasnik (2003) give unacceptable examples of subject extraction with both raising adjectives and raising verbs, Kayne (1984:18) also notes that there is some speaker variation regarding the raising verb case. He suggests that this is an instance of interference from parentheticals or that the extraposed clause is actually a complement (see the discussion below) for the speakers who find such examples acceptable.

[21] The situation is a bit more complicated under the C-to-V analysis; if C-to-V were to be forced here even the null C examples without extraction would be ruled out. We thus may need to assume that C-to-V is in principle optional or that it simply does not occur in the context currently under consideration (i.e. that the null C here is not an affix (see below) or that the movement takes place only in the presence of v). There is, however, another, rather straightforward option that has the desired effect. Pesetsky (1992) argues that C-to-V takes place because of the affix nature of the null C. Bobaljik (1995), however, suggests that there are two ways of satisfying an affix requirement: through head movement or PF merger under adjacency. Assume that they are both in principle available in the case under consideration (i.e. null C), which was in fact proposed (though implemented slightly differently) in Kim (2008). The former option is ruled out in the extraposition case since it would involve C-lowering. PF-merger under adjacency is, however, still an option and can take place in (i). Notice also that the contrast between (i) and (ii), noted in Bošković and Lasnik (2003), can still be captured: neither head movement nor PF merger under adjacency is an option in (ii), while the latter is possible in (i). (Bošković and Lasnik 2003 in fact restate Pesetsky's 1992 analysis in terms of PF merger. As far as I can tell, combining the two in a way discussed here does not have any obvious undesirable consequences (see also Kim 2008); the facts regarding the distribution of null-C clauses discussed in Pesetsky 1992 and Bošković and Lasnik 2003 can still be captured.)

(i) *It appeared* C *John had left.*

(ii) **It appeared at that time* C *John had left.*

[22] The account cannot be maintained as is under the *that*-deletion analysis of the *that*-trace effect. Here is a potential alternative that is consistent with that analysis: Following the line of research in Moro (1997), Hornstein and Witkoś (2003), and Sabel (2000), Bošković (in press) suggests that in this kind of construction, the expletive and its clausal associate are generated as a constituent VP/AP internally. In particular, they are generated as the Spec and the complement of a linker-like projection FP (this could be

den Dikken's 2006 Relator Projection). Suppose now that what is special about the *that*-less clauses in question is that they are actually IPs, i.e. they do not involve *that*-deletion. Under Bošković's (in press) approach to phases, where the highest projection in the functional domain of a clause functions as a phase, the FP (rather than IP) should then function as a phase. The subject will then have to move from the IP-edge subject position to the edge of FP. Since the IP is not labeled at the point of movement, this movement violates antilocality. The problem does not arise with object and adjunct movement.

[23]For ease of exposition, I adopt here an approach where the nominal head originates external to the relative clause.

[24]Note that in many languages a *that*-CP can occur even above indirect questions (in fact often optionally as in Spanish). The precise projection labels and the details of the structure actually do not really matter here; see Rizzi (1997) for a different perspective; see also Deal (2014). (Notice also that if null Rel incorporates into C, the Rel head and Op would still be located within the same phrase in (56).)

[25]Erlewine also argues for an antilocality account. The analysis of Kaqchikel adopted here follows the gist of Erlewine's account, with some modifications and an adaptation to the labeling framework.

[26]Kaqchikel verbal morphology is rather complex (see Erlewine 2014 and references cited therein, especially Preminger 2011). I focus here on constructions involving what Erlewine refers to as Set A morphology (still glossing over some morphological complexities; note also that I assume that in this context the presence of Set B morphology is conditioned on the presence of Set A morphology), since this morphology requires the presence of the subject in SpecIP.

[27]I have argued in section 5.4. that relatives are not structurally uniform in English: English has relatives with only one projection above IP and relatives with two projections above IP, which is the case with *that*-relatives. At least some Mayan languages use AF with local subject relatives (see Coon, Pedro, and Preminger in press), which means that these Mayan languages have only the first option from English.

[28] Erlewine (2014) in fact also explicitly argues (primarily based on Mayan languages) that a clause includes only those functional projections that are independently motivated—finely articulated sequences of functional projections proposed in works like Rizzi (1997) and Cinque (1999) are not always present (see in fact Rizzi 1997:314-315 on this position).

    Notice also that Abels's (2003) account of the immobility of IPs that are dominated by CP, illustrated by (i), in terms of his generalization that phasal complements cannot move also requires that the CP field is not split in this case. (Since CP is a phase, the PIC requires IP movement through SpecCP, but antilocality blocks it because it is too short; (iia) is ruled out by antilocality and (iib) by the PIC).
(i)*[*His mother likes Mary*]$_i$ *everyone believes that t$_i$.*
(ii) a. *[$_{CP}$ IP$_i$ [$_{C'}$ C t$_i$
     b. *IP$_i$ [$_{CP}$ [$_{C'}$ C t$_i$

[29]Chomsky (2014) was not concerned with the details of implementation of his proposal regarding T and labeling in a language like English. They, however, become important in light of the current approach to antilocality, where movement to an unlabeled category results in an antilocality violation. In particular, the precise timing of labeling is important here. There are two possibilities: having in mind Chomsky's (2000, 2001) proposal that movement is preceded by Agree (i.e. movement is Agree+Merge), probing of the subject by T, which is followed by movement of the subject, itself results in labeling, so that the subject moves to a labeled category. Alternatively, the weakness of T regarding labeling can be interpreted slightly differently: there is labeling when T merges with its complement, but this weak labeling requires a follow up merger with a phrase T agrees with (recall that what we are dealing with here is simply the traditional EPP effect; at any rate, I will leave the precise details of implementation open here).

[30]In more traditional terms, AF takes care of the EPP property in these contexts. (Erlewine in fact argues that T here has the EPP property in Kaqchikel).

[31]This is simply a different perspective on Erlewine's (2014) claim that the morphology in question is associated with T having the EPP property.

[32] I am using the term AF-insertion for expository reasons. What we may actually be dealing with here is different options for the phi-specification of T, the one that is morphologically realized as AF having the last-resort status. (Alternatively, we may be dealing here with a pronominal element similar to the one argued for in section 5.6. below regarding the French *qui*-construction, which is inserted as last resort.)

[33]Kaqchikel is actually quite similar to Trentino and Florentino, as discussed in Brandi and Cordin (1989) and Rizzi (1990). In Trentino and Florentino, subjects agree only if they are in SpecIP (i-ii); postverbal subjects do not agree. (As illustrated in (26) for Florentino, wh-moved subjects cannot agree, which confirms that wh-movement from SpecIP is imposible ((26) involves the configuration in (29))). This can be interpreted as indicating that "usual" agreement can only be licensed if the subject is located in SpecIP in Trentino and Florentino, just as in Kaqchikel.

(i) *Le   ragazze   l'   hanno   telefonato.*   Florentino
      the   girls   CL_{3pl}   has_{3pl}   phoned
      `The girls have phoned.'
      (Campos 1997)

(ii)   a. *Gl'-   ha   telefonato   delle   regazze*.   Florentino
          b. *Ø   Ha   telefoná   qualche   putela*.   Trentino
              CL_{3sm}   has_{3sm}   telephoned   some   girls
          `Some girls have telephoned.'
           (Brandi and Cordin 1989)

However, when the subject does not move to SpecIP, as in (ii), Trentino and Florentino can still use default verbal morphology, 3.p.sg (this is not an option in Kaqchikel due to the rather complex rules for verbal agreement morphology that Kaqchikel has, see Erlewine 2014). This is the same morphology as in regular preverbal subject constructions where the subject is 3.p.sg.m., hence Infl with this morphology is strong enough to label.

Like Kaqchikel, Trentino and Florentino thus require the subject to be located in SpecIP to license regular subject-verb agreement morphology. When this does not happen, they use default agreement morphology, which plays the same role as AF in Kaqchikel. However, it does not have the same last resort flavor as Kaqchikel AF; it is not present only when the subject for independent reasons cannot move to SpecIP—i.e. it is not a last-resort mechanism. (One could try to argue that the fact that AF is not possible in (64a) is not due to a last-resort nature of AF but Case (assuming subject in SpecIP correlates with the usual subject agreement morphology). The difference between Trentino and Florentino and Kaqchikel would then be that the subject must move to a position that c-commands I in Kaqchikel (in constructions under consideration), either to SpecIP or to a higher position like SpecCP, for Case-licensing, which is not the case with Trentino and Florentino. This can be captured if, as argued in Bošković (2007) and discussed in section 5.5.2, Case-licensing normally requires the DP to c-command its Case source; one of the special mechanisms to get around this requirement discussed in Bošković (2007) would then be available in Trentino and Florentino, but not Kaqchikel (in the relevant context). Morphological ergativity of Kaqchikel interferes with investigating this option. However, this option seems implausible for Kinande, which will be analyzed in the same way as Kaqchikel in section 5.5.2. However, in Kinande, it is clear the subject need not move for Case reasons; it can stay in its base position with exactly the same agreement morphology that occurs in normal subject-in-SpecIP transitive constructions, as long as another element moves to SpecIP to license the morphology in question (see note 34).)

[34]The relevant element actually need not be the subject; e.g., it can be a locative in the locative inversion construction or the object in the subject-object inversion construction (which is not a passive); in both of these cases the element in SpecTP (not the subject, which remains in its base position) undergoes traditional subject agreement, which confirms that such agreement requires an element in SpecTP (the element can also be a *pro*, see below).

It should be noted that there are some interpretational requirements on subjects in Kinande which are similar to Chinese. It is well-known that there is a specificity/topicality requirement on subjects located in SpecTP in Chinese. Kinande has a similar requirement on clause-initial subjects located in SpecTP (I reanalyze from this perspective the relevant data noted in Schneider-Zioga 2007 in work in preparation).

[35]It is not out of question that we are dealing here with a pronoun that undergoes deletion in PF, see e.g. Holmberg (2005). ((i), from Mutaka (n.d.), where SM is the usual subject agreement morphology, shows that null subject constructions are possible in Kinande.)

(i)   *a-ká-ly-a   o-mu-tsérê.*
         SM-TM-eat-FV   AUG-C3-rice
         '(Someone) eats rice.'

[36] This kind of a base-generated wh-dependency is apparently not possible in Kaqchikel, hence the grammaticality of (64d) with regular morphology and ungrammaticality with AF. It should be noted here that Kinande is extremely permissive regarding the possibility of base-generation of wh-phrases in SpecCP; in fact, Kinande quite generally disallows any movement out of CPs, long-distance dependencies being created through *pro* or a series of Operators that are base-generated in SpecCPs (see Boeckx 2003, Bošković 2008, and especially Schneider-Zioga 2009, who shows that the ban on movement out of clauses extends even to A-raising—even A-raising is clause-bounded in Kinande). We are thus dealing with a much broader difference between the two languages which is abundantly independently motivated (see the works cited above).

[37] Note that we are not dealing here with an Avoid Pronoun Principle kind of effect, see Boeckx (2003).

[38] As Schneider-Zioga (2009) notes, the lack of superiority effects even in cross-clausal superiority contexts confirms the lack of long-distance wh-movement.
(i)   *ekihi   kyo   ndi   anasi nga   kyo   Josefu abula?*
      what   wh. AGR who   know   if   wh.AGR Joseph bought
      Lit. `What does who know if Joseph bought?'
      (Schneider-Zioga 2009)

[39] Is there any evidence that the AA-morphology is indeed last resort? If it were not, then in any construction, even non-wh constructions, it should be possible to introduce AA-morphology and leave the subject in SpecvP, with nothing in SpecTP. This, however, is not possible. The AA-morphology is restricted to the contexts requiring local subject wh-movement.

[40] Note that if object shift targets SpecVP, extraction from shifted objects is expected to be impossible (it involves the same kind of configuration in the relevant respect as extraction from subjects located in SpecIP). Stepanov (2007) shows that extraction from shifted objects is indeed impossible (see also Bošković 1997, 2002; Lasnik 1999). Note also that, given that ECM subjects must undergo object shift, as argued in Bošković (2002) (see also the discussion below), the degraded status of ??*Who do you believe friends of to have left* then also follows.

[41] See Bošković (2008), Schneider-Zioga (1995); note that Bošković (2008) treats double object constructions as in the line of work originating with Kayne (1984) (see especially den Dikken 1995), where ditransitive constructions involve an ECM-style configuration: the goal and the theme are generated in a small clause that excludes the higher verb.

[42] It is, however, not out of question that the saving effect of head movement on locality/antilocality violations discussed in section 5.1. could be stated in such a way that the V-to-v movement would void the antilocality violation in question.

[43] (76) would still involve movement via SpecvP for PIC reasons.

[44] E.g., they show that while *-il* has phi-features it does not have the same phi-feature specification as regular expletive *il*, being valued during the syntactic derivation. (Basically, Rizzi and Shlonsky 2007 show that in contrast to *il*, which is 3p.sg, *-il* agrees with the wh-subject in phi-features (thus, they that it is plural when the subject is plural, as revealed through liaison). Given that *–il* occurs only in the context where the subject moves to SpecCP, from where it c-commands Infl, in light of Bošković's (2007, 2008) proposal regarding case discussed above, we can assume that the subject in SpecCP probes the IP domain, getting case this way and also valuing the phi-features of *–il*. When the phi-features of the pronominal in question are not valued this way, they get default 3.p.sg specification, which is what happens with "regular" *il*.

[45] As in English and Kaqchikel, there is an improvement with an intervening adverb (thus, (i) is better than (77)a), which can be captured in the manner discussed above (it should be noted that *qui* will not be blocked in this type of examples if the relevant adverbs have the option of being IP-adjoined, see in this respect Rizzi and Shlonsky 2007 and Sportiche 2011).
(i) ?*Quelle étudiante$_i$ crois-tu   que dans deux jours t$_i$ va   partir?*
    which student   believe-you that in   two days   is-going to-leave

[46] Agbayani (2000) observes that if sluicing involves wh-movement followed by IP deletion, as standardly assumed, the wh-phrase in examples like (i) cannot be located in SpecIP.
(i) *Someone bought a car. Who?*

[47] Why can't the subject then stay vP internally in non-subject wh-questions, as in *What has bought John* (the issue noted in this note also arises under the alternative analysis discussed in section 5.8.2 and can be

handled in the same way)? There are two reasons: As discussed above, Bošković (2007, 2008) argues that the subject needs to c-command its case assigner, T, for case-licensing reasons: this in itself would force subject movement to SpecTP (as discussed in Bošković 2007, some languages have a way of case-marking the subject that does not require the subject to c-command T; such constructions could then be acceptable in such languages under this view). Alternatively, Chomsky (2013) suggests that the subject that stays in SpecvP makes labeling of vP impossible (i.e. the subject needs to move away so that vP can be labeled; Chomsky also suggests that this requirement may not hold in all languages, referring to German).

[48]It is sometimes assumed that this is not the case with subject questions due to the lack of *do*-support. However, such questions do not show *do*-support for independent reasons discussed already in Chomsky (1957). Under the PF merger account of English verbal morphology (Halle and Marantz 1993; Bobaljik 1995; Lasnik 1995), which goes back to Chomsky (1957), *do* is inserted as last resort when the tense affix is not PF-adjacent to the verb hence cannot merge with it. This is what happens in matrix questions, where, due to T-to-C movement, the subject intervenes between the Tense affix and the verb. However, this is not the case in subject questions even if T moves to C. Since the subject is located in SpecCP, the tense affix in C is PF-adjacent to the verb (no phonologically realized material intervenes), hence there is no need for *do*-support, which is then blocked.

[49]In fact, as discussed in Bošković (2008), due to such case-licensing, SpecCP in the construction under consideration would count as an ambiguous A'/A position hence the grammaticality of examples like *Who seems to himself to be smart*.

[50]See also Bošković (in preparation) for a labeling-based account of the freezing effect, i.e. the ban on movement out of moved elements.

[51]The actual situation is slightly more complicated. Movement needs to struck the right balance: it cannot be too short or too long. In the cases in question, it is not possible to accomplish that.

[52]Another way to look at this is in terms of Chomsky's (2000, 2001) assumption that all merge must have a reason. In the case of head-complement merger, the merger is driven by subcategorization requirements (which, as discussed above, also determine labeling); non-complement merger would have more than one possible motivation: e.g. because of the PIC (for the relevant element to avoid being sent to spell out, see Bošković 2007), for feature licensing (which would hold with movement to criterial positions—see Bošković 2007 for an implementation of this), or for labeling reasons (where the relevant head requires another merger for labeling reasons—this case may ultimately boil down to satisfying subcategorization requirements under the above assumption about such requirements and labeling). Obviously, the discussion in this note, and the concluding section more generally, raises a number of questions, addressing which would go way beyond the scope of this article.

References

Abels, Klaus. 2003. Successive cyclicity, antilocality, and adposition stranding. Storrs, CT: University of Connecticut dissertation.

Agbayani, Brian. 2000. Wh-subjects in English and the vacuous movement hypothesis. *Linguistic Inquiry* 31. 703-713.

Aissen, Judith. 1999. Markedness and subject choice in Optimality Theory. *Natural Language and Linguistic Theory* 17. 673-711.

An, Duk-Ho. 2007. Syntax at the PF interface. Storrs, CT: University of Connecticut dissertation.

Aoun, Joseph, and Yen -Hui Audrey Li. 1991. The interaction of operators. In Robert Freidin (ed.), *Principles and parameters in comparative grammar*, 163-181. Cambridge, MA: MIT Press.

Belletti, Adriana. 1990. *Generalized verb movement*. Turin: Rosenberg and Sellier.

Bobaljik, Jonathan. 1995. Morphosyntax: The syntax of verbal inflection. Cambridge, MA: Massachusetts Institute of Technology dissertation.

Bobaljik, Jonathan, and Dianne Jonas. 1996. Subject positions and the roles of TP. *Linguistic Inquiry* 27.195-236.

Boeckx, Cedric. 2003. *Islands and Chains*. Amsterdam: John Benjamins.

Boeckx, Cedric. 2005. Some notes on bounding. Ms., Harvard University, Cambridge, Mass.

Boeckx, Cedric. 2008. *Bare Syntax*. Oxford: Blackwell.

Borer, Hagit. 1984. *Parametric syntax*. Dordrecht: Foris.

Bošković, Željko. 1992. Clausal selection, subjacency, and minimality. Ms., University of Connecticut, Storrs.

Bošković, Željko. 1994. D-structure, theta-criterion, and movement into theta-positions. *Linguistic Analysis* 24. 247-286.

Bošković, Željko. 1997. *The syntax of nonfinite complementation: An economy approach*. Cambridge: MIT Press.

Bošković, Željko. 2001. *On the nature of the syntax-phonology interface: Cliticization and related phenomena.* Amsterdam: Elsevier Science.

Bošković, Željko. 2002. A-movement and the EPP. *Syntax* 5. 167-218.

Bošković, Željko. 2004. Be careful where you float your quantifiers. *Natural Language and Linguistic Theory* 22. 681-742.

Bošković, Željko. 2005. On the locality of left branch extraction and the structure of NP. *Studia Linguistica* 59. 1-45.

Bošković, Željko. 2007. On the locality and motivation of Move and Agree: An even more minimal theory. *Linguistic Inquiry* 38. 589-644.

Bošković, Željko. 2008. On successive cyclic movement and the freezing effect of feature checking. In Jutta M. Hartmann, Veronika Hegedüs, and Henk van Riemsdijk (eds.), *Sounds of silence: Empty elements in syntax and phonology*, 195-233. Amsterdam: Elsevier.

Bošković, Željko. 2009. On relativization strategies and resumptive pronouns. In Gerhild Zybatow, Uwe Junghanns, Denisa Lenertová, Petr Biskup (eds.), *Studies in Formal Slavic Phonology, Morphology, Syntax, Semantics and Information Structure: Proceedings of FDSL 7, Leipzig 2007*, 79-93. Frankfurt am Main: Peter Lang.

Bošković, Željko. 2011. Rescue by PF deletion, traces as (non)interveners, and the *that*-trace effect. *Linguistic Inquiry* 42.1-44.

Bošković, Željko. 2013a. Traces do not head islands: What can PF deletion rescue? In Yoichi Miyamoto, Daiko Takahashi, Hideki Maki, Masao Ochi, Koji Sugisaki, Asako Uchibori (eds.), *Deep insights, broad perspectives: Essays in honor of Mamoru Saito*, 56-93. Tokyo: Kaitakusha.

Bošković, Željko. 2013b. Phases beyond clauses. In Lilia Schürcks, Anastasia Giannakidou, and Urtzi Etxeberria (eds.), *The nominal structure in Slavic and beyond*, 75-128. Berlin: De Gruyter Mouton.

Bošković, Željko. 2014. Now I'm a phase, now I'm not a phase: On the variability of phases with extraction and ellipsis. *Linguistic Inquiry* 45. 27-89.

Bošković, Željko. in press. From the Complex NP Constraint to Everything: On deep extractions across categories. *The Linguistic Review Glow Issue*.

Bošković, Željko. in preparation. The ban on movement out of moved elements in the phasal/labeling system. Ms., University of Connecticut.

Bošković, Željko, and Howard Lasnik. 2003. On the distribution of null complementizers. *Linguistic Inquiry* 34. 527-546.

Brandi, Luciana and Patricia Cordin. 1989. Two Italian dialects and the null subject parameter. In Osvaldo Jaeggli and Kenneth J. Safir (eds.), *The null subject parameter*, 111-142. Dordrecht: Kluwer.

Branigan, Philip. 2005. The phase theoretic basis for Subject-Aux Inversion. Ms., Memorial University of Newfoundland.

Bresnan, Joan W. 1972. Theory of complementation in English syntax. Cambridge, MA: Massachusetts Institute of Technology dissertation.

Brillman, Ruth and Aron Hirsch. 2014. An anti-locality account of English subject/non-subject asymmetries. Paper presented at the 50th meeting of the Chicago Linguistic Society, Chicago.

Broekhuis, Hans. 2005. Extraction from subjects: some remarks on Chomsky's *On phases*. In Hans Broekhuis, Norbert Corver, Riny Huybregts, Ursula Kleinhenz and Jan Koster (eds.), *Organizing the grammar: Studies in honor of Henk van Riemsdjik*, 59-68. Berlin: Mouton de Gruyter.

Browning, Maggie. 1996. CP recursion and *that*-t effects. *Linguistic Inquiry* 27. 237-255.

Buesa García, Carlos. 2011. The interaction between locality and the subject-gap restriction in Spanish questions. In Suzi Lima, Kevin Mullin and Brian Smith (eds.), *Proceedings of the North East Linguistic Society 39*, 163-176. Amherst: GLSA, University of Massachusetts.

Campos, Héctor. 1997. On subject extraction and the anti-agreement effect in Romance. *Linguistic Inquiry* 28. 92-119.

Chametzky, Robert. 2000. *Phrase structure: From GB to Minimalism*. Blackwell.

de Chene, Brent. 1995. Complementizer-trace effects and the ECP. *Geneva Generative Papers* 3.1. 1–4. Département de Linguistique Générale, Université de Genève.

Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.

Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.

Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2000. Minimalist inquires. In Roger Martin, David Michaels and Juan Uriagereka (eds.), *Step by step: Essays on Minimalist syntax in honor of Howard Lasnik*, 89-155. Cambridge: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1-52. Cambridge: MIT Press.

Chomsky, Noam. 2008. On phases. In Robert Freidin, Carlos Peregrin and Maria Luisa Zubizarreta (eds.), *Foundational issues in Linguistic theory. Essays in honor of Jean-Roger Vergnaud*,133-166. Cambridge: MIT Press.

Chomsky, Noam. 2013. Problems of projection. *Lingua* 130. 33-49.

Chomsky, Noam 2014. Problems of projection: extensions. Ms., MIT, Cambridge.

Chomsky, Noam, and Howard Lasnik. 1977. Filters and control. *Linguistic Inquiry* 11. 1-46.

Cinque, Guglielmo. 1999. *Adverbs and functional heads: A cross-linguistic perspective.* Oxford: Oxford University Press.

Collins, Chris. 2002. Eliminating labels. In Samuel David Epstein and T. Daniel Seely (eds.), *Derivation and explanation in Minimalist syntax*, 42-64. New York: Wiley.

Collins, Chris. 2014. Merge(X.Y) = {X,Y}. Ms., New York University.

Coon, Jessica, Pedro Mateo Pedro, and Omer Preminger. In press. The role of case in A-bar extraction asymmetries: Evidence from Mayan. *Linguistic Variation*.

Culicover, Peter. 1992. The adverb effect: Evidence against ECP accounts of the *that-t* effect. In Amy J. Schafer (ed.), *Proceedings of Northeast Linguistics Society 23*. 97-11. Amherst: GLSA, University of Massachusetts.

Culicover, Peter and Michael Rochemont. 1992. Adjunct extraction from NP and the ECP. *Linguistic Inquiry* 23. 496-501.

Deal, Amy Rose. 2014. Cyclicity and connectivity in Nez Perce relative clauses. Ms., University of California Santa Cruz.

Dikken, Marcel den. 1995. *Particles*. Oxford: Oxford University Press.

Dikken, Marcel den. 2006. *Relators and Linkers: The syntax of predication, predicate inversion and Copulas*. Cambridge, MA: MIT Press.

Dikken, Marcel den. 2007. Phase extension: Contours of a theory of the role of head movement in phrasal extraction. *Theoretical Linguistics* 33. 1–41.

Epstein, Samuel David, Hisatsugu Kitahara and T. Daniel Seely. 2014. Labeling by minimal search: Implications for successive-cyclic A-movement and the conception of the postulate "Phase". *Linguistic Inquiry* 45. 463-481.

Erlewine, Michael. 2014. Anti-locality and optimality in Kaqchikel Agent Focus. Ms., MIT.

Fox, Danny, and Howard Lasnik. 2003. Successive-cyclic movement and island repair: The difference between sluicing and VP-ellipsis. *Linguistic Inquiry* 34. 143-154.

Gallego, Ángel J. and Juan Uriagereka. 2006. Conditions on sub-extraction. Ms., Universitat Autònoma de Barcelona and University of Maryland, College Park.

Gallego, Ángel J. and Juan Uriagereka. 2007. Sub-extraction from subjects: A phase theory account. In José Camacho, Nydia Flores-Ferrán, Liliana Sánchez, Viviane Déprez and María José Cabrera (eds.), *Romance Linguistics 2006*, 149-162. Amsterdam: John Benjamins.

Ginzburg, Jonathan and Ivan A. Sag. 2000. *Interrogative Investigations*. CSLI Publications.

Grohmann, Kleanthes. 2003. *Prolific domains: On the antilocality of movement dependencies*. Amsterdam: John Benjamins.

Grohmann, Kleanthes. 2011. Antilocality: Too close relations in grammar. In Cedric Boeckx (ed.), *The Oxford handbook of linguistic minimalism*, 260-290. Oxford: Oxford University Press.

Halle, Morris, and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In Kenneth Hale and Samuel Jay Keyser (eds.), *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, 111-176. Cambridge, MA: MIT Press.

Hiraiwa, Ken. 2005. Dimensions of symmetry in syntax: Agreement and clausal architecture. Cambridge, MA: Massachusetts Institute of Technology dissertation.

Hoge, Kerstin. 2001. *That*-t effects in English and Yiddish. In Galina Alexandrova and Olga Arnaudova (eds.), *The Minimalist Parameter*, 233-48. Amsterdam: John Benjamins.

Holmberg, Anders, and Thorbjörg Hróarsdóttir. 2003. Agreement and movement in Icelandic raising constructions. *Lingua* 113. 997-1019.

Hornstein, Norbert. 2009. *A theory of syntax: Minimal operations and universal grammar*. Cambridge: Cambridge University Press.

Hornstein, Norbert and Jairo Nunes. 2008. Adjunction, labeling and bare phrase structure. *Biolinguistics* 2. 57-86.

Hornstein, Norbert, and Witkoś, Jacek. 2003. Yet another approach to existential constructions. In . Lars-Olof Delsing, Cecilia Falk, Gunlög Josefsson and Halldór Ármann Sigurðsson (eds.), *Grammar in Focus: Festschrift for Christer Platzack*. Lund University, Department of Scandinavian.

Hornstein, Norbert, Howard Lasnik and Juan Uriagereka. 2003. The dynamics of islands: Speculations on the locality of movement. *Linguistic Analysis* 33. 149-175.

Huang, C. -T. James. 1982. Logical relations in Chinese and the theory of grammar. Cambridge, MA: Massachusetts Institute of Technology dissertation.

Hunter, Tim. 2010. Relating movement and adjunction in syntax and semantics. College Park, MD: University of Maryland dissertation.

Ishii, Toru. 1999. Cyclic spell-out and the *that*-trace effect. In Sonya Bird, Andrew Carnie, Jason Haugen and Peter Norquest (eds.), *Proceedings of West Coast Conference on Formal Linguistics 18*, 220-231. Sommerville: Cascadilla Press.

Ishii, Toru. 2004. The phase impenetrability condition, the vacuous movement hypothesis, and *that*-effects. *Lingua* 114. 183-215.

Jeong, Youngmi. 2006. The landscape of applicatives. College Park, MD: University of Maryland dissertation.

Kandybowicz, Jason. 2006. Comp-trace effects explained away. In Donald Baumer, David Montero, and Michael Scanlon (eds.), *Proceedings of the 25th West Coast Conference on Formal Linguistics*, 220-228. Somerville: Cascadilla Press.

Kandybowicz, Jason. 2008. *The grammar of repetition: Nupe grammar at the syntax phonology interface*. Amsterdam: John Benjamins.

Kayne, Richard. 1984. *Connectedness and binary branching*. Dordrecht: Foris.

Kim, Sun-Woong. 2008. English C moves downward as well as upward: An extension of Bošković and Lasnik's (2003) approach. *Linguistic Inquiry* 39. 295-307.

Koopman, Hilda. 2006. Agreement configuration: In defense of the Spec head configuration. In Cedric Boeckx (ed.), *Agreement Systems*, 159-199. Amsterdam: John Benjamins.

Lasnik, Howard. 1995. Verbal morphology: *Syntactic structures* meets the Minimalist Program. In Héctor Campos and Paula Kempchinsky (eds.), *Evolution and revolution in linguistic theory: Essays in honor of Carlos Otero*, 251-275. Washington, D. C.: Georgetown University Press.

Lasnik, Howard. 1999. *Minimalist analysis*. Oxford: Blackwell.

Lasnik, Howard. 2001. When can you save a structure by destroying it? In Min-Joo Kim and Uri Strauss (eds.), *Proceedings of the North East Linguistic Society* 31, 301-320. Amherst: GLSA, University of Massachusetts.

Lasnik, Howard, and Mamoru Saito. 1984. On the nature of proper government. *Linguistic Inquiry* 15. 235-289.

Lasnik, Howard, and Mamoru Saito. 1992. *Move α: Conditions on its application and output*. Cambridge: MIT Press.

Law, Paul. 1993. On the base position of wh-adjuncts and extraction. Paper presented at the 67th Annual Meeting of the Linguistic Society of America, Los Angeles, California, January 1993.

Lohndal, Terje. 2007. Subextraction and the freezing effect: A Scandinavian case study. Ms., University of Oslo.

Lohndal, Terje. 2009. Comp-T effects: Variation in the position and features of C. *Studia Linguistica* 63. 204-232.

McCloskey, James. 1991. Resumptive pronouns, A'-binding, and levels of representation in Irish. In Randall Hendrick (ed.), *Syntax and Semantics 23: The Syntax of the Modern Celtic Languages*, 199-248. New York: Academic Press.

McCloskey, James. 2000. Quantifier Float and wh-movement in an Irish English. *Linguistic Inquiry* 31. 57-84.

Merchant, Jason. 2001. *The syntax of silence.* Oxford: Oxford University Press.

Mizuguchi, Manabu. 2008. Derivation, minimalism and *that*-trace effects. *English Linguistics* 25. 56-92.

Mizuguchi, Manabu. 2014. Phases, labeling, and wh-movement of the subject. Paper presented at the 32nd Conference of the English Linguistic Society of Japan, Gakushuin University, Tokyo, November 8.

Moro, Andrea. 1997. *The raising of predicates: Predicative noun phrases and the theory of clause structure*. Cambridge: Cambridge University Press.

Müller, Gereon. 2010. On Deriving CED Effects from the PIC. *Linguistic Inquiry* 41. 35-82.

Mutaka, Ngessimo Mathe. n.d. *Kinande: A grammar sketch*. The African Anaphora Project, Rutgers University.

Nomura, Masashi. 2005. Nominative case and AGREE(ment). Storrs, CT: University of Connecticut dissertation.

Nunes, Jairo. in preparation. The locus of edge features and its implications for upward and sideward movement. Ms., University of Sao Paolo.

Ott, Dennis. In press. Symmetric merge and local instability: Evidence from split topics. *Syntax*.

Perlmutter, David. 1971. *Deep and surface constraints in syntax*. New York: Holt, Rinehart and Winston.

Pesetsky, David. 1981. Complementizer-trace phenomena and the nominative island condition. *The Linguistic Review* 1. 297-343.

Pesetsky, David. 1992. Zero Syntax Vol. *2*. Ms., MIT, Cambridge.

Pesetsky, David, and Esther Torrego. 2001. T-to-C movement: Causes and consequences. In Michael Kenstowicz (ed.) *Ken Hale: A life in language*, 355-426. Cambridge, MA.: MIT Press.

Preminger, Omer. 2011. Agreement as a fallible operation. Cambridge, MA: Massachusetts Institute of Technology dissertation.

Reinhart, Tanya. 1980. On the position of extraposed clauses. *Linguistic Inquiry* 11. 621-624.

Richards, Norvin. 2001. *Movement in language: Interactions and architectures*. Oxford: Oxford University Press.

Riqueros, José. 2013. Spanish Nominal(ization) Patterns. Storrs, CT: University of Connecticut dissertation.

Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge: MIT Press.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman (ed.) *Elements of grammar*, 281-337. Dordrecht: Kluwer.

Rizzi, Luigi. 2006. On the form of chains: Criterial positions and ECP effects. In Lisa Lai-Shen Cheng and Norbert Corver (eds.), *Wh-movement: Moving on*, 97-133. Cambridge, MA: MIT Press.

Rizzi, Luigi. 2013. Cartography, criteria and labeling. Ms., Université de Genève.

Rizzi, Luigi. this volume. Labelling, maximality, and the head-phrase distinction.

Rizzi, Luigi and Ur Shlonsky. 2007. Strategies of Subject Extraction. In H.-M.Gärtner and Uli Sauerland (eds.), *Interfaces + Recursion = Language? Chomsky's Minimalism and the View from Syntax-Semantics*, 115-160. Berlin: Mouton de Gruyter.

Ross, John Robert. 1969. Guess who? In Robert I. Binnick, Alice Davison, Georgia M. Green, and Jerry L. Morgan (eds.), *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*, 252-286. Chicago: University of Chicago, Chicago Linguistic Society

Roussou, Anna. 2002. C, T, and the subject: *That*-t phenomena revisited. *Lingua* 112. 13-52.

Rudin, Catherine. 1988. On multiple questions and multiple *wh*-fronting. *Natural Language and Linguistic Theory* 6. 445-501.

Sabel, Joachim. 2000. Expletives as features. In Roger Billerey and Brook Danielle Lillehaugen (eds.), *The Proceedings of the Nineteenth West Coast Conference on Formal Linguistics*, 101-114. Somerville: Cascadilla Press.

Saito, Mamoru. 2014. Case and labeling in a language without φ-feature agreement. In Anna Cardinaletti, Guglielmo Cinque and Yoshio Endo (eds.), *On Peripheries: Exploring Clause Initial and Clause Final Positions*, 269-297. Tokyo: Hituzi Syobo Publishing.

Saito, Mamoru, and Keiko Murasugi. 1999. Subject predication within IP and DP. In Kyle Johnson and Ian Roberts (eds.), *Beyond principles and parameters,* 167-188. Dordrecht: Kluwer.

Schneider-Zioga, Patricia. 1995. Specifier/head agreement in Kinande. *Cahiers Linguistiques d'Ottawa* 23. 67-93.

Schneider-Zioga, Patricia. 2007. Anti-agreement, anti-locality, and minimality. *Natural language & Linguistic Theory* 25. 403-446.

Schneider-Zioga, Patricia. 2009. Wh-agreement and bounded and unbounded movement. In Jose Brucart, Anna Gavorro and Juame Sola (eds.), *Merging Features*, 46-59. Oxford: Oxford University Press.

Seely, T. Daniel. 2006. Merge, derivational c-command, and subcategorization in a label-free syntax. In Cedric Boeckx (ed.), *Minimalist Essays,* 182-220. Amsterdam: John Benjamins.

Shlonsky, Ur. 2015. A note on labeling, Berber states, and VSO order. In Sabrina Bendjaballah, Noam Faust, Mohamed Lahrouchi and Nicola Lampitelli (eds.), *The Form of structure, the structure of form*, 349-360. Amsterdam: John Benjamins.

Sportiche, Dominique. 2011. French relative *qui*. *Linguistic Inquiry* 42. 83-124.

Stepanov, Arthur. 2001. Cyclic domains in syntactic theory. Storrs, CT: University of Connecticut dissertation.

Stepanov, Arthur. 2007. The End of CED? Minimalism and Extraction Domains. *Syntax* 10. 80-126.

Stjepanović, Sandra. 1999. What do second position cliticization, scrambling, and multiple wh-fronting have in common. Storrs, CT: University of Connecticut dissertation.

Stowell, Timothy. 1981. Origins of phrase structure. Cambridge, MA: Massachusetts Institute of Technology dissertation.

Szczegielniak, Adam. 1999. *That*-t effects crosslinguistically and successive cyclic movement. In Karlos Arregi, Benjamin Bruening, Cornella Krause and Vivian Lin (eds.), *MIT Working Papers in Linguistics* 33. 369-393. Cambridge: Department of Linguistics, MITWPL.

Talić, Aida. 2014. Extraordinary complement extraction: PP-complements and inherently case-marked nominal complements. *Studies in Polish Linguistics* 8. 127-150.

Taraldsen, Knut T. 2001. Subject extraction, the distribution of expletives and stylistic inversion. In Aafke Hulk and Jean-Yves Pollock (eds.), *Subject Inversion in Romance and the theory of universal grammar*,16-182. New York: Oxford University Press.

Ticio, Emma. 2005. Locality and anti-locality in Spanish DPs. *Syntax* 8. 229-286.

Truswell, Robert. 2011. *Events, phrases, and questions*. Oxford: Oxford University Press.

Uriagereka, Juan. 1988. On government. Storrs, CT: University of Connecticut dissertation.

Uriagereka, Juan. 2012. *Spell-out and the minimalist program*. Oxford: Oxford University Press.

Watanabe, Akira. 1993. Larsonian CP Recursion, factive complements, and selection. *Proceedings of the 23rd meeting of the Northeast Linguistics Society*, 523-537. Amherst: GLSA, University of Massachusetts.

Wurmbrand, Susi. 2013. Tagalog infinitives: Consequences for the theory of phases, voice marking and extraction. Ms., University of Connecticut, Storrs.

Wurmbrand, Susi. 2014. Tense and aspect in English infinitives. *Linguistic Inquiry* 45. 403-447.

Yoo, YongSuk. 2015. Labeling algorithm and its consequences on movement. Paper presented at the 17th Seoul Conference on Generative Grammar, Kyung Hee University, Seoul, Korea, August 5th-8th.