Antilocality at the Phase Edge

Erik Zyman · University of Chicago · April 23, 2019

Abstract. Much work has argued that syntactic movement is subject to antilocality constraints that prevent it from being too short. If so, a crucial question is precisely what those antilocality constraints are. This paper investigates the interaction between antilocality and phases, and argues that antilocality manifests in a particular way at phase edges. The paper defends a generalization dubbed Phasal Antilocality: for a phase YP, movement from within a constituent at the edge of YP must cross an XP dominating YP. It is shown that Phasal Antilocality, together with other ingredients, explains the intricate generalizations about when PP-extraction is and is not possible from subjects. The analysis also correctly predicts that violations resulting from illicit PP-extractions from subjects should be ameliorated under a wide range of circumstances. The paper concludes by considering why Phasal Antilocality holds, and what it reveals about the architecture of syntax and the role of economy therein.

Keywords. Antilocality; phases; phase edges; crossing; extraction from subjects; economy.

1. Introduction

As is well known, syntactic movement is subject to locality constraints that prevent it from applying over too great a structural distance. But an interesting body of work has argued that movement is also subject to antilocality constraints that prevent it from applying over too short a distance (Bošković 1994, 1997, 2005, 2008, 2013, 2016b; Murasugi & Saito 1995; Ishii 1997, 1999; Saito

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& Murasugi 1999; Abels 2003; Grohmann 2003; Brillman & Hirsch 2016; Erlewine 2016; Newman 2018; Branan 2019; Martínez Vera 2019, to appear; Deal to appear; see also Baier 2017 and Pesetsky 2019:13–14, and see Grohmann 2011 for an overview).

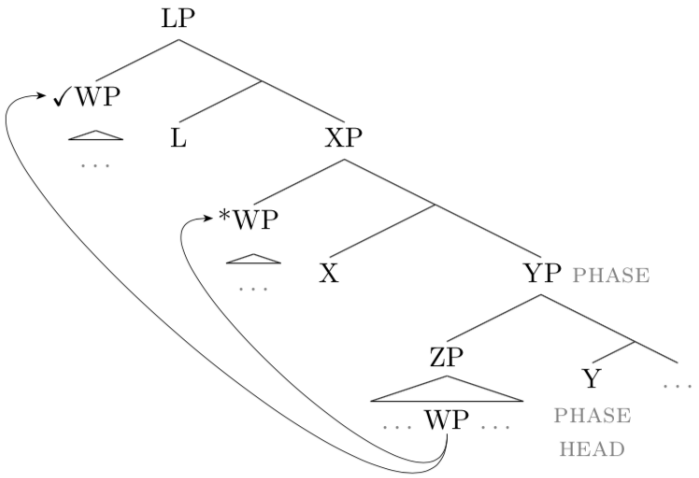
If movement is indeed subject to antilocality constraints, then a natural question (also investigated in the works cited above) is precisely what antilocality constraints it is subject to. To bring us closer to a complete answer to that question, this paper investigates the interaction between antilocality and phases (Chomsky 2001, 2008; Citko 2014, a.m.o.; see also Grohmann 2011). It will be argued that antilocality manifests in a particular and interesting way at phase edges—and, more specifically, that the following generalization holds:

(1) **Phasal Antilocality**

For a phase YP, movement from within a constituent at the edge of YP must cross an XP dominating YP.

That is:

(2)



The empirical evidence for Phasal Antilocality ((1)) will come from extractions from subjects. In particular, it will be argued that Phasal Antilocality, together with independently motivated auxiliary assumptions, explains the highly intricate and otherwise puzzling generalizations about

when extraction from subjects is and is not possible.

The paper is organized as follows. Section 2 introduces the puzzle of licit and illicit PP-extractions from subjects and briefly recapitulates Chomsky's (2008) analysis of them. Section 3 presents evidence from lexical selection that the relevant PPs are indeed extracted from the subjects rather than base-generated outside them. Section 4 briefly reviews the evidence that PPs can be extracted from internal-argument subjects, but generally not from external-argument subjects. Section 5 derives that basic generalization from Phasal Antilocality and certain other ingredients. The next four sections lay out, test, and confirm various predictions of Phasal Antilocality. Section 6 tests the prediction that illicit short-distance extraction from an external argument in [Spec,TP] should be ameliorated by the insertion of an adverbial along the movement path. Section 7 tests the prediction that an external argument in [Spec,TP], despite disallowing clause-bounded extraction from it, should allow cross-clausal extraction from it. Section 8 tests the prediction that extraction should be possible from external-argument associates of expletive *there*. Section 9 tests the prediction that extraction should be possible from external-argument subjects of all different types of nonfinite clauses. Section 10, the conclusion, discusses why Phasal Antilocality should hold, and what it reveals about the architecture of syntax and the role of economy therein.

2. The Puzzle: Licit and Illicit Extractions from Subjects (Chomsky 2008)

Although it is sometimes suggested that extraction from subjects is for the most part impossible in English, Chomsky (2008) discusses some cases in which it is apparently possible (see also Ross 1967:242; Kuno 1973:378; Polinsky et al. 2013; Sheehan 2013; and Haegeman, Jiménez-Fernández & Radford 2014, and references therein). As is well known, an argument PP[1] can be extracted from a direct object ((3-a)). When the direct object becomes the subject in the corresponding passive clause, moving to [Spec,TP], a PP can still be extracted from it ((3-b)). (Example (3-a) is adapted from Chomsky 2008:147, (5b).)

[1] Argument PPs will often be referred to below simply as PPs, since only argument PPs (and not adjunct PPs) can be extracted from DPs in English (Bošković 2008, secs. 1.2, 3.1). Following Chomsky 2008:160 (n. 38), this paper will restrict its attention to extractions that pied-pipe the P rather than stranding it, to avoid the additional complications introduced by so-called incomplete constituent effects (Kuno 1973; Kobayashi 2011; Haegeman, Jiménez-Fernández & Radford 2014, a.o.), however these are ultimately to be understood.

(3) a. [Of which car]$_1$ did they find [the driver __$_1$]?

b. [Of which car]$_1$ was [the driver __$_1$]$_2$ found __$_2$?

But although a PP can be extracted from an internal-argument subject in [Spec,TP] ((3-b)), a PP generally cannot be extracted from an external-argument subject in [Spec,TP]:

(4) *[Of which car]$_1$ did [the driver __$_1$] cause a scandal? (adapted from Chomsky 2008:147, (6b))[2]

Chomsky's (2008) analysis of this asymmetry is summarized in (5), with irrelevant details omitted.

(5) a. In (3-a), the *wh*-phrase is extracted from within the object to the edge of the *v*P phase, and then on to the edge of the CP phase.

b. In (3-b), there is no clause-internal phase (*v*P is nonphasal). The *wh*-phrase is extracted directly from within the underlying object to [Spec,CP]; in addition, the object moves to [Spec,TP].

c. In (4) (which is unacceptable), the subject moves from [Spec,*v*P] to [Spec,TP].

(i) The PP cannot be extracted from the subject when the latter is in [Spec,TP], because by then, the subject A-chain has all its uninterpretable features valued and is therefore syntactically invisible.

(ii) The PP also cannot be extracted from the subject when the latter is in [Spec,*v*P]. The subject itself, being at the edge of the *v*P phase, can move, but there is a cost to extracting something from *within* an element at a phase edge (see also Haegeman, Jiménez-Fernández & Radford 2014). (Because of (5-c-i) and (5-c-ii), the PP cannot be extracted from the subject at all.)

On Chomsky's analysis, as indicated in (5-c), PP-extraction from a DP is impossible whenever the

[2]Judgment diacritics: [no diacritic] *or* ✓ = acceptable; (?) = slightly marginal, almost perfect; ? = marginally acceptable; (?)? = between "?" and "??"; ?? = highly marginal; ??? = very highly marginal; ?* = severely degraded; * = unacceptable; ** = even worse than "*"; ↑ = better than the baseline/reference sentence; ^{M} = acceptable but marked.

DP is at a phase edge *or* in its final A-position. This analysis predicts, then, that if an external-argument subject transits through an intermediate position that is not at a phase edge (and, of course, is not its final A-position), it should be possible to extract a PP from it (when it is in this intermediate position). Strikingly, this prediction is correct. When an external-argument subject undergoes raising to subject, PP-extraction from it becomes possible:

(6) Of which car is the driver likely to cause a scandal? (adapted from Chomsky 2008:153, (18b))

This follows from Chomsky's analysis because, in (6), [$_{DP}$ *the driver of which car*] transits through the specifier of the nonfinite T *to* ((7))—and [Spec,*to*P] is neither a phase-edge position (on standard assumptions) nor the subject's final A-position.

(7) [of which car]$_1$ is [the driver $\_\__1$]$_2$ likely [$_{TP}$ $\_\__2$ to [$_{vP}$ $\_\__2$ cause a scandal]]

Unfortunately, Chomsky's (2008) analysis of extraction from subjects has been shown to face substantial empirical problems in other domains (Matsubara 2008, Kobayashi 2011, Kanno 2016),[3] so a new analysis is needed. But although the new analysis of extraction from subjects developed below rejects many of the premises of Chomsky's (2008) analysis, it will crucially build on (though it will modify) Chomsky's hypothesis in (5-c-ii). Extraction from within an *Edge Constituent* (a constituent at a phase edge) does not always incur an acceptability penalty, contra Chomsky, but it is restricted—specifically, by Phasal Antilocality.

3. Argument PPs Can Be Extracted from Moved Subjects: Evidence from L-Selection

A question at this point, then, is what sentences such as those examined in section 2 reveal about when extraction is and is not possible from subjects. But before this question can be sensibly

[3] For example, in [$_{PP}$ *Of which car*]$_1$ *did you intend for* [$_{DP}$ *the driver* $\_\__1$]$_2$ *to* $\_\__2$ *cause an accident?* (adapted from Matsubara 2008:469, (16b)), the embedded subject is only ever in [Spec,*v*P] (a phase edge position) and [Spec,TP] (its final A-position), so Chomsky's analysis predicts that it should not be possible to extract a PP from it, but it is. This is discussed in detail in section 7.2, where it is shown that the analysis developed in this paper explains that observation.

asked, it has to be shown that the Ā-moved PPs in such examples really are extracted from the corresponding subjects. This is especially so given that a number of researchers, most notably Broekhuis (2005), have argued that those PPs are not extracted from the corresponding subjects, but are instead base-generated outside them. (See appendix A for evidence that Broekhuis's arguments, though mostly convincing for Dutch, do not carry over to English.)

As it happens, there is clear and unambiguous evidence that these PPs are extracted from the corresponding subjects. This evidence comes from lexical selection, or L-selection (Pesetsky 1991, Merchant to appear). (A very similar argument is made by Haegeman, Jiménez-Fernández & Radford [2014:87], on which more below.)

As is well known, L-selection is extremely local. In (8-a), the N *obedience* L-selects *to* as the head of its PP complement.[4] This is possible because a head H can L-select the head of an XP if (and only if) that XP merges with H or a projection of H (Merchant to appear). Thus, even when the (optional) internal argument of *obedience* is not realized, as in (8-b), *obedience* cannot impose its L-selectional requirement (forcing the appearance of *to*) outside the NP it heads ((8-c)).

(8) a. [$_{DP}$ [$_{NP}$ Obedience {to/*for/*of/*in/*on/*at/*upon} them]] is demanded by the law.[5]

b. Obedience is demanded by the law.

c. Obedience is demanded by [$_{DP}$ a certain [$_{NP}$ portion {of/*to} the law]].

Returning to the Ā-moved PPs under discussion, each one's head P is L-selected by the N within the subject DP. This is illustrated in (9) and (10) with Ns that L-select *to* and *for*, respectively (examples adapted from Zyman 2018:163–164, (240–241)).

[4] If a noun is composed of a categoryless root and a nominalizing head *n* (Marantz 1997; Chomsky 2013:46, 2015, 2016; Richards 2017, a.m.o.), then a P L-selected by a "noun" may in fact be selected by the root, by *n*, or by both in different cases, among other possibilities (see Merchant to appear for discussion), without affecting the argument being developed here.

[5] Some of the versions of (8-a) are acceptable on irrelevant interpretations on which the PP inside the subject is not the internal argument of *obedience*.

(9) a. [To/*For/*Of/*In/*On/*At/*Upon whom]$_1$ is [obedience __$_1$] demanded by the law?

b. To/*On what sorts of parents would a close attachment generally be discouraged?

c. To/*For which emotions would a marked proneness on his part be lamented by all?

d. To/*Of whom had a resemblance been developed by the politician?

e. To/*Of which performances had tickets been purchased by the event organizer?

(10) a. For/*To what function had a specialization been developed by the organ?

b. For/*Of what chemicals is an affinity displayed by these cells?

c. For/*To whom had an unexpected affection been developed by the protagonist?

d. For/*To/*Of what actions could a capacity be developed by such a simple organism?

e. For/*To/*Of what type of art had a talent been developed by the sophomores?

f. For/*To what activities had a penchant been developed by the students?

Given the extremely local nature of L-selection, these examples show that the relevant PPs are indeed extracted from the corresponding subject DPs.

As mentioned above, a very similar argument is made by Haegeman, Jiménez-Fernández, and Radford (2014:87). However, their examples involve topicalization, whereas much of the discussion of potential PP-extractions from subjects (in the wake of Chomsky 2008) has focused on interrogative *wh*-movement. The examples in (9)–(10) show that (like PPs that are apparently topicalized out of subjects) *wh*-PPs that appear to undergo interrogative *wh*-movement out of subjects show clear L-selection effects, indicating that the relevant *wh*-interrogatives involve true extraction from their subjects as well.

4. The Basic Generalization: PPs Can Be Extracted from Internal Arguments, but (Generally) Not from External Arguments

Now that it has been established that PPs can genuinely be extracted from subject DPs, the following questions arise:

(11) a. *Empirical question:* From which DPs can a PP be extracted?

b. *Theoretical question:* Why is PP-extraction possible from those DPs and not from others?

This section will briefly argue, largely in agreement with Chomsky 2008, that the answer to the empirical question in (11-a) is the following:

(12) **PP-Extraction Generalization:** An argument PP can be extracted:

a. from an internal argument, whether or not it moves to [Spec,TP],

b. but not from an external-argument subject (in the simple case).[6]

4.1 Extraction from Internal Arguments (Objects and Subjects)

An argument PP can be extracted from an underlying direct object ((13-a)), even when the latter moves to [Spec,TP] (in a passive, (13-b)):

(13) a. [Of which car]$_1$ did they find [the driver __$_1$]? (= (3-a))

b. [Of which car]$_1$ was [the driver __$_1$]$_2$ found __$_2$?

The same holds for notionally "indirect" objects (examples adapted from Chomsky 2008:147, (5b), (7b)):

(14) a. [Of which car]$_1$ did they award [the driver __$_1$] a prize?

b. [Of which car]$_1$ was [the driver __$_1$]$_2$ awarded __$_2$ a prize?

An argument PP can also be extracted from the sole argument of an unaccusative verb, regardless of whether the latter has a transitive counterpart or not:

(15) [Of which car]$_1$ did [the driver __$_1$]$_2$ collapse __$_2$? unaccusative

[6]The qualification "in the simple case" is included here because the analysis to be developed in section 5 will predict that, in several more complex configurations, PP-extraction from an external-argument subject should actually become possible. The relevant predictions are tested and shown to be correct in sections 6–9.

(16) a. [Of which politician]$_1$ did they shatter [the statue __$_1$]? transitive

b. [Of which politician]$_1$ did [the statue __$_1$]$_2$ shatter __$_2$? unaccusative

4.2 No Extraction from External-Argument Subjects (Generally)

By contrast, a PP generally cannot be extracted from the external-argument subject of a transitive verb (as shown in (17), adapted from Chomsky 2008:147, (6b)), or of an unergative verb:

(17) *[Of which car]$_1$ did [the driver __$_1$] cause a scandal? (= (4))

(18) a. *[Of which car]$_1$ did [the driver __$_1$]$_2$ sing a song? transitive

b. *[Of which car]$_1$ did [the driver __$_1$]$_2$ sing? unergative

The first-pass generalization that emerges, then, is that a PP can generally only be extracted from a subject when the latter is an internal argument.[7]

5. Explaining the Generalization: Phasal Antilocality

The generalization to be explained is repeated below:

(19) **PP-Extraction Generalization:** An argument PP can be extracted: (= (12))

a. from an internal argument, whether or not it moves to [Spec,TP],

b. but not from an external-argument subject (in the simple case).

Why should (19) hold? I propose that the key to explaining this generalization is the following:

[7] A consequence of this conclusion is that PP-extraction can be used as a diagnostic for distinguishing internal from external arguments. For example, the acceptability of (i) indicates that *receive* is a two-argument unaccusative (whose subject is underlyingly an internal argument):

(i) [Of which car]$_1$ did [the driver __$_1$]$_2$ receive __$_2$ a prize? (adapted from Chomsky 2008:160, n. 39)

(20) **Phasal Antilocality** (= (1))

For a phase YP, movement from within a constituent at the edge of YP must cross an XP dominating YP.

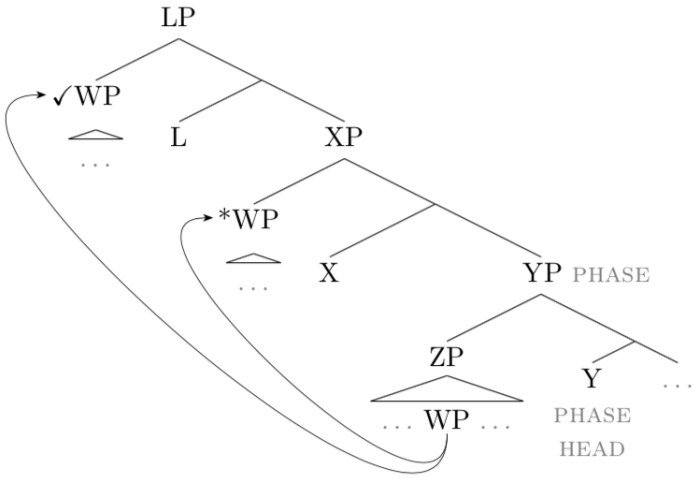
where, following Erlewine (2016:445, (43)), *crossing* is defined as follows:

(21) **Definition of *crossing***

Movement from position α to position β *crosses* γ iff γ dominates α but does not dominate β.

The content of (20) is shown graphically in (22) (repeated from (2)):

(22)



The following subsections lay out the derivations of some of the crucial sentences in section 4, to show that Phasal Antilocality ((20)) makes correct predictions about the basic cases. Section 5.1 shows that Phasal Antilocality correctly predicts the licitness of PP-extraction from a moved unaccusative or passive subject (one that ends up in [Spec,TP]). Section 5.2 shows that Phasal Antilocality correctly predicts the illicitness of PP-extraction from a moved external-argument subject (in the basic case).

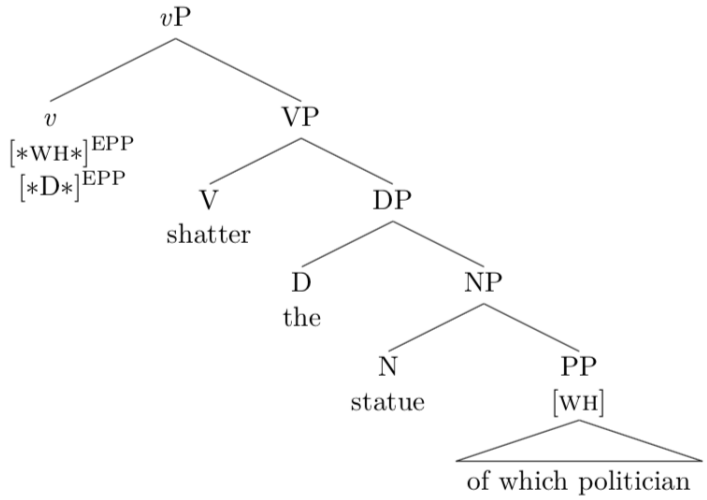
5.1 Deriving the Licitness of Extraction from Moved Unaccusative and Passive Subjects

Consider again (23), in which a PP is licitly extracted from a moved unaccusative subject:

(23) [Of which politician]$_1$ did [the statue $\_\__1$]$_2$ shatter $\_\__2$? (= (16-b))

The sentence in (23) is derived as follows. First, the following structure is built up:

(24)

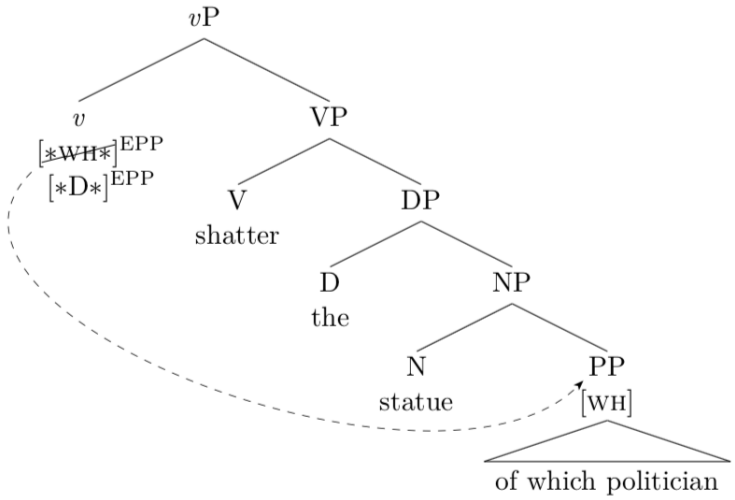


I assume that there is a clause-internal phase (in this case *v*P—see Fox 1999, Legate 2003, Harwood 2015, Van Urk 2015, Van Urk & Richards 2015, Ingason & Wood 2017, a.o.; see Freidin 2016:693–694 for discussion), even in unaccusative and passive clauses (Legate 2003, contra Chomsky 2008). I also assume that successive cyclic movement is driven by optional features on phase heads—in the case at hand, [∗WH∗]$^{\text{EPP}}$ and [∗D∗]$^{\text{EPP}}$ on *v*. (See the end of note 14 below for discussion of an alternative.) The precise derivational effects of these features are shown directly below. As discussed in note 9 below, these two features on *v* need not be ordered.

The [∗WH∗] feature on *v* is a probe feature (Heck & Müller 2008). It probes the c-command domain of *v* for the closest element bearing the feature [WH]—and finds the *wh*-PP, which satisfies it, as shown by the strikethrough in (25).[8]

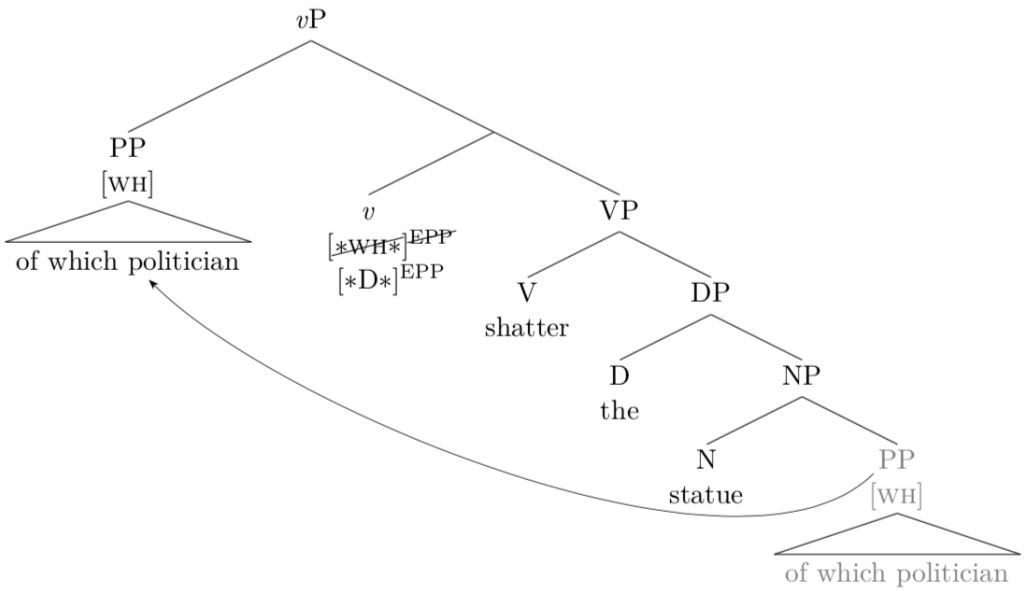
[8]I tentatively assume for concreteness that DP is not a phase (at least in English), as argued by Davis (2019); Chomsky, Gallego, and Ott (to appear); and references cited there. If DP is a phase in English, however, the analysis developed in this paper should remain essentially unaffected, except that the relevant derivations will be rendered

(25)



Although [∗WH∗] is satisfied by this point, the EPP subfeature it bears is not. This subfeature forces the goal of the search conducted by the feature (the goal in this case being the *wh*-PP) to internally merge with the highest available projection of *v*. Once this has occurred, the subfeature is satisfied:

(26)

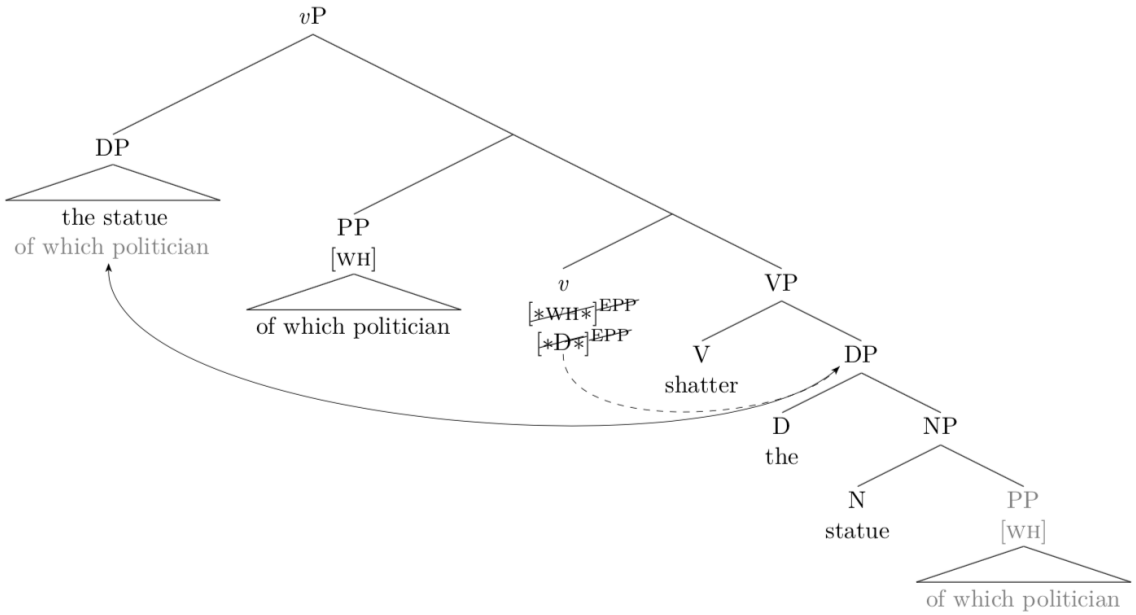


The other probe feature on *v*, $[*D*]^{EPP}$, exerts the same effects, mutatis mutandis. [∗D∗] probes

slightly more complex.

the c-command domain of *v* for the closest element bearing the categorial feature [D]; it finds the DP complement of V (which satisfies it); and its EPP subfeature raises the DP to the *v*P edge:[9]

(27)



The complement of the phase head *v*, namely VP, is spelled out. (V-to-*v* movement is suppressed here for ease of exposition.)

This brings us to the TP layer, about which a few words are in order. Grohmann (2003:74ff., esp. (30)) argues that clause structure is divided into three regions, which he calls Prolific Domains: the Θ-Domain, which gives rise to thematic interpretation; the Φ-domain, where agreement takes place; and the Ω-Domain, which gives rise to discourse-related interpretations. (These three domains are essentially identical to Rizzi's [1997:281] lexical, inflectional, and complementizer layers, respectively.) Grohmann (ibid., (45i)) claims that Prolific Domains are individually trans-

[9]This derivation shows $[*\text{WH}*]^{\text{EPP}}$ probing and raising its goal before $[*\text{D}*]^{\text{EPP}}$ does. However, it need not be stipulated that these two features are ordered on *v*. If $[*\text{WH}*]^{\text{EPP}}$ probes first, the derivation will proceed as shown in the text. If $[*\text{D}*]^{\text{EPP}}$ probes first, it will raise the DP to the *v*P edge, out of the c-command domain of *v*, so $[*\text{WH}*]^{\text{EPP}}$ will be unable to find a suitable goal (assuming that non-highest copies are invisible to probes), which I assume will cause the derivation to crash. To summarize, if $[*\text{WH}*]^{\text{EPP}}$ probes first, the derivation converges (all else being equal), but if $[*\text{D}*]^{\text{EPP}}$ probes first, the derivation crashes. Thus, in effect, the former derivation is "indirectly forced," and we can maintain that the two probe features on *v* are unordered rather than stipulating that $[*\text{WH}*]^{\text{EPP}}$ is ordered first.

If the two features were to probe simultaneously, the derivation would unfold essentially just as in the text. As discussed shortly below, though, and again in note 14, there is at least one type of lexical item in English—T heads—whose probe features are ordered and thus cannot probe simultaneously.

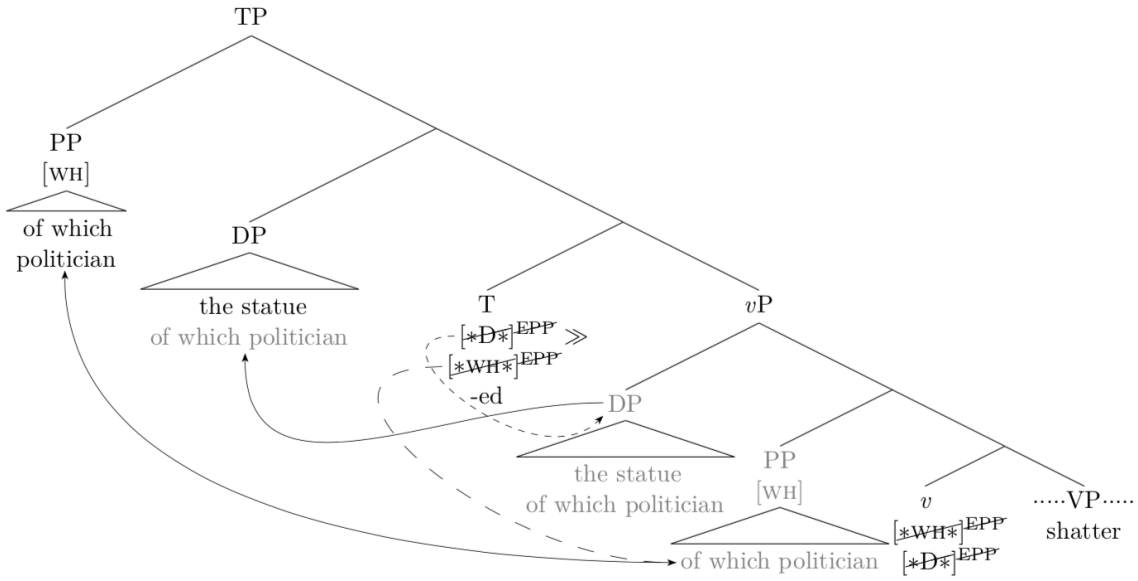
ferred to the interfaces. Building on this idea and Bošković's (2016a:2) view that certain IPs are phases, I propose that the set of phases contains not only CP and *v*P but also TP.[10]

I assume that subject movement to [Spec,TP] is driven by a $[*\text{D}*]^{\text{EPP}}$ feature on T. I also assume that, at least in English, a T that bears both $[*\text{D}*]^{\text{EPP}}$ and $[*\text{WH}*]^{\text{EPP}}$ (the latter of which, when present, drives successive cyclic *wh*-movement) has them in that order—i.e., $[*\text{D}*]^{\text{EPP}}$ on T must probe (and raise its goal) before $[*\text{WH}*]^{\text{EPP}}$ can. (On ordered features on lexical items, see Müller 2016:11, 2017:3, and 2019:5 and references there. The ordering is shown in (28) below by the "$\gg$" symbol.) Plausibly, this feature ordering is not accidental and arbitrary, but is instead a reflex of the fact that, in English, T always bears some version of $[*\text{D}*]^{\text{EPP}}$, whereas it only optionally bears $[*\text{WH}*]^{\text{EPP}}$. The feature ordering will not be crucial in this derivation, but it will be in the derivation in section 5.2 (see note 14 below).

The derivation, then, continues as follows (where the dots around the VP label indicate that the VP has already been spelled out):

[10] See also Assmann, Georgi, Heck, Müller, and Weisser's (2015:353) assumption that Ā-movement to [Spec,CP] must pass through [Spec,TP]. Deal (2015, 2016) argues that TP is a phase in relative clauses (see also Davis 2019, sec. 7), on the basis of the facts of relative pronoun positions in Nez Perce, the anti-*that*-trace effect in English relatives, and resumption in Palestinian Arabic relatives. However, she also gives arguments from English and Palestinian Arabic that TP is not a phase outside of relative clauses. If the assumption made here that TP is always a phase is on the right track, then the English and Palestinian Arabic data just mentioned will have to be reanalyzed.

(28)

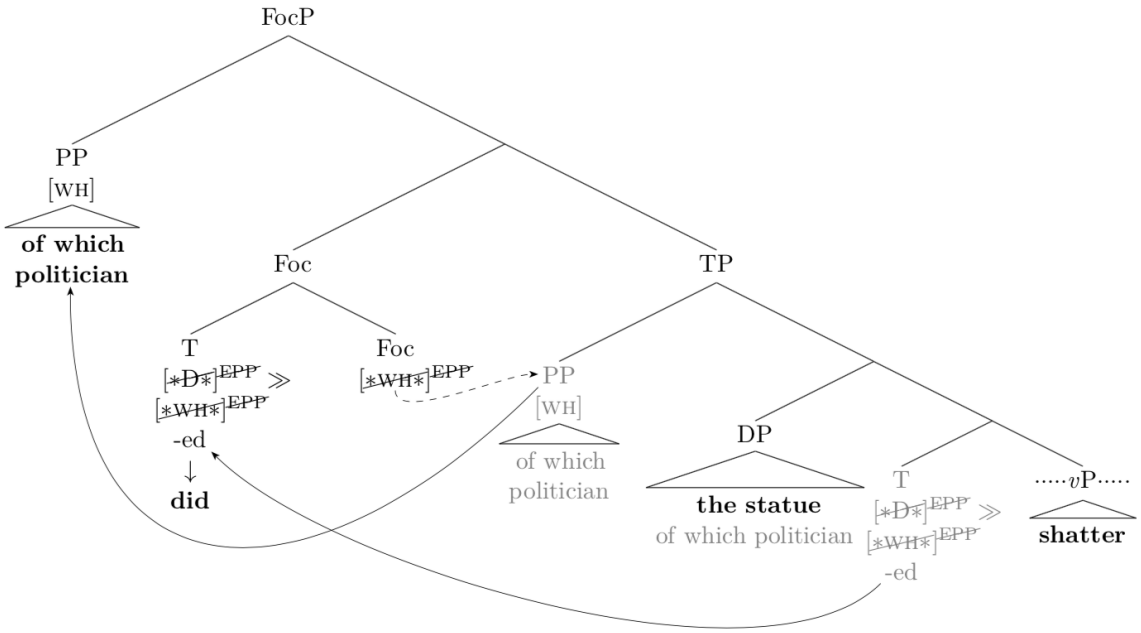


Note that, in (28), both the DP and the PP can licitly move from the *v*P phase edge to the TP phase edge, without violating Phasal Antilocality. This is because each of those two steps involves movement *of* rather than *out of* an Edge Constituent (a constituent at a phase edge), so Phasal Antilocality is vacuously satisfied (i.e., it is irrelevant).

The complement of the phase head T, namely *v*P, is spelled out. Merged in next is the left-peripheral head that determines the final landing site for interrogative *wh*-movement, taken here to be Foc(us) (cf. Rizzi 1997, Servidio 2009). Foc bears $[*\text{WH}*]^{\text{EPP}}$,[11] which attracts the *wh*-PP in [Spec,TP] to [Spec,FocP]:

[11] Foc is not a phase head: its $[*\text{WH}*]^{\text{EPP}}$ feature triggers the final step of *wh*-movement, not an intermediate step. Plausibly, Foc can bear $[*\text{WH}*]^{\text{EPP}}$ in all idiolects of English, but $[*\text{FOC}*]^{\text{EPP}}$ only in those that (unlike mine) allow overt movement of (non-interrogative) focused elements to the left periphery—as in *%BEANS I ate*, which Dan Brodkin informs me is acceptable for him.

(29)



As shown in (29), T undergoes head movement to Foc (subject–auxiliary inversion).[12] This derivation yields the correct result:

(30) [Of which politician]$_1$ did [the statue __$_1$]$_2$ shatter __$_2$? (= (16-b))

It is worth noting that, although this analysis adopts the Foc head from Rizzi 1997, I do not assume that a null Fin(iteness) head is projected in English. (It may be that the right way to think about the nonprojection of null Fin in English is that Fin and T are ordinarily syncretic in this language.[13])

[12] Head movement will play no role in the analysis developed in this paper, which therefore will not investigate whether it is syntactic, postsyntactic, or both in different cases, or what triggers it. (For recent discussion, see Angeles 2017, secs. 4–5; Arregi & Pietraszko 2018, 2019; Gribanova & Harizanov 2018; Newman 2018a:32–33, 2018b; and Bruening 2019.) Head movement is shown in the trees only when it affects constituent order, so that the reader can easily verify that the correct order is derived in all cases.

[13] The claim here is that *null* Fin is not projected separately in English because Fin may perhaps be realized overtly in sentences such as (i) (from a student essay written in California, via McCloskey 2006:104, (69b); for more examples, see ibid., (69a,c–e), and Pesetsky 2019:35, (75a)):

(i) He thinks that if you are in a bilingual classroom that you will not be encouraged to learn English.

Before concluding this section, it will be worthwhile to briefly show that the analysis also correctly predicts the licitness of PP-extraction from moved passive subjects, as in

(31) [Of which car]$_1$ was [the driver __$_1$]$_2$ found __$_2$? (= (3-b))

Because the derivation of (31) is very similar to the one just laid out in detail (for an unaccusative clause with *shatter*), it will suffice to present it in abbreviated form:

(32)
a. *v* found [$_{DP}$ the driver [$_{PP}$ of which car]] → Move *wh*-PP to [Spec,*v*P]
b. [$_{vP}$ [$_{PP}$ of which car] *v* found [$_{DP}$ the driver]] → Move DP to another [Spec,*v*P]
c. [$_{vP}$ [$_{DP}$ the driver] [$_{PP}$ of which car] *v* found] → Spell out VP
d. [$_{vP}$ [$_{DP}$ the driver] [$_{PP}$ of which car] *v* found] → Merge in passive *be* and T
e. T$_{PAST}$ be [$_{vP}$ [$_{DP}$ the driver] [$_{PP}$ of which car] *v* found] → Move *be* to T
f. be+T$_{PAST}$ [$_{vP}$ [$_{DP}$ the driver] [$_{PP}$ of which car] *v* found] → Move DP to [Spec,TP]
g. [$_{DP}$ the driver] be+T$_{PAST}$ [$_{vP}$ [$_{PP}$ of which car] *v* found] → Move *wh*-PP to another [Spec,TP]
h. [$_{PP}$ of which car] [$_{DP}$ the driver] be+T$_{PAST}$ [$_{vP}$ *v* found] → Spell out *v*P
i. [$_{PP}$ of which car] [$_{DP}$ the driver] be+T$_{PAST}$ [$_{vP}$ *v* found] → Merge in Foc
j. Foc [$_{PP}$ of which car] [$_{DP}$ the driver] be+T$_{PAST}$ [$_{vP}$ *v* found] → Move complex T head to Foc
k. be+T$_{PAST}$+Foc [$_{PP}$ of which car] [$_{DP}$ the driver] [$_{vP}$ *v* found] → Move *wh*-PP to [Spec,FocP]
l. [$_{PP}$ of which car] be+T$_{PAST}$+Foc [$_{DP}$ the driver] [$_{vP}$ *v* found] =
m. Of which car was the driver found? (= (3-b)/(31))

The derivation of the passive clause in (32), like the derivation of an unaccusative clause laid out above, does not involve extraction from within an Edge Constituent at all, so Phasal Antilocality is vacuously satisfied by every step of both derivations. The analysis, then, correctly predicts that

PP-extraction should be possible both from unaccusative subjects and from passive subjects.

5.2 Deriving the Illicitness of Extraction from Moved External-Argument Subjects (in the Basic Case)

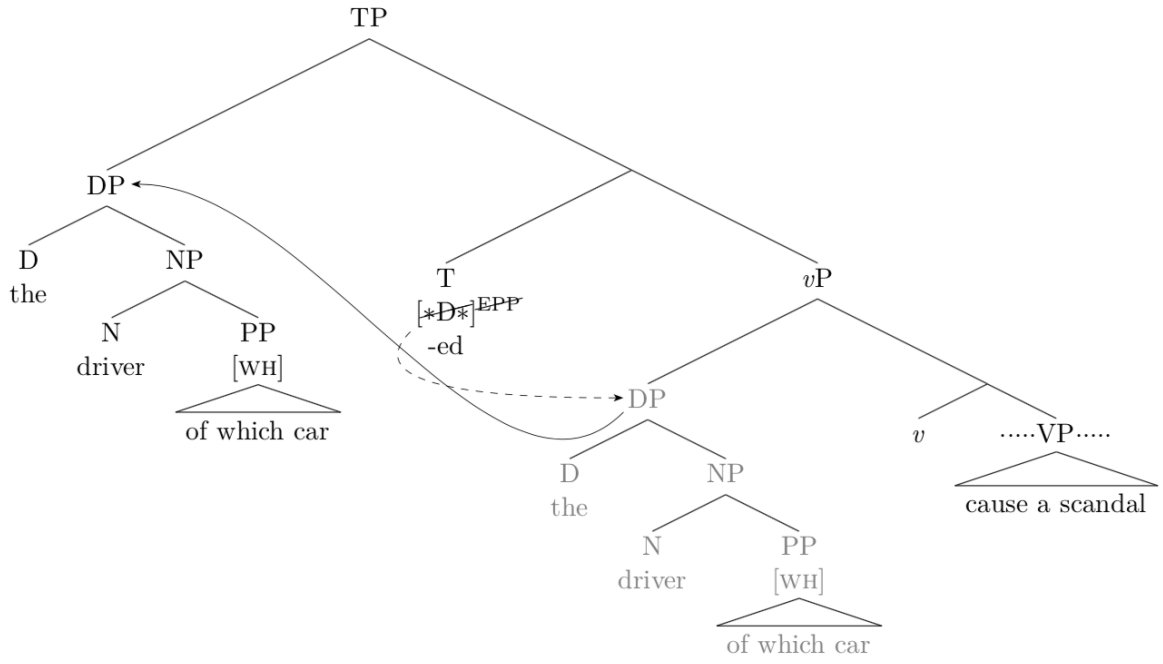
We have just seen that the analysis correctly predicts the licitness of extraction from internal-argument subjects that move to [Spec,TP]. But if the analysis is to be viable, it must crucially be able to account for the illicitness (in the basic case) of extraction from external-argument subjects that move to [Spec,TP]. This section shows that the analysis does indeed account for it.

Consider again the following case of illicit extraction from an external-argument subject:

(33) *[Of which car]$_1$ did [the driver __$_1$] cause a scandal? (= (4))

Let us attempt to derive (33) and see what goes wrong. First, the following structure is built up:

(34)

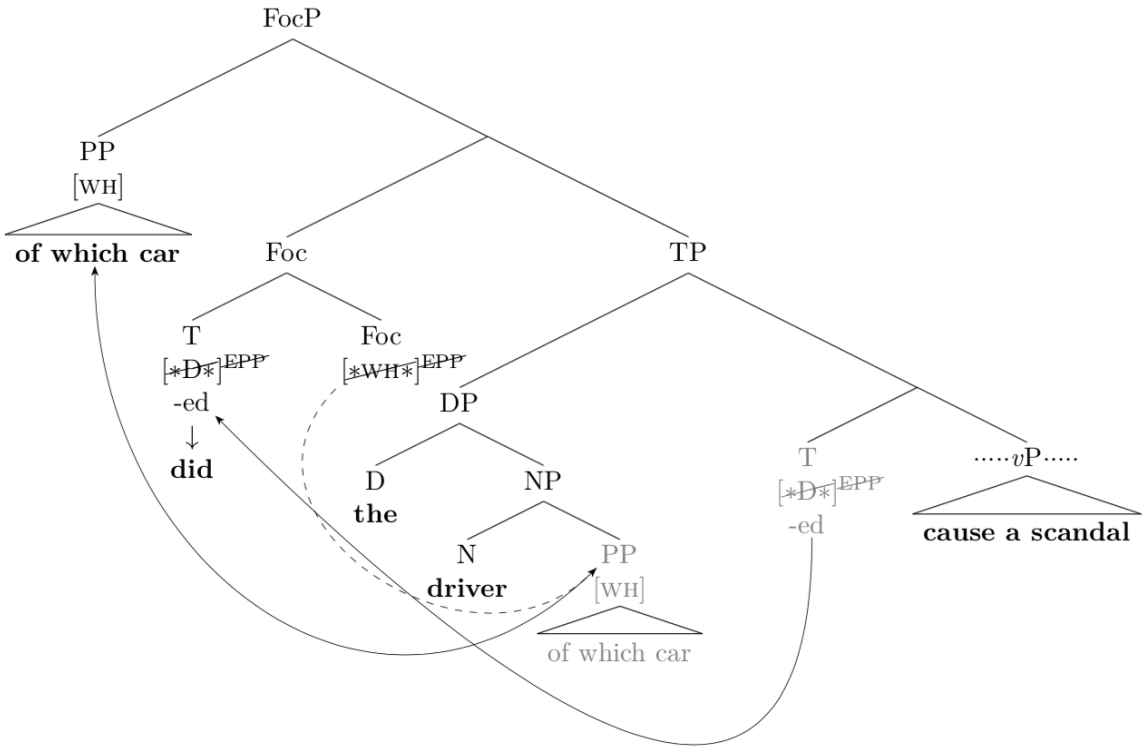


(For discussion of what would happen if the phase head T bore different features, see note 14

below.)

The complement of the phase head T, namely *v*P, is spelled out. Then, Foc is merged in (and T moves to Foc—i.e., subject–auxiliary inversion occurs). Crucially, though, Foc cannot attract the *wh*-PP from within the subject DP at the TP phase edge ((35)), because this would violate Phasal Antilocality ((36)).

(35) *



(36) **Phasal Antilocality** (= (1))

For a phase YP, movement from within a constituent at the edge of YP must cross an XP dominating YP.

Because the illicitness of the step in (35) is crucial to the analysis, the reasoning here is worth clarifying explicitly. The subject in (35) is at the edge of a phase (TP). Therefore, extraction from within this subject must obey Phasal Antilocality (with TP being the "YP" mentioned in (36)). The tree in (35) shows an attempt to move the *wh*-PP from within the subject to [Spec,FocP]. This

attempted movement, however, does not cross even a single XP dominating TP (= "YP"): to do that, it would have to cross FocP rather than merely landing in its specifier (or, more precisely, creating a specifier for it). Therefore, the hypothetical movement step in (35) violates Phasal Antilocality and is consequently impossible.

This derives the unacceptability of the sentence, which is repeated below.[14]

(37) *[Of which car]$_1$ did [the driver $\_\__1$] cause a scandal? (= (4))

To recapitulate, then, the analysis predicts that extraction should be possible from an internal-argument subject that moves to [Spec,TP], but not (at least in the basic case) from an external-argument subject that moves to [Spec,TP]—exactly the situation which is observed.

With that conclusion established, the following four sections lay out, test, and confirm various further predictions of the analysis. For ease of exposition, the discussion in the main text is restricted to English, but the predictions are also tested for French, Spanish, Catalan, Brazilian Portuguese, and Russian in appendix B.

[14]The tree in (34) shows T bearing $[*D*]^{EPP}$ only. On the analysis developed here, however, T is a phase head capable of driving successive cyclic movement—and, in particular, English T can bear not only $[*D*]^{EPP}$ but also $[*WH*]^{EPP}$. It is therefore crucial to verify that, if a T bearing both $[*D*]^{EPP}$ and $[*WH*]^{EPP}$ is merged into the structure in (34), the unacceptable sentence in (37) still cannot be derived (i.e., that the analysis does not incorrectly predict it to be acceptable on that derivation).

Fortunately, this is indeed the case: the sentence still cannot be derived. At least in English, a T that bears not only $[*D*]^{EPP}$ but also $[*WH*]^{EPP}$ obligatorily has those features in that order (as discussed in section 5.1 above). If $T_{[*D*]^{EPP} \gg [*WH*]^{EPP}}$ is merged into the structure in (34), $[*D*]^{EPP}$ will first attract the external-argument DP to [Spec,TP], out of the c-command domain of T. As a result, $[*WH*]^{EPP}$ will be unable to find a suitable goal (assuming, as we did in note 9, that non-highest copies are invisible to probes), which will cause the derivation to crash. Moreover, even if this somehow did not cause the derivation to crash, Foc would still be unable to subextract the *wh*-PP from within the external-argument DP at the TP phase edge, owing to Phasal Antilocality, exactly as in (35). We see, then, that merging $T_{[*D*]^{EPP} \gg [*WH*]^{EPP}}$ into the structure in (34) will not incorrectly derive (37); instead, it will cause the derivation to crash.

On a related note, the ingredient of this analysis that involves the DP obligatorily moving to the TP edge before the *wh*-phrase does is implementable if movement operations are, or at least can be, driven by features of higher, c-commanding heads (Chomsky 1995:297, 2000, 2001, 2004, 2008, Lasnik 1995, 2003, McCloskey 2001, Bošković 2004 [appendix], Cable 2012, a.o.; see also Nunes 2016), and features on heads can be ordered. By contrast, it is not clear that this ingredient of the analysis could be implemented if every movement operation were driven by a feature of the moving element (Chomsky 1995:201; Bošković 1995, 2002, 2007, 2011, 2018; Grohmann, Drury & Castillo 2000, a.o.). If the analysis in the text is on the right track, then, it provides an argument for the former hypothesis about the driving force for movement and against the latter.

6. Prediction A: Amelioration of Phasal Antilocality violations through the insertion of an extra projection

Consider again sentence (4) (repeated in (38)), which involves illicit extraction from an external-argument subject in [Spec,TP], as shown in (39):

(38) *[Of which car]$_1$ did [the driver __$_1$] cause a scandal? (= (4))

(39) *[$_{\text{FocP}}$ PP$_{[\text{WH}]\text{-}1}$ Foc [$_{\text{TP}}$ [$_{\text{DP}}$ … __$_1$ …] T …]] * Phasal Antilocality

As discussed above, (38) is underivable because the *wh*-movement step is too local (and consequently violates Phasal Antilocality). This leads to the following prediction (cf. Brillman & Hirsch 2016, sec. 3.2.1, and Erlewine 2016):

(40) **Prediction A: Amelioration by an extra projection**
If, in (38)/(39), an extra projection is inserted on the clausal spine between the launching and landing sites of the Ā-movement, then the movement should become long enough to obey Phasal Antilocality, and the sentence should become more acceptable.

The relevant derivation is illustrated abstractly below:

(41) [$_{\text{FocP}}$ PP$_{[\text{WH}]\text{-}1}$ Foc **[$_{\text{XP}}$** X [$_{\text{TP}}$ [$_{\text{DP}}$ … __$_1$ …] T …]]] ✓ Phasal Antilocality

What is needed in order to test this prediction is a projection that can play the role of XP in (41). Rizzi (1997) argues that the clausal left periphery has the following structure:

(42) [$_{\text{ForceP}}$ Force [$_{\text{TopP*}}$ Top [$_{\text{FocP}}$ Foc [$_{\text{TopP*}}$ Top [$_{\text{FinP}}$ Fin [$_{\text{IP}}$ …]]]]]]

(adapted from Rizzi 1997:297, (41))

Given that the extra projection (= XP in (41)) has to be between TP (= Rizzi's IP) and FocP, and given that (null) Fin is not projected separately from T in English (see the discussion under

(30)), the extra projection has to be a TopP. The presence of a TopP can be forced by including a preposed adverbial (assuming, with Rizzi [1997:301], that preposed adverbials occupy specifiers of Top heads). And indeed, an illicit extraction from an external-argument subject in [Spec,TP] improves considerably when a preposed adverbial is inserted:

(43) a. *Of which car did the driver cause a scandal? (= (4))
b. (?)Of which car, according to your recollection, did the driver cause a scandal?
c. (?)Of which car, when you were at the racetrack, did the driver cause a scandal?
d. (?)Of which car, in the middle of the race yesterday, did the driver cause a scandal?

It might be objected that the prosodic characteristics of the preposed adverbials in (43b–d) suggest that they are parentheticals. Two points are worth making in response. First, this objection does not threaten the analysis in any significant way. Even if a particular XP seems like a "parenthetical" in some intuitive, pretheoretical sense, this does not in itself furnish a strong argument that it does not occupy a specifier position. Secondly, the amelioration effect is also observed with at least some prosodically lighter adverbials that can ((44-b)), but crucially need not ((44-c)), be prosodically phrased as parentheticals:

(44) a. *Of which car did the driver cause a scandal? (= (4))
b. (?)Of which car, last Sunday, did the driver cause a scandal?
c. (?)Of which car last Sunday did the driver cause a scandal?

For both of these reasons, the objection about parentheticals does not threaten the argument from preposed adverbials in favor of Phasal Antilocality.[15]

[15] When TopP is not projected, the head movement that T undergoes (which gives rise to subject–auxiliary inversion) targets Foc (as in (29)). However, the constituent order in sentences with preposed adverbials such as (44b–c) shows that, when both [Spec,FocP] and a lower [Spec,TopP] position are filled, T does not move as far as Foc. Rather, when T undergoes head movement, it always moves to the lowest (closest) left-peripheral head (which in sentences such as (44b–c) must be Top, since English lacks null Fin). But this is a well-established property of subject–auxiliary inversion with complex left peripheries in English, one completely independent of the extraction restrictions investigated here, as shown by the following examples (all via Bruening 2016:8, (17b–d)):

Crucially, an illicit extraction from a subject (as in (44-a)) is specifically ameliorated by the presence of an adverbial *along the movement path*. If the same adverbials are inserted into (44-a) in positions not on the movement path, they do not ameliorate its unacceptability ((45)–(46)). This confirms that the amelioration is not just a generalized effect of adding an adverbial *somewhere* in the sentence.

(45) *Illicit extraction from a subject is not ameliorated by an adverbial higher than the landing site*

a. *According to your recollection, of which car did the driver cause a scandal?

b. *When you were at the racetrack, of which car did the driver cause a scandal?

c. *In the middle of the race yesterday, of which car did the driver cause a scandal?

d. *Last Sunday, of which car did the driver cause a scandal?

(46) *Illicit extraction from a subject is not ameliorated by an adverbial lower than the launching site*

a. *Of which car did the driver cause a scandal, according to your recollection?

b. *Of which car did the driver cause a scandal when you were at the racetrack?

c. *Of which car did the driver cause a scandal in the middle of the race yesterday?

d. *Of which car did the driver cause a scandal last Sunday?

To summarize, Phasal Antilocality correctly predicts that the unacceptability induced by an illicit extraction from a subject should be ameliorated if a preposed adverbial is inserted along the movement path.

(i) a. *__To whom__ at last __will__ the government turn? (adapted from *The Guardian*, via Haegeman 2000, n. 2)
b. I promise that __on no account__ during the holidays __will__ I write a paper. (adapted from Sobin 2003)
c. __What__ under no circumstances __would__ John do for Mary? (adapted from Maekawa 2006:230, (6a))

7. Prediction B: Licit cross-clausal extraction from an external argument in [Spec,TP]

This section will show that, also as predicted by Phasal Antilocality, an illicit extraction from a subject can be improved by changing it from clause-bounded to cross-clausal.

In laying out and testing this prediction, it will be convenient to split it up into two subpredictions, each involving a different type of embedded CP. The two subpredictions—involving *that*-CPs and *for*-CPs—are tested in sections 7.1 and 7.2, respectively.

7.1 Prediction B_1: …in a That-*CP*

Consider the following:

(47) What did Katie believe [$_{CP}$ that Mike had bought]?

Before the subprediction involving *that*-CPs is laid out, some assumptions about the structure of *that*-CPs should be made explicit. Following (but modifying in some ways) the ideas emerging from a great deal of cartographic and proto-cartographic work (Bhatt & Yoon 1991, Rizzi 1997, Cinque 1999, Cardinaletti 2004, a.m.o.), I assume that, in a *that*-CP, there is always more than one clausal functional head above TP.

Bhatt and Yoon (1991) argue that, in languages such as Korean and Kashmiri, C should be decomposed into a higher head Sub(ordinator) and a lower head M(ood):[16]

(48) Bill-un [John-i wa-ss-**ta**-**ko**] sayngkakhanta.
Bill-TOP [John-NOM come-PST-DECL-SUB] thinks
'Bill thinks that John came.' Korean (adapted from Bhatt & Yoon 1991:42, (1a))

Unlike Bhatt and Yoon, I assume that this decomposition is correct for English too, though I will refer to their M and Sub heads as Force (cf. Rizzi 1997) and C, respectively, as shown in (49).[17]

[16] Abbreviations: ACC = accusative, AFF = affirmative particle, DECL = declarative, GEN = genitive, INF = infinitive, INST = instrumental, NOM = nominative, PA = personal *a* (Spanish), PST = past, SUB = subordinator, T = linking *-t-* (French), TOP = topic particle.

[17] This analysis is inspired by Bhatt and Yoon's (1991) analysis of the C-system in Korean and Kashmiri, but it does not mechanically transfer it to English. *That* (here analyzed as a C) satisfies the selectional requirements of higher heads, whereas, in Korean, *-ko* does not; instead, the lower mood morpheme does (ibid:42; Bruening, Dinh & Kim 2018:9).

(See note 19 below for discussion of alternatives.)

(49) (…) [$_{\text{FocP}}$ what did+Foc Katie believe [$_{\text{CP}}$ that [$_{\text{ForceP}}$ Force [$_{\text{TP}}$ Mike had bought]]]]?

(= (47))

Given this structure, Phasal Antilocality makes the following prediction:

(50) **Prediction B_1: Cross-clausal extraction from *that*-CP subjects**

It should be possible to extract a PP from an external-argument subject in [Spec,TP] in a *that*-CP to the CP phase edge (and then out of the embedded CP), because ForceP will make the first step long enough to obey Phasal Antilocality.

The relevant part of this kind of derivation is shown below:

(51) … [$_{\text{CP}}$ $\text{PP}_{[\text{WH}]\text{-}1}$ C_{that} [**$_{\text{ForceP}}$** Force [$_{\text{TP}}$ [$_{\text{DP}}$ … $\_\__1$ …] T …]]] ✓ Phasal Antilocality

In other words, although clause-bounded extraction from within an external argument in [Spec,TP] is unacceptable (all else being equal), cross-clausal extraction from such an argument should be more acceptable. As discussed by Kobayashi (2011) and Kanno (2016:67, 71–72), this is indeed

Bhatt and Yoon (1991:47) account for this by positing that a Sub such as Korean *-ko* is not a head taking MP as its complement but an adjunct to MP. This predicts that *-ko* should be optional, which is correct ((i)), though Sanghee Kim informs me that some speakers prefer including *-ko* to omitting it.

(i) Bill-un [John-i wa-ss-ta(**-ko**)] sayngkakhanta.
Bill-TOP [John-NOM come-PST-DECL(-SUB)] thinks
'Bill thinks that John came.' Korean (Sanghee Kim, p.c.; adapted from Bhatt & Yoon 1991:42, (1a))

However, *-ko* cannot appear more than once in the same minimal clause (**Bill-un* [*John-i wa-ss-ta-**ko-ko***] *sayngkakhanta*—Sanghee Kim, p.c.), which seems problematic for the *-ko*-as-adjunct analysis, given that iterability is a core property of adjuncts. A possible alternative analysis that avoids this problem is one on which *-ko* is an optional second argument selected by M(/Force), linearized as a rightward specifier (and is therefore correctly predicted not to be iterable). A rightward specifier might seem unusual for Korean, but so does the rightward adjunct posited by Bhatt and Yoon. (See Bhatt & Yoon 1991:n. 6 for further discussion.)

Furthermore, if the embedded clause surfaces to the right of the matrix verb, *-ko* becomes obligatory (*Bill-un sayngkakhanta* [*John-i wa-ss-ta-*(**ko**)*]—Sanghee Kim, p.c.). Although this does not follow from the *-ko*-as-rightward-specifier analysis without further assumptions, it is far more problematic for the *-ko*-as-adjunct analysis, since adjuncts are always optional.

the case (see Chaves 2012:482 and Kanno 2016:64 for related observations):

(52) a. *Of which car did the driver cause a scandal?

b. Of which car is it likely that the driver caused a scandal?

(Example (52-b) is adapted from Kobayashi 2011:42, (20b).) Three more examples of licit cross-clausal extraction of this type are given below.[18]

(53) a. Of which car did it seem that the driver had caused a scandal?

b. Of which car did it appear that the driver had caused a scandal?

c. Of which car did John claim that the driver had caused a scandal?

We see, then, that the prediction about cross-clausal extraction in (50) is borne out.[19]

Cross-clausal extraction from an external-argument subject in [Spec,TP] in an embedded finite clause is also licit when the embedded finite clause is not headed by an overt *that*:

(54) a. [M]Of which car is it likely the driver caused a scandal?

b. Of which car did it seem the driver had caused a scandal?

c. Of which car did it appear the driver had caused a scandal?

d. Of which car did John claim the driver had caused a scandal?

[18]Note that it is not possible that the *of*-PPs in (52-b) and (53) originate as matrix proleptic PPs, because the predicates *likely*, *seem*, *appear*, and *claim* do not permit proleptic *of*-PPs:

(i) a. It's likely (*of that car) that the driver caused a scandal.
b. It seemed (*of that car) that the driver had caused a scandal.
c. It appeared (*of that car) that the driver had caused a scandal.
d. John claimed (*of that car) that the driver had caused a scandal.

[19]As discussed above, the analysis given here posits for concreteness that the traditional "C" in English should be decomposed into a lower Force head and a higher C head, roughly following Bhatt and Yoon (1991) (though see note 17). As should be clear, however, Phasal Antilocality makes the correct prediction about cross-clausal extraction which is laid out in (50) when combined with any analysis of clause structure on which there is always some clausal functional head between the phase heads T and C. That is, nothing hinges on the use of the label "Force" for the head whose projection makes the subextraction from within [Spec,TP] long enough to obey Phasal Antilocality (or, for that matter, on the use of the label "C" for the highest clausal phase head).

This is correctly predicted by the account developed here under either of the two main analyses of *that*-less embedded finite clauses (on which see also Brillman & Hirsch 2016, sec. 3.2.3). If *that*-less embedded finite clauses are structurally identical to *that*-CPs except that they are headed by a null counterpart of *that*, then (54a–d) are derived just like (52-b) and (53a–c)—i.e., as in (51) (except that the C is null rather than overt). If, however, *that*-less embedded finite clauses are bare TPs (Doherty 2013), then (54a–d) are derived as follows:

(55) … [$_{v\text{P}/a\text{P}}$ PP$_{[\text{WH}]\text{-}1}$ *v*/*a* **[$_{\textbf{VP/AP}}$** V/A [$_{\text{TP}}$ [$_{\text{DP}}$ … __$_1$ …] T …]]] ✓ Phasal Antilocality

In (55), the *wh*-PP is extracted from within the external-argument DP to the edge of the smallest phase in the matrix clause. The external-argument DP is at the edge of the TP phase, so this subextraction must obey Phasal Antilocality—and it does, because the matrix VP or AP makes the extraction long enough.

Thus, Phasal Antilocality correctly predicts the acceptability of (54a–d) regardless of whether *that*-less embedded finite clauses are bare TPs or CPs headed by a null C.

7.2 Prediction B$_2$: …in a For-*CP*

Turning from *that*-CPs to *for*-CPs, consider the following:

(56) What did Katie arrange [$_{\text{CP}}$ for Mike to buy]?

In keeping with the thrust of the (proto-)cartographic works cited in section 7.1, I assume that, like *that*-CPs, *for*-CPs always contain more than one clausal functional head above TP—in particular, both a lower Force head and a higher C head (exactly as was posited for *that*-CPs in section 7.1):

(57) (…) [$_{\text{FocP}}$ what did+Foc Katie arrange [$_{\text{CP}}$ C [$_{\text{ForceP}}$ for [$_{\text{TP}}$ Mike to buy]]]]? (= (56))

Given this structure,[20] Phasal Antilocality makes the same prediction about cross-clausal extraction

[20] As mentioned in section 6, Rizzi (1997) argues that the clausal left periphery has the structure in (i). He further argues that *that* surfaces in Force, but *for* is a Fin head—explaining why *that* but not *for* can be immediately followed by preposed adverbials, which he takes to occupy [Spec,TopP] positions ((ii)). (See McFadden 2011, secs. 6–7, for

from *for*-CP subjects as it did about cross-clausal extraction from *that*-CP subjects:

(58) **Prediction B_2: Cross-clausal extraction from *for*-CP subjects**

It should be possible to extract a PP from an external-argument subject in [Spec,TP] in a *for*-CP to the CP phase edge (and then out of the embedded CP), because ForceP will make the first step long enough to obey Phasal Antilocality.

The relevant part of this type of derivation is laid out below:

(59) … $[_{CP}$ $PP_{[WH]\text{-}1}$ C **[ForceP** for $[_{TP}$ $[_{DP}$ … $\_\__1$ …] T_{to} …]]] ✓ Phasal Antilocality

As noted by Matsubara (2008) and further discussed by Kobayashi (2011), Egashira (2015; *non vidi*), and Kanno (2016), the type of extraction mentioned in (58) is indeed possible:

(60) a. [Of which car]$_1$ did you arrange for [the driver $\_\__1$] to cause an accident?

b. [Of which car]$_1$ did you intend for [the driver $\_\__1$] to cause an accident?

c. [Of which statesman]$_1$ did they campaign for [the biographer $\_\__1$] to visit our campus?

((60a–b) adapted from Matsubara 2008:469, (16a–b))

discussion.)

(i) $[_{ForceP}$ Force $[_{TopP*}$ Top $[_{FocP}$ Foc $[_{TopP*}$ Top $[_{FinP}$ Fin $[_{IP}$ …]]]]]] (adapted from Rizzi 1997:297, (41))

(ii) a. …that ⟨tomorrow⟩ John will leave ⟨tomorrow⟩. (adapted from Rizzi 1997:301, (51–52))
b. …for ⟨*tomorrow⟩ John to leave ⟨tomorrow⟩.

However, *for* also cannot be preceded by a preposed adverbial belonging to the embedded clause (*I arranged ⟨*tomorrow⟩ for John to leave ⟨tomorrow⟩*) (McCloskey 2006:93), which does not follow from Rizzi's analysis (without further assumptions), but does follow from the analysis in (57), if *for* (qua Force head) directly selects a TP headed by *to* (so there is no room for any TopPs or, therefore, for any preposed adverbials).

If the latter analysis is correct, then some clausal functional heads (including Top) are merged in in some derivations but not others, as argued by Rizzi (1997:314–315), Starke (2004, secs. 2.1–2.2), Bošković (2016b:42), and Erlewine (2016:475).

This paper will continue to use the term "*for*-CP" for convenience, even though it adopts the analysis in (57), on which *for* is not the head of the CP (but rather a Force head lower than C). See also note 19.

7.3 Summary and a Remaining Issue

Let us briefly recapitulate the empirical findings of this section:

(61) When [Spec,TP] is occupied by an external-argument subject, a PP within it…

a. *cannot* move to the local [Spec,FocP] (clause-bounded Ā-movement). The movement would be too short, violating Phasal Antilocality.

b. *can* move (successive-cyclically) to the [Spec,FocP] position of the next highest clause (cross-clausal Ā-movement). The first step (movement to the edge of the embedded CP) is long enough to obey Phasal Antilocality.

Before concluding this section, we should address one remaining issue. The subsections above tested both clause-bounded and cross-clausal extraction from [Spec,TP] in finite CPs, but only cross-clausal extraction from [Spec,TP] in infinitival CPs (i.e., from [Spec,*to*P]). Does the possibility of clause-bounded extraction from [Spec,*to*P] pose any empirical problems?

At least for English, the answer is no. In this language, whenever interrogative *wh*-movement targets the left periphery immediately above a *to*-TP, [Spec,TP] is occupied by PRO, so the possibility of extraction from [Spec,TP] does not arise ((62)). Therefore, attempted clause-bounded extraction from [Spec,*to*P] cannot provide any evidence for or against Phasal Antilocality.

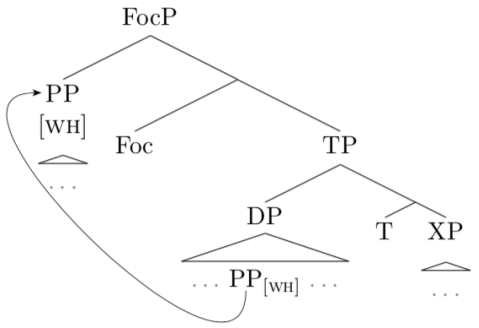
(62) She was wondering [$_{CP}$ when {PRO / *for the driver of the car / **the driver of the car} to cause a scandal].

Summarizing, then, Phasal Antilocality correctly predicts the asymmetry between clause-bounded and cross-clausal extraction which is observed. Given an external-argument subject in [Spec,TP], cross-clausal extraction is possible from it, but clause-bounded extraction is not ((61)).

8. Prediction C: Licit extraction from external-argument associates of *there*

As discussed above, Phasal Antilocality rules out movement to [Spec,FocP] from within a subject (and, therefore, from within an external-argument subject) in the immediately lower [Spec,TP]:

(63) *



The hypothetical movement step in (63) is ruled out by Phasal Antilocality because the PP traverses too short a structural distance outside the TP phase.

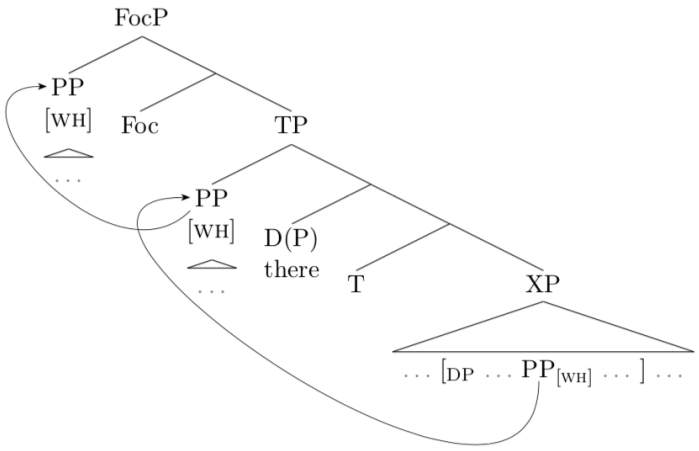
As is well known, however, a subject need not (and cannot) raise all the way to [Spec,TP] in English if this position is occupied by expletive *there*. That fact makes it possible to formulate the following prediction:

(64) **Prediction C: Extraction from external-argument associates of *there***

It should be possible to extract a PP from an external-argument associate of *there* and move it to [Spec,FocP] in the same clause.

The relevant derivation is schematized below:

(65)



It is worth clarifying explicitly exactly why this derivation is permitted by Phasal Antilocality. In

the first movement step, a *wh*-PP moves from within the associate DP to the TP phase edge. This should be licit as long as the associate DP is not at a phase edge immediately under T (because, if it were, the movement step in question would violate Phasal Antilocality). In the second movement step, the *wh*-PP moves from the TP phase edge to [Spec,FocP]. This should be licit because, before the movement, the *wh*-PP is a TP Edge Constituent, so Phasal Antilocality should be vacuously satisfied.

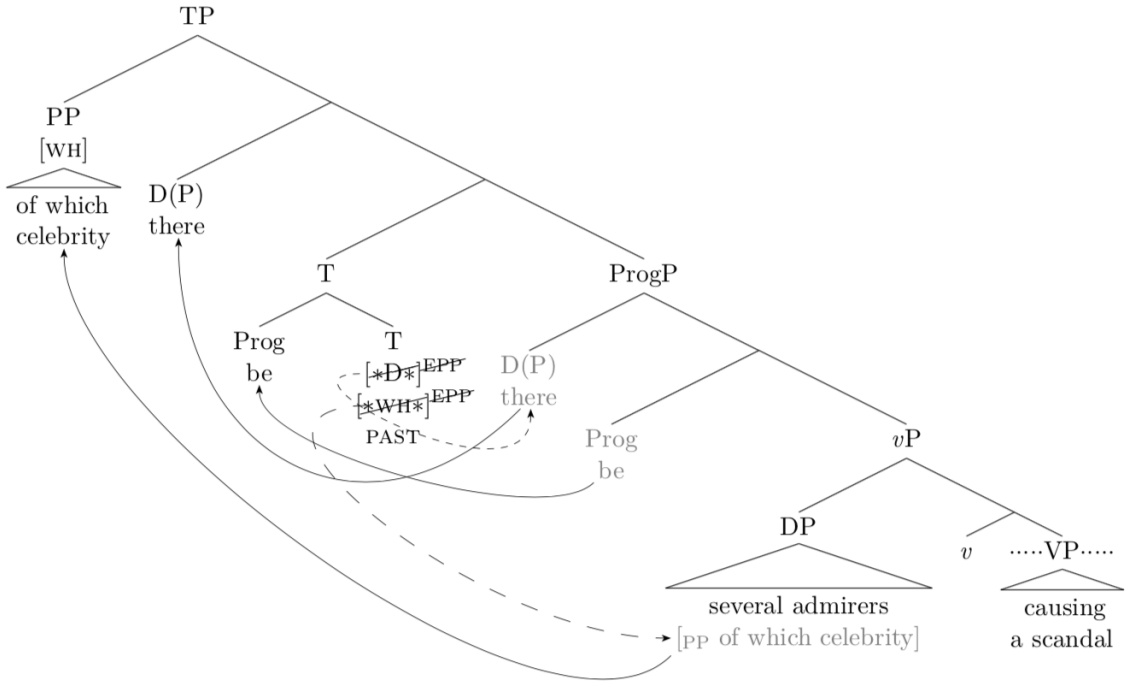
The empirical prediction is correct (cf. Lasnik & Park 2003:651 and Bibbs 2018:6). Although *wh*-movement to [Spec,FocP] is impossible from within an external argument in [Spec,TP], it is possible from the same external argument when the latter is the associate of *there*:

(66) a. *Of which celebrity were several admirers causing a scandal?

b. Of which celebrity were there several admirers causing a scandal?

Because the abbreviated derivation in (65) is quite schematic, it will be worth verifying in detail that the acceptability of (66-b) is indeed predicted by Phasal Antilocality. Consider its derivation. First, the structure in (67) is built up. I assume that *there* is merged low (Deal 2009; Davis 2019, sec. 8.2; and references cited there).

(67)



Let us assume for the moment that the smallest clausal phase in (67) is *v*P (though see note 21 below for discussion of an alternative). The $[*D*]^{EPP}$ feature on T attracts *there* from [Spec,ProgP] to the TP phase edge. This movement vacuously satisfies Phasal Antilocality, both because it is movement of (rather than out of) a specifier and because [Spec,ProgP] is not a phase-edge position. The $[*WH*]^{EPP}$ feature on T attracts the *wh*-PP from within the DP at the *v*P phase edge to the TP phase edge. This movement step is subject to Phasal Antilocality, because it involves extraction from within a (*v*P) Edge Constituent—and it obeys it, because it crosses ProgP, which makes it long enough.[21]

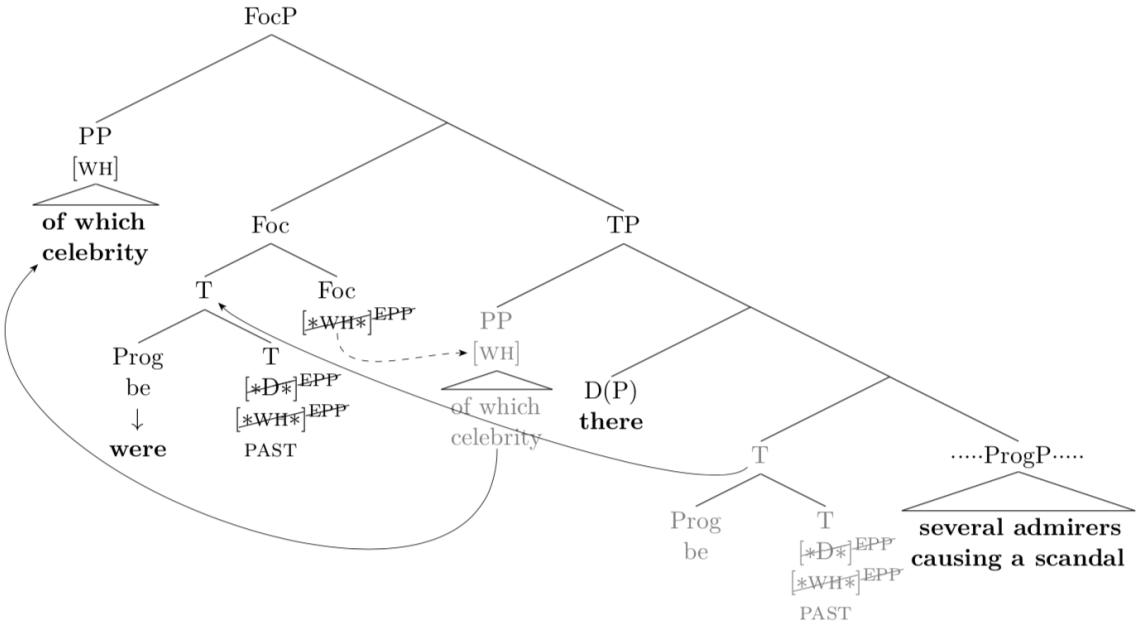
[21] A few words are in order about a possible alternative analysis. The discussion in the text assumes that the smallest clausal phase in (67) is *v*P. However, Harwood (2015) and Zyman (2019) argue on a number of grounds that, when progressive *be* is present, the smallest clausal phase is not *v*P but ProgP (call this the ProgP-Phase Analysis).

If this is so, Phasal Antilocality still makes the right predictions about the portion of the derivation of (66-b) schematized in (67). On the ProgP-Phase Analysis, the *wh*-PP in (66-b) moves from within the associate DP in [Spec,*v*P] to the edge of the ProgP phase (attracted by a $[*WH*]^{EPP}$ feature on Prog). This movement vacuously satisfies Phasal Antilocality, because the associate DP, which it proceeds out of, is not at a phase edge (on the ProgP-Phase Analysis). Then, *there* and the *wh*-PP, which are both at the edge of the ProgP phase, both move to the TP phase edge. These movement steps also vacuously satisfy Phasal Antilocality, because they involve movement of (rather than out of) Edge Constituents.

We see, then, that Phasal Antilocality permits both *there* and the *wh*-PP to end up at the TP phase edge, as desired, regardless of whether the smallest clausal phase in (67) is *v*P or ProgP.

The complement of the phase head T, namely ProgP, is spelled out. The *wh*-PP moves from the TP phase edge to [Spec,FocP]. This is movement of, rather than out of, an Edge Constituent, so it vacuously satisfies Phasal Antilocality:

(68)



Thus, the sentence (repeated in (69)) is generated, as desired. Phasal Antilocality, then, correctly predicts that extraction should be possible from external-argument associates of *there*.

(69) Of which celebrity were there several admirers causing a scandal? (= (66-b))

9. Prediction D: Licit extraction from external-argument subjects of other nonfinite clauses

Section 7 showed that, although an external-argument subject in [Spec,TP] generally cannot launch clause-bounded extraction (**Of which car did the driver cause a scandal?*), it can launch cross-clausal extraction, regardless of whether it is the subject of a *that*-CP or of a *for*-CP. This section will show that Phasal Antilocality in fact predicts that extraction should be possible from the external-argument subject of *any* nonfinite clause, and that this prediction is correct in every case.

9.1 Prediction D_1: Extraction from subjects raised to object

Consider the following sentence:

(70) They believed the driver to have caused a scandal.

On the standard modern analysis of sentences such as (70), the embedded subject undergoes raising to object (Postal 1974, Johnson 1991:586–588, Chomsky 2013:47, 2015, 2016, a.m.o.). This is typically understood as involving raising of the embedded subject from the embedded [Spec,TP] to the matrix [Spec,VP], with the matrix V raising to *v*:

(71) … [$_{vP}$ they believe$_1$+*v* [$_{VP}$ [$_{DP}$ the driver]$_2$ __$_1$ [$_{TP}$ __$_2$ to …]]]

Because the raised embedded subject is in [Spec,VP], a non-phase-edge position, PP-extraction from it should vacuously satisfy Phasal Antilocality. This leads to the following prediction:

(72) **Prediction D_1: Extraction from subjects raised to object**

It should be possible to extract a PP from within an embedded external-argument subject that has undergone raising to object, and move the PP to the edge of the smallest clausal phase in the matrix clause, and then out of this phase.

The relevant extraction is schematized below:

(73) … [$_{vP}$ PP$_{[WH]\text{-}1}$ DP V+*v* [$_{VP}$ [$_{DP}$ … __$_1$ …] …]]]

This prediction is correct, as shown by (74) (which is adapted from Chomsky 2008:153, (19), and Matsubara 2008:465, (5b); see also Bibbs 2018:5, (19a)).

(74) Of which car did they believe the driver to have caused a scandal?

*9.2 Prediction D_2: Extraction from subjects of structurally reduced (*to*-less) nonfinite clauses*

Consider the following:

(75) a. They {saw / heard / watched} the driver cause an accident.
b. They {made / let / had} the driver cause an accident.

Because the embedded nonfinite clauses in (75) lack the T *to*, the null hypothesis is that they are simply *v*Ps, as shown in (76).

(76) … [$_{vP}$ they see/make$_1$+*v* [$_{VP}$ __$_1$ [$_{vP}$ [$_{DP}$ the driver] cause+*v* …]]]

The embedded subject in (76) is at the edge of the (embedded) *v*P phase, so any extraction from this DP must obey Phasal Antilocality. The prediction here is the following:

(77) **Prediction D_2: Extraction from subjects of structurally reduced nonfinite clauses**
It should be possible to extract a PP from within the external-argument subject of a structurally reduced (*v*P-sized) nonfinite clause, and move the PP to the edge of the smallest clausal phase in the matrix clause, and then out of this phase.

The reason this should be possible is that the initial step of PP-extraction will obey Phasal Antilocality, owing to the presence of the matrix VP:

(78) … [$_{vP}$ PP$_{[WH]\text{-}1}$ DP see/make$_1$+*v* **[$_{VP}$** __$_1$ [$_{vP}$ [$_{DP}$ … __$_1$ …] cause+*v* …]]]

As discussed by Matsubara (2008:466–467), this type of extraction is indeed possible:

(79) a. Of which car did they {see / hear / watch} the driver cause an accident?
b. Of which car did they {make / let / have} the driver cause an accident?

A few more examples, which may be more normal pragmatically, are given below:

(80) a. Of which statesman did they {see / hear / watch} the biographer give a lecture?

b. Of which statesman did they {make / let / have} the biographer give a lecture?

Let us recapitulate. Section 7.2 showed that cross-clausal extraction is possible from the external-argument subject of a *for*-CP, and that this is predicted by Phasal Antilocality. This section showed that, in fact, the external-argument subjects of all types of nonfinite clauses permit extraction out of them, and that this too is predicted by Phasal Antilocality.[22]

10. Conclusion and Architectural Implications: Why Does Phasal Antilocality Hold?

10.1 Empirical Conclusions

Let us take stock. Someone who was just beginning to investigate extraction from subjects in English might well start off with the following:

(81) **Coarse first-pass approximation**

In English, extraction from subjects is generally not possible.

The investigation in this paper has been restricted to extraction of argument PPs from subjects. And the (perhaps somewhat surprising) finding that has emerged is that, in order for this type of extraction to actually be ruled out, five separate conditions must be met (descriptively speaking):

[22] As discussed above, however, the precise reasons why Phasal Antilocality makes this correct prediction differ somewhat across different types of nonfinite clauses. In the case of a *to*-TP that launches raising to object, this raising places the underlying embedded subject in a non-phase-edge position ([Spec,VP]), so extraction out of it vacuously satisfies Phasal Antilocality. By contrast, in the case of a bare *v*P complement, as in (80), the embedded subject is a *v*P Edge Constituent, so extraction from it is required to obey Phasal Antilocality—but it does, because the matrix VP makes this movement step long enough.

(82) **Conditions that must be met to block argument PP extraction from a subject in English**

a. The subject must be an external argument.

(If it is an internal argument, extraction is possible: sections 4–5.)

b. The extraction must not cross a preposed adverbial.

(If it does, it becomes much more acceptable: section 6.)

c. The extraction must be clause-bounded.

(If it is cross-clausal, it is acceptable: section 7.)

d. The subject must raise all the way to [Spec,TP].

(If it is an associate of *there*, or the subject of an embedded bare *v*P complement, and therefore surfaces lower than [Spec,TP], extraction is possible: sections 8 and 9.2.)

e. The T whose specifier hosts the subject must be finite.

(If it is the nonfinite T *to*, as in a *for*-CP, extraction is possible: section 7.2; see also section 9.1.)

If even one of these five conditions is not met, extraction from the subject becomes possible.

As discussed in the previous sections, all five of the generalizations in (82) fall out from Phasal Antilocality ((83)) (together with some independently motivated auxiliary assumptions):

(83) **Phasal Antilocality** (= (1))

For a phase YP, movement from within a constituent at the edge of YP must cross an XP dominating YP.

10.2 Architectural Implications

Phasal Antilocality, then, is strongly supported by the empirical evidence available. The question that thus arises immediately is:

(84) Why is movement subject to Phasal Antilocality?

Or, to approach the issue from another perspective:

(85) What does Phasal Antilocality reveal about the architecture of syntax?

The rest of this section attempts to bring us closer to answering these questions.[23] The discussion will necessarily be somewhat speculative, given the present state of knowledge concerning these matters. Nonetheless, here is a possibility.

The phase edge (along with the technology that subserves it, namely probe features) is a device by which the syntax establishes long-distance dependencies that otherwise could not be established, given phasal spellout. What Phasal Antilocality may be telling us, then, is that the technology of the phase edge is fundamentally adapted—to use an evolutionary metaphor—to (successive cyclic) transportation of *entire* constituents. That is, the type of long-distance movement derivation which is optimal from the point of view of the system is one that proceeds in "over-and-out" fashion: a phase head attracts a particular constituent to the phase edge, and then *that very same constituent* moves out of the phase entirely. Because this type of derivation is optimal, and in fact apparently entirely unproblematic for the system, nothing like Phasal Antilocality constrains it.[24]

But although it is entirely unproblematic for a probe in a higher phase to probe and attract a lower Edge Constituent (a constituent at the edge of the lower phase), it is, as Chomsky (2008) argued, not so easy for a probe in the higher phase to probe *into* a lower Edge Constituent and extract from it one of its subconstituents. Contra Chomsky 2008, however, extraction from within an Edge Constituent does not always incur an acceptability penalty. It is simply that, if the syntax is to execute a difficult and costly operation like that, it had better be "worth it." In particular, this type of difficult probing into an Edge Constituent cannot merely result in a "semi-trivial"

[23] Two other questions that arise in this connection, and that will be important to pursue in future investigations, are what the relationship is between Phasal Antilocality and other antilocality constraints/generalizations that have been proposed (see the references in section 1) and whether any of these can be unified.

[24] The use of *because* here is not meant to suggest that the optimality of this kind of derivation *logically entails* its not being subject to anything like Phasal Antilocality. That would be a non sequitur. The suggestion, rather, is that the former property of this kind of derivation is (plausibly) causally responsible for the latter.

movement step in which the attracted constituent fails to cross even a single XP dominating the phase (YP) that it is escaping. Rather, the movement must have a more substantial effect: it must cross at least one XP dominating the YP phase. Phasal Antilocality, then, suggests that syntactic operations are indeed subject to economy constraints of roughly the sort investigated extensively in early Minimalism (see Bošković & Messick in press for related discussion).

This subsection has aimed to place Phasal Antilocality on reasonably sound conceptual footing, and to show that it is intelligible, rather than mysterious, in the current theoretical context. But although the statement of Phasal Antilocality given here relies on theoretical notions that are general and abstract, it is nonetheless the type of generalization that should ideally be derivable from even deeper principles. This paper is intended to serve as the groundwork for such a deduction.

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Appendix A: Evaluating Broekhuis's (2005) No-Extraction Analysis

Section 3 argued that the Ā-moved PPs investigated in this paper, such as *of which car* in (86), are genuinely extracted from the relevant DPs. The argument was based on the observation that, in each of these PPs, the head P is L-selected by the N within the DP.

(86) [Of which car]$_1$ was [the driver $\_\__1$]$_2$ found $\_\__2$? (= (3-b))

However, Broekhuis (2005), in a response to Chomsky (2008), argues, on the basis of Dutch data, that these PPs actually are not extracted from DP, but rather originate outside DP (call this the No-Extraction Analysis; see also Gallego 2009). It will therefore be worthwhile to reexamine Broekhuis's arguments against extraction to determine how they can be reconciled with the evi-

dence from L-selection in favor of extraction (i.e., in favor of what will be referred to below as the Extraction Analysis). This appendix does just that, and shows that Broekhuis's arguments, though fairly convincing for Dutch (especially when taken together), do not carry over to English. For the latter language, then, there is strong evidence for extraction (from L-selection) and no evidence against extraction.

10.3 Argument A: The limited number of possible head Ps

Broekhuis (2005:62) reports that "the allegedly extracted PPs can only be headed by a limited set" of Ps—in Dutch, only *van* 'of' and *over* 'about'. Thus, in (87-b), [$_{PP}$ *op de hoek*] 'on the corner' can be interpreted as modifying *het huis gekocht* 'bought the house', but not *huis* 'house' (cf. (87-a)), showing that it cannot be extracted from the object DP. (The examples in (87) are adapted from Broekhuis 2005:62, (5).)

(87) a. Jan heeft het huis op de hoek gekocht.
Jan has the house on the corner bought
'Jan has bought the house on the corner.' Dutch

b. *[Op de hoek]$_1$ heeft Jan [$_{DP}$ het huis __$_1$] gekocht.
[on the corner]$_1$ has Jan [$_{DP}$ the house __$_1$] bought
int. 'Jan has bought the house on the corner.'

However, this argument is inconclusive for Dutch, at least as formulated by Broekhuis. The restriction to *van* 'of' and *over* 'about' might suggest that the Dutch PPs in question are not extracted from DP (but rather originate as DP-external proleptic PPs of some sort; see also Gallego 2009), though further argumentation would be required to establish that. At any rate, the impossibility of extraction in (87-b) is irrelevant. On standard assumptions, the PP in (87-b) (on the relevant parse) originates as an adjunct to NP. In English, adjuncts cannot be extracted from DPs (Bošković 2008, secs. 1.2, 3.1). It is therefore quite plausible that the problem with (87-b) in Dutch is not the attempted extraction from DP per se, but more specifically the attempted *adjunct* extraction from DP.

In any case, Broekhuis's two other arguments are considerably more convincing for Dutch—

though, as we will see, they do not carry over to English.

10.4 Argument B: Pronominalization

Broekhuis (2005:62) reports that, "under the right contextual and pragmatic conditions," the DP from which the PP appears to have been extracted can be replaced by a pronoun, as shown in (88) (which is adapted from Broekhuis 2005:62, (6)).

(88) a. Van DEZE auto hebben ze **de eigenaar** nog niet gevonden (maar van DIE
of this car have they the owner yet not found (but of that.one
wel).
AFF)
'Of this car they haven't yet found the owner (but of that one they have).' Dutch

b. Van DEZE auto hebben ze **hem** nog niet gevonden (maar van DIE wel).
of this car have they him yet not found (but of that.one AFF)
lit. '*Of this car they haven't yet found him (but of that one they have).'

Since a pronoun normally replaces a full DP, the PP's ability to "survive pronominalization" in (88-b) suggests that it originates (or at least has a parse on which it originates) outside the DP rather than being extracted from the DP.

This argument is fairly convincing for Dutch. In English, however, pronominalization is not possible in the equivalent of (88-b), as shown in (89) below (though see Haegeman, Jiménez-Fernández & Radford 2014:86 for somewhat different judgments and further discussion). This is what is predicted by the Extraction Analysis but contrary to the prediction of the No-Extraction Analysis, suggesting that the former is the correct account for English.

(89) a. Of this car they haven't yet found the owner, but of that one they have.

b. *Of this car they haven't yet found {him / her / them}, but of that one they have.

10.5 Argument C: Alleen *'only'*

Broekhuis (2005:62–63) notes that, in Dutch, a *van* 'of'–PP can form a constituent with a preceding particle *alleen* 'only' when this constituent is in [Spec,CP], but not when it would be DP-internal,

as shown in (90) (which is adapted from Broekhuis 2005:63, (7)).

(90) a. **Alleen** van DEZE auto hebben ze de eigenaar nog niet gevonden.
only of this car have they the owner yet not found
'Only of this car have they not yet found the owner.' Dutch

b. *Ze hebben de eigenaar **alleen** van DEZE auto nog niet gevonden.
they have the owner only of this car yet not found
int. 'They haven't yet found the owner only of this car.'

This suggests that [$_{XP}$ *alleen van* DEZE *auto*] is not extracted from DP in (90-a), and, by extension, that *van* 'of'–PPs in [Spec,CP] generally are not extracted from DP (or at least generally have a parse on which they are not extracted from DP).

This argument too seems convincing for Dutch (though see Haegeman, Jiménez-Fernández & Radford 2014:87–88 for a different assessment). In English, however, the corresponding PP can form a constituent with a preceding *only* not only when this constituent (henceforth the *only*-XP) is Ā-moved ((91-a)) but also when it is DP-internal ((91-b))—as also shown by Haegeman, Jiménez-Fernández, and Radford (2014:88, (28)), who give different examples.

(91) a. Only of THIS car have they not yet found the owner.

b. ^{M}They haven't yet found the owner only of THIS car.

To be sure, (91-b), though acceptable, is marked in comparison to (91-a) (hence the ^{M} diacritic). However, it becomes more natural with a pause preceding *only*:

(92) They haven't yet found the owner – only of THIS car.

It might be objected that, plausibly, the pause in (92) is a reflex of (base-generated) extraposition—i.e., the *only*-XP is DP-external in (92)—and that this together with the markedness of (91-b) suggests that *only*-XPs prefer to be DP-external in English, as in Dutch.

However, three strands of evidence tell against the hypothesis that the *only*-XP is obligatorily DP-external in (92). First, it can be followed by a second internal argument and any number of

*v*P-adjuncts:

(93) a. [M]They gave the owner only of THIS car a huge prize (with great enthusiasm) (at the ceremony).

b. They gave the owner – only of THIS car a huge prize (with great enthusiasm) (at the ceremony).

Secondly, the *only*-XP in (93) actually cannot follow any of these constituents, contrary to what would be expected if it were base-generated in extraposed position:

(94) They gave the owner a huge prize ⟨*only of THIS car⟩ with great enthusiasm ⟨*only of THIS car⟩ at the ceremony ⟨*only of THIS car⟩.

Third, the P heading the PP in the configuration in (92) is L-selected by the N within the relevant DP:

(95) a. [M]We discussed the cells' affinity only {for/*to/*of/*in/*on/*at/*upon} sugar.

b. We discussed the cells' affinity – only {for/*to/*of/*in/*on/*at/*upon} sugar.

Given the highly local nature of L-selection, (95) indicates that these *only*-XPs can originate DP-internally—i.e., they are not obligatorily base-generated in an extraposed/DP-external position. (See Bruening 2018:363 for a very similar argument against a hypothetical analysis on which extraposed CPs are base-generated in their surface positions.)

It is true that an *only*-XP *can* be extraposed under certain circumstances:[25]

(96) They found the owner yesterday only of THIS car.

However, (93-b), (94), and (95-b), taken together, make it clear that an *only*-XP in English can

[25]There is a question as to what exactly these circumstances are, and why—e.g., why the *only*-XP can be extraposed in (96) but not in (94). That question, though interesting, will be set aside here, as it is not directly relevant to the present discussion.

originate, and surface, DP-internally, even when preceded by a pause. Therefore, Broekhuis's (2005:62–63) argument from the Dutch particle *alleen* 'only' in favor of the No-Extraction Analysis, though fairly convincing for Dutch, does not carry over to English. In the latter language, an *only*-XP can be DP-internal, so there is no obstacle to positing that an Ā-moved *only*-XP that appears to have been extracted from DP indeed has been.

10.6 Summary

Let us take stock. Broekhuis (2005) argues on the basis of Dutch data that Ā-moved PPs of the sort investigated in this paper are not in fact extracted from DP, but rather originate DP-externally. Broekhuis's arguments to this effect are fairly convincing for Dutch, especially the arguments from pronominalization and the particle *alleen* 'only'. As we have seen, however, these arguments do not carry over to English. For the latter language, then, there is no evidence for Broekhuis's No-Extraction Analysis, but strong evidence for the Extraction Analysis (from L-selection, as shown in section 3).

Appendix B

Sections 6–9 tested various predictions of Phasal Antilocality in English. This appendix tests them in French, Spanish, Catalan, Brazilian Portuguese, and Russian. The predictions are laid out in (97).[26] (As in the text, all the PP-extractions under discussion are extractions of argument PPs.)

[26]Three notes on the data are in order. First, these data are the results of a preliminary investigation; more detailed testing of the predictions in more idiolects of these languages (and in other languages) would be highly worthwhile. Secondly, the predictions are about acceptability contrasts—i.e., they are all predictions to the effect that the violation in a sentence equivalent to **Of which car did the driver cause an accident?* should be ameliorated if a particular manipulation is made to the structure. For this reason, the judgments given in the numbered examples below all come from idiolects in which the equivalent of that baseline sentence is degraded or unacceptable. If, in a particular idiolect, the equivalent of that sentence is acceptable, then the amelioration predictions cannot be tested in that idiolect, because there is no violation to ameliorate. This is discussed in greater detail in the text following (108) below; see also note 28. Third, the diacritics prefixed to the sentences represent the judgments from whichever idiolect most closely bore out the predictions of the analysis, but the sentences are followed by by-idiolect breakdowns of the judgments in brackets—e.g., the annotation "[$*_A$, $??_B$]" following (98) means that that sentence is * in idiolect A and ?? in idiolect B. The assignment of letters (A, B, …) to speakers restarts for each language; thus, "A" in the French subsection and "A" in the Spanish subsection are not the same speaker.

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(97) Predictions of the Phasal Antilocality analysis

a. **Preposed adverbials:** The degradation induced by an illicit PP-extraction from an external-argument subject should be ameliorated by the insertion of a preposed adverbial along the movement path (section 6).

b. **Cross-clausal extraction:** PP-extraction from a high external-argument subject should be more acceptable when cross-clausal than when clause-bounded (section 7).

c. **Low subjects:** PP-extraction from an external-argument subject should yield a more acceptable result if the subject is low than if it is in the canonical high subject position (cf. section 8).

d. **Nonfinite subjects:** PP-extraction should be possible from the external-argument subject of a nonfinite clause, such as the infinitival complement of a *see*- or *make*-type verb (section 9).

10.7 French

In French, as in English, the baseline is unacceptable or highly degraded ((98)). The violation is ameliorated if a preposed adverbial is inserted ((99)—though only in some idiolects), if the extraction is made cross-clausal ((100)), or if the PP is extracted from the external argument of the infinitival complement of *voir* 'see' ((101)), though the results are more variable with *faire* 'make' ((102)).[27]

(98) *[De quelle voiture]$_1$ [le conducteur __$_1$] a causé un accident ?
of which car the driver has caused an accident
int. '*Of which car did the driver cause an accident?' [*$_A$, ??$_B$]

(Russian). (Not all these people's judgments are shown below, for the reason explained earlier in this footnote.)

[27]This last fact may be related to independent peculiarities of the subject of the infinitival complement of *faire* 'make' (such as its being realized as an *à* 'to'–phrase), though space prevents investigation of this possibility here.

(99) [De quelle voiture]$_1$, selon tes souvenirs, [le conducteur __$_1$] a causé un
of which car according.to your recollections the driver has caused an
accident ?
accident
'(?)Of which car, according to your recollection, did the driver cause an accident?'

[✓$_A$, ??$_B$]

(100) [De quelle voiture]$_1$ te semble-t-il que [le conducteur __$_1$] a causé un
of which car to.you seems-T-it that the driver has caused an
accident ?
accident
'Of which car does it seem to you that the driver caused an accident?' [✓$_A$, (?)$_B$]

(101) [De quelle voiture]$_1$ as-tu vu [le conducteur __$_1$] causer un accident ?
of which car have-you seen the driver cause.INF an accident
'Of which car did you see the driver cause an accident?' [✓$_A$, (?)?$_B$]

(102) ??[De quelle voiture]$_1$ ont-ils fait causer un accident [au conducteur __$_1$] ?
of which car have-they made cause.INF an accident to+the driver
int. 'Of which car did they make the driver cause an accident?' [??$_A$, *$_B$]

10.8 Spanish

In Spanish, these phenomena display a considerable amount of idiolectal variation. The judgments below come from idiolects in which there is some contrast between the baseline sentence ((103)) and the test sentences ((104)–(108)). Other idiolects are discussed below the data.

The baseline sentence is highly degraded ((103)). The violation is indeed ameliorated if a preposed adverbial is inserted ((104)); if the extraction is changed from clause-bounded to cross-clausal ((105)); if the extraction is launched from a low rather than a high subject position ((106)) (cf. Ordóñez 1998, Gallego 2013); or if the extraction proceeds from the external-argument subject of the infinitival complement of *ver* 'see' ((107)) or *hacer* 'make' ((108)):

(103) ??[De qué coche]$_1$ [el chofer __$_1$] causó un accidente?
of what car the driver caused an accident
int. '*Of which car did the driver cause an accident?' [??$_A$, ??$_B$]

(104) ↑[De qué coche]$_1$, según recuerdas tú, [el chofer __$_1$] causó un accidente?
of what car according.to remember you the driver caused an accident
'(?)Of which car, according to what you remember, did the driver cause an accident?'
[↑$_A$, (?)$_B$]

(105) ↑[De qué coche]$_1$ te parece que [el chofer __$_1$] causó un accidente?
of what car to.you seems that the driver caused an accident
'Of which car does it seem to you that the driver caused an accident?' [↑$_A$, (?)$_B$]

(106) ↑[De qué coche]$_1$ causó un accidente [el chofer __$_1$]?
of what car caused an accident the driver
'*Of which car did the driver cause an accident?' [↑$_A$, (?)$_B$]

(107) ↑[De qué coche]$_1$ viste a[l chofer __$_1$] causar un accidente?
of what car you.saw PA+the driver cause.INF an accident
'Of which car did you see the driver cause an accident?' [↑$_A$, (?)$_B$]

(108) ↑[De qué coche]$_1$ hicieron a[l chofer __$_1$] causar un accidente?
of what car they.made to+the driver cause.INF an accident
'Of which car did they make the driver cause an accident?' [↑$_A$, ?$_B$]

As noted above, however, these phenomena display idiolectal variation in Spanish. In some idiolects, the baseline in (103) is unacceptable, but so are sentences that attempt to fix the putative Phasal Antilocality violation by making the movement path longer ((104)–(108)). However, these idiolects disallow extraction from definite DPs rather generally, including at least some definite direct object DPs. Owing to this interfering factor, these idiolects provide neither evidence for nor counterevidence to Phasal Antilocality. In addition, in one further idiolect I have investigated, the Phasal Antilocality–obeying sentences ((104)–(108)) are acceptable, but so is the baseline ((103)). In this idiolect, one cannot test the general prediction that it should be possible to improve the baseline by making the movement path longer, since the baseline is acceptable to begin with.[28] What is important here, though, is that in idiolects in which there are contrasts between the baseline ((103))

[28]If the Phasal Antilocality analysis is on the right track, this liberal idiolect allows (103) on a parse on which either the movement path is in fact long enough (because there is a null clausal functional head between T and Foc—plausibly Fin) or the subject is not at the edge of the TP phase but rather lower, in the interior of the phase, rendering Phasal Antilocality irrelevant. The question of which of these analyses is correct, if either, will have to be left open here.

and the test sentences ((104)–(108)), they go in the direction predicted by the analysis.[29]

10.9 Catalan

In Catalan too, the baseline sentence is highly degraded:

(109) ??[De quin cotxe]$_1$ [el conductor __$_1$] va provocar un accident?
of which car the driver caused an accident
int. '*Of which car did the driver cause an accident?' [??$_A$, ??$_B$]

The violation is ameliorated if an adverbial is inserted ((110)—though only in some idiolects), if the extraction is changed from clause-bounded to cross-clausal ((111)), or if the extraction is launched from a low subject position ((112)—though only in some idiolects; cf. Gallego 2013):

(110) ↑[De quin cotxe]$_1$, segons el que recordes, [el conductor __$_1$] va provocar
of which car according.to what you.remember the driver caused
un accident?
an accident
'(?)Of which car, according to what you remember, did the driver cause an accident?'
[↑$_A$, ??$_B$]

(111) ↑[De quin cotxe]$_1$ et sembla que [el conductor __$_1$] va provocar un accident?
of which car to.you seems that the driver caused an accident
'Of which car does it seem to you that the driver caused an accident?' [↑$_A$, ?$_B$]

(112) ↑[De quin cotxe]$_1$ va provocar un accident [el conductor __$_1$]?
of which car caused an accident the driver
int. '*Of which car did the driver cause an accident?' [↑$_A$, ?*$_B$]

It is also ameliorated if the extraction is launched from the external-argument subject of the infinitival complement of *veure* 'see' ((113)), though not (for reasons unclear) if it is launched from the external-argument subject of the infinitival complement of *fer* 'make' ((114)).

[29] A qualification is needed, though: when this paper had nearly been completed, it was brought to my attention by Laura Stigliano that there are also idiolects of Spanish in which some or all of the test sentences ((104)–(108)) are not better than the baseline sentence ((103)) but worse. This seems like prima facie counterevidence to the analysis developed here, and indicates that the predictions that the analysis makes about Spanish would be well worth testing more extensively and in more idiolects.

(113) ↑[De quin cotxe]$_1$ vas veure [el conductor __$_1$] provocar un accident?
of which car you.saw the driver cause an accident
'Of which car did you see the driver cause an accident?' [↑$_A$, ?$_B$]

(114) *[De quin cotxe]$_1$ li van fer a[l conductor __$_1$] provocar un accident?
of which car to.him they.made to+the driver cause an accident
int. 'Of which car did they make the driver cause an accident?' [*$_A$, *$_B$]

10.10 Brazilian Portuguese

In Brazilian Portuguese too, these phenomena display idiolectal variation. The judgments below come from an idiolect in which there is some contrast between the baseline and test sentences.[30]

The baseline sentence is rather degraded:

(115) (?)?[De qual carro]$_1$ [o motorista __$_1$] causou um acidente?
of which car the driver caused an accident
int. '*Of which car did the driver cause an accident?'

But the violation in (115) is ameliorated if a preposed adverbial is inserted ((116)) or if the extraction is changed from clause-bounded to cross-clausal ((117)):

(116) [De qual carro]$_1$, de acordo com a sua lembrança, [o motorista __$_1$] causou um
of which car according to the your memory the driver caused an
acidente?
accident
'(?)Of which car, according to your recollection, did the driver cause an accident?'

(117) ?[De qual carro]$_1$ você acha que [o motorista __$_1$] causou um acidente?
of which car you think that the driver caused an accident
'Of which car do you think the driver caused an accident?'

It is also perhaps ameliorated to some extent if the PP is extracted from the external-argument subject of the infinitival complement of *ver* 'see' ((118)), though not if it is extracted from the external-argument subject of the infinitival complement of *fazer* 'make' ((119)).

[30]There are also stricter idiolects of Brazilian Portuguese (and of Russian; cf. section 10.11 below) that disallow not only the baseline sentence ((115)) but also sentences instantiating the general configurations in ((116)–(119)). The question of whether this is true counterevidence to the analysis developed here or the result of some independent factor (e.g., a general restriction on extraction from definite nominals) will have to be left open here.

(118) ? / (?)?[De qual carro]$_1$ você viu [o motorista __$_1$] causar um acidente?
of which car you saw the driver cause an accident
'Of which car did you see the driver cause an accident?'

(119) ??[De qual carro]$_1$ eles fizeram [o motorista __$_1$] causar um acidente?
of which car they made the driver cause an accident
int. 'Of which car did they make the driver cause an accident?'

10.11 Russian

The baseline sentence is unacceptable or marginal, depending on the idiolect ((120); on the idiolectal variation that these phenomena display in Russian, see note 30 above). The violation is (contrary to the prediction of the analysis) not ameliorated by a preposed adverbial ((121)), but it is ameliorated to some extent if the extraction proceeds not from a high but from a low subject (in [Spec,*v*P]—Bailyn 2004, Gribanova 2013) ((122)).[31] The violation is also ameliorated to a degree (though not in all idiolects) if the extraction proceeds from the external-argument subject, if it is a subject, of the infinitival complement of *zastavit'* 'make' ((123)).

(120) *[Kakoj mašiny]$_1$ [voditel' __$_1$] vyzval avariju?
which.GEN car.GEN driver.NOM caused accident.ACC
int. '*Of which car did the driver cause an accident?' [*$_A$, ?$_B$]

(121) *[Kakoj mašiny]$_1$, po tvoim vospominanijam, [voditel' __$_1$] vyzval avariju?
which.GEN car.GEN by your.INST recollections.INST driver.NOM caused accident.ACC
int. '(?)Of which car, according to your recollection, did the driver cause an accident?'
[*$_A$, (?)?$_B$[32]]

[31] One might initially object that (122) should also violate Phasal Antilocality (and should therefore be as unacceptable as (120)), on the grounds that the *wh*-phrase undergoes apparently too-local movement from within the subject in [Spec,*v*P] (i.e., from within a *v*P Edge Constituent) to the edge of the TP phase on its way to [Spec,FocP]. This is not the case, however, because there is an AspP between *v*P and TP in Russian (Gribanova 2013, Polinsky et al. 2013, and references therein), which makes the first movement step long enough to obey Phasal Antilocality:

(i) … [$_{TP}$ [$_{YP}$ kakoj mašiny]$_1$ T [**$_{AspP}$** Asp [$_{vP}$ [$_{XP}$ voditel' __$_1$] *v* …]]] ✓ Phasal Antilocality

[32] This speaker replaced the preposed *po* 'by'–PP with *kak tebe pomnitsja* 'how you.DAT remembers.REFL' (≈ 'as you remember it'), which for her is more natural in this context.

(122) ??[Kakoj mašiny]$_1$ vyzval [voditel' __$_1$] avariju?
which.GEN car.GEN caused driver.NOM accident.ACC
'*Of which car did the driver cause an accident?' [??$_A$, (?)$_B$]

(123) ???[Kakoj mašiny]$_1$ zastavili [voditelja __$_1$] vyzvat' avariju?
which.GEN car.GEN they.made driver.ACC cause.INF accident.ACC
'Of which car did they make the driver cause an accident?' [???$_A$, (?)?$_B$]