

Contextual phasehood and the ban on extraction from complements of lexical heads: When does X become a phase?*

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Abstract: In a double phase-configuration, where a phasal head takes a phase as its complement, extraction is banned from the complement of the lower phase. An account of the ban is proposed where XP functions as a phase only after it is merged into the structure, with movement to the edge of XP driven by the need to undergo successive-cyclic movement without violating the Phase-Impenetrability Condition taking place after this merger.

Keywords: islands, phases, spell-out, successive-cyclic movement, the Phase-Impenetrability Condition

1. Introduction

Ross (1967) established the constraint in (1), where complex NP is a noun modified by a clause.¹

(1) The Complex NP Constraint (CNPC): Extraction from complex NPs is disallowed.

The effect of (1) is illustrated by (2).

(2) *How_i did you hear [_{NP} rumors [_{CP} that [_{IP} John bought a house t_i]]]?

Extraction is allowed from complex VPs: there is no such thing as Complex VP Constraint, in contrast to the Complex NP Constraint.

(3) How_i did you [_{VP} think [_{CP} that [_{IP} a dog bit John t_i]]]?

Previous research on the locality of movement has focused on (3), putting (2) aside. Thus, the works on the locality of movement within minimalism generally ignore (2), the analyses of successive-cyclic movement being developed on the basis of (3). Bošković (2015a), however, argues that that move has been fundamentally misguided since (2) represents a pervasive pattern found in many contexts, (3) being highly exceptional. In particular, (with some exceptions to be discussed below) extraction is banned not only from clausal, but all complements of nouns. Furthermore, APs, PPs, and ergative VPs pattern with NPs: extraction is also banned from the complement of adjectives, prepositions, and ergative verbs.² The only exception to the general ban on extraction out of complements of lexical heads (the Complex XP Constraint) in fact concerns transitive, non-ergative VP. Since this case has been used to build theories of successive-cyclic movement, the existing theories of successive-cyclic movement make such movement too easy. This paper proposes a new account of the ban on extraction from complements of lexical heads (also sharpening the exact formulation of the ban in question by restating it in more general phase-theoretic terms), which makes successive-cyclic movement in general more difficult while still leaving room to allow it in (3).

The analysis proposed in the paper is crucially based on a contextual approach to phasehood, where XP functions as a phase only after it is merged into the structure. As a result, movement to

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¹I will ignore relative clauses. Since they are adjuncts extraction out of them involves a violation of the traditional Adjunct Condition, i.e. the ban on extraction out of adjuncts. (It should be noted here that Safir 1985 shows that (1) cannot be reduced to the Adjunct Condition by treating nominal clausal complements as adjuncts.)

²The same actually holds for passive verbs, which will not be discussed here.

the edge of XP driven by the need to undergo successive-cyclic movement without violating the Phase-Impenetrability Condition (PIC) takes place after this merger, which will be shown to deduce the ban on extraction from complements of lexical heads.³ What will be crucial in the deduction is that under the approach to phases argued for here, all the examples that motivate the ban in question involve a configuration where a phasal head takes a phase as its complement, a configuration which will be shown to be very recalcitrant to extraction.

I will start the discussion by generalizing the CNPC, then turn to the deduction of the generalized CNPC, also exploring some consequences of the proposed deduction.

2. On the Complex XP Constraint⁴

The CNPC concerns clausal complements. However, extraction is banned not only from clausal complements of nouns, but all complements of nouns. This is illustrated by the contrast between (4) and (5) and the contrast between (6) and (7) (such contrasts were originally noted in Bach and Horn 1976 and Chomsky 1973).⁵

- (4) Of $\text{who}(m)_i$ did you see [friends t_i]?
 (5) ??Of $\text{who}(m)_i$ did you see [_{NP} enemies of friends t_i]?
 (6) Who_i did you see [friends of t_i]?
 (7) ?*Who did you see [_{NP} enemies of friends of t_i]?

Note that I assume a reanalysis/pruning account of P-stranding, where there is no PP in (6) (see e.g. Stepanov 2012), which means that, like (4), (6) involves extraction of a nominal complement, in contrast to (7), which involves extraction out of a nominal complement. (In section 3.3., I will however give an account of P-stranding where there is a PP in (6). Pending section 3.3. I will put P-stranding aside; at any rate, the relevant contrast holds even without P-stranding, as in (4) and (5) and other data discussed below.)

Consider in this respect Greek. In Greek, both genitive DPs and PPs function as nominal complements. Both cases exhibit a simple/deep extraction contrast, as illustrated in (8)-(11), extraction being disallowed from the complement of a noun.

- (8) Tu vivliu_i mu ipes pos dhiavases tin [kritiki t_i]
 the-gen book-gen me said-2s that read-2s the review
 ‘You told me you read the review of the book.’ (Horrocks & Stavrou 1987)
 (9) *Tu vivliu_i mu ipes pos dhiavases tin [_{NP} enstasi [tis kritikis t_i]]
 the-gen book-gen me said-2s that read-2s the objection the-gen review-gen
 ‘You told me you read the objection to the review of the book.’

³See Bošković (2015a) for an alternative account of the locality effect in question based on Chomsky’s (2013) labeling system and antilocality, and Bošković (2015b) for an alternative account based on phasal spell-out (i.e. on the assumption that what is sent to spell-out is the phase itself, as in the original phase theory).

⁴This section and section 5 sum up some of the relevant arguments from Bošković (2015a); the reader is referred to that work for additional arguments and discussion (the data where the source is not noted come from that work, except for (11b), which is due to C. Christopoulos and M. Stavrou (p.c.)). Note also that since weak islands are sometimes completely weakened with argument extraction (especially with DP argument extraction, see Cinque 1990), adjunct extraction is a more reliable diagnostic, hence adjunct extraction will be used whenever possible. However, in English it can be tested only with clausal complements, adjunct extraction quite generally being disallowed from DPs in English, as in *From which city_i did Peter meet [girls t_i] (see Chomsky 1986). (Another interfering factor that arises with argument but not with adjunct extraction, which makes the latter more reliable, concerns phase collapsing from section 4 (and more generally reanalysis), an effect found with argument but not adjunct extraction, see Bošković (2015a) for relevant discussion in this respect.)

⁵We are dealing here with argument extraction (see footnote 4), hence the locality violations are weaker. Note that for ease of exposition, I will only mark the relevant NP in the unacceptable examples.

- (10) Se t_i eksefrasan ton [antilogo t_i]?
 to what expressed-3p the objection
 ‘To what did they express the objection?’
- (11) *a. Se t_i eksefrasan [_{NP} epikrisi [tu antilogu t_i]]?
 to what expressed-3p criticism the-gen objection-gen
 ‘To what did they express criticism of the objection?’
- b. *Tis kritikis_i eksefrasan ton [_{NP} antilogo [se epikrisi t_i]]?
 the-gen review-gen expressed-3p the objection to criticism
 ‘They expressed the objection to criticism of the review.’

These examples indicate that extraction from the complement of a noun is quite generally disallowed. There is nothing special about CPs in this respect: extraction from a nominal complement is disallowed regardless of the categorial status of the complement. (1) should then be generalized as in (12) (the Generalized Complex NP Constraint).

- (12) Extraction out of nominal complements is disallowed.

The generalized version of the CNPC holds for other lexical heads as well. Consider first adjectives, starting with the CNPC context. Extraction from APs headed by adjectives modified by clauses is disallowed, on a par with complex NPs. Thus, (13) is unacceptable if the adjuncts modify the embedded clause.

- (13) *How_i/Why_i are you [_{AP} proud [_{CP} that John hired Mary t_i]]?

As in the case of nouns, the effect is not confined to clausal complements of adjectives: Extraction is also banned from non-CP complements of adjectives, as illustrated by (14).

- (14) a. Of who(m)_i is he [proud t_i]?
 b. ?*Of who(m)_i is he [_{AP} proud of [friends t_i]]?

Recall that nouns can take either genitive DP or PP complements in Greek, extraction being disallowed out of both DP and PP complements of nouns. Greek adjectives can also take either genitive DPs or PPs as their complements. In both cases, extraction from the complement of *responsible* is banned.

- (15) *Tu ktiriu_i [_{AP} ipefthinos [tu fotismu t_i]]
 the-gen building-gen is-responsible the-gen lighting-gen
 ‘the building he is responsible for the lighting of’
- (16) *Tu ktiriu_i [_{AP} ipefthinos [gia to fotismo t_i]]
 the-gen building-gen is-responsible for the lighting
 ‘the building he is responsible for the lighting of’

APs thus pattern with NPs regarding extraction from their complements. In addition to (12), we then also have the Generalized Complex AP Constraint in (17).

- (17) Extraction out of adjectival complements is disallowed.

Furthermore, PPs pattern with NPs and APs in the relevant respect. (18) replicates the simple/deep extraction contrast from NPs/APs that was discussed above (see also Landau 2009).

- (18) a. Who_i did you read [about t_i]?

b. ?*Of who(m)_i did you read [_{PP} about [_{friends} t_i]]?

Consider now the CNPC context with PPs. Prepositions can take finite CP complements in Spanish. Significantly, extraction is disallowed out of such complements.⁶

- (19) a. *¿cómo_i se acordó [_{PP} de [_{CP} que [Pedro preparaba la comida t_i]]]
how clitic (s)he.remembered of that Pedro prepared.imperfect the food
b. cf. se acordó de que Pedro preparaba la comida.

That extraction from complements of prepositions is banned is confirmed by Greek (20).⁷

- (20) *Tinos_i endhiaferese [_{PP} ya [ti fili t_i]]
who-gen be-interested-2s for the friend
'Whose friend are you interested in?' (Horrocks & Stavrou 1987)

The above data provide evidence for the existence of the Generalized Complex PP Constraint (21).

- (21) Extraction out of complements of prepositions is disallowed.

Why are then VPs different when it comes to extraction from their complements? Before providing an answer to the question it is important to note that they are not always different. The locality effect in question is actually found with ergative VPs. Thus, (22), involving a non-ergative context, is better than (23), which involves an ergative verb.

- (22) Who did they [see [(some) friends of t_i] yesterday?
(23) ?*Who_i did there [arrive [(some) friends of t_i] last week?

Only argument extraction, which yields a weaker effect than adjunct extraction, can be checked with English DPs (see footnote 4). Belletti and Rizzi (1988), however, show that some psych verbs which take CP arguments are ergative (see sections 5-6 for ergatives with just a CP argument). (24)-(26) involve uncontroversially ergative psych verbs, where the CP is standardly assumed to be located in the V-complement position (see e.g. Belletti and Rizzi 1988, Pesetsky 1995, Landau 2009). Both argument and adjunct extraction are degraded in this context, the latter being worse, as expected.⁸

- (24) a. ??What_i did it appeal to Mary [that John fixed t_i]?
b. *How_i did it appeal to Mary [that John fixed the car t_i]?
(25) a. ??What_i did it depress Mary [that John sold t_i]?
b. *How_i did it depress Mary [that John was fired t_i]?
(26) a. ??What_i does it bother Bill [that John underestimates t_i]?
b. *How_i does it bother Bill [that John fixed the car t_i]?

There are also transitive ergatives that do not take CP arguments. Only argument extraction can be checked in such cases. Importantly, extraction is degraded in this context (see also Belletti & Rizzi 1988 for the same observation regarding Italian).

⁶Some languages treat (some) prepositions as inherent Case-markers, see in this respect Nunes (2009). Such prepositions are not relevant to our concerns (the discussion here concerns lexical categories).

⁷(11b) and (16) are actually also relevant here.

⁸(24)-(26) may involve short V-movement, which may exist in English even independently of v (i.e. V-to-v), see in this respect Johnson (1991) and Lasnik (1999).

- (27) ??Who_i did your behavior bother [the sister of t_i]? (Johnson 1992)
(28) ?*Who_i did John's embarrassment escape [friends of t_i]?

The Generalized Complex VP Constraint effects thus emerge with ergative verbs: ergative verbs pattern with nouns, adjectives, and prepositions in the relevant respect.

- (29) Extraction out of complements of ergative verbs is disallowed.

When properly generalized, the CNPC thus represents a pervasive pattern found in many contexts. Extraction is banned not only from clausal but all nominal complements. Furthermore, APs, PPs, and ergative VPs pattern with NPs: extraction is banned from their complements regardless of the categorial status of the complement.⁹ With the exception of non-ergative verbs, extraction is then banned from all complements of all lexical heads. In other words, (1) should be generalized as in (30).

- (30) **The Complex XP Constraint** (where X ≠ non-ergative V)
Extraction out of complements of lexical heads is disallowed.

3. Deducing the Complex XP Constraint

3.1. The theory of phases

I now turn to the deduction of (30). I will first restate (30) within the phase theory of Bošković (2015a) and then propose a new deduction of (30), different from the one proposed in Bošković (2015a) (as well as Bošković 2015b).

Chomsky (2000) proposes a context-independent approach to phasehood where certain phrases (vP and CP) are always phases regardless of their syntactic context. A number of authors have, however, argued that the phase status of X can be affected by its syntactic context. Thus, based on a number of arguments regarding the locality of movement and the distribution of ellipsis, Bošković (2012, 2013a, 2014) argues that the highest projection in the extended domain of a lexical head/clause functions as a phase. In this system, vP is a phase as the highest projection in the extended domain of V and CP is a phase as the highest clausal projection. There is a phase even with ergatives even if vP, which is responsible for external θ -role assignment, is absent with ergatives; in that case VP is a phase as the highest projection in the domain of V.

Another way to look at this is from the perspective of Grohmann (2003), where a clause is divided into three domains, the discourse, the agreement, and the θ -domain, and movement must pass through each domain. Suppose that, as proposed in Bošković (2015a), we collapse the agreement and the discourse domain into one domain, giving us two domains: thematic and non-thematic. This in fact corresponds to Chomsky's original conception of phases if we assume that the highest projection in a domain functions as a phase. vP is then a phase as the highest projection in the thematic domain, and CP is a phase as the highest projection in the non-thematic domain. With ergatives, due to the lack of vP, VP is the highest projection in the thematic domain hence a phase. (The presence of a non- θ -marking vP with ergatives would not affect anything (hence this possibility will be ignored below): VP would still be a phase.)¹⁰ I will adopt here this approach to phases: the highest projection in the thematic domain of every lexical head and the highest projection in the non-thematic/functional domain function as phases.

⁹ See also Bošković (2015a) on passives; it is noted in that work that the locality effect in question is also found with passive verbs.

¹⁰ This is an important difference from Bošković (2013a, 2014), where the thematic domain does not form a separate phasal domain, hence ergative VP is not a phase unless it is the only projection in the extended domain of V.

Significantly, under this approach to phases all the examples that instantiate (30) which were discussed above involve the context in (31), where a phasal head takes a phase as its complement.

(31) [_{XP=Phase} [_{YP=Phase}]]

To illustrate, NP is a phase in (2) as the highest projection in the nominal thematic domain. The same holds for AP in (13) and PP in (19), as the highest projections in the A/P thematic domains. Focusing on the NP case, the noun takes CP, which is a phase, as its complement in (2), hence (2) involves a double-phase context from (31). The same holds for Greek (9), which involves a DP phase right below the NP phase. All the unacceptable extractions from nominal complements discussed above in fact involve (31). The same holds for the examples involving the AP constraint from (17): all the unacceptable extractions from the complement of an adjective involve the context in (31). Thus, the adjective, a phasal head, takes a CP phase complement in (13) and a DP/PP phase complement in Greek (15)-(16). The same holds for prepositions: preposition, a phasal head, also takes a phase as its complement in all the cases of (21), given in (18)-(20).

Consider also the VP cases, i.e. examples (22)-(28). Recall that ergatives behave differently from other verbs in that they show Complex XP Constraint effects. Given the difference, the obvious conclusion is that vP is what matters here. With non-ergative verbs, vP is the highest projection in the verbal thematic domain. VP is then not a phase. As a result, extraction from clausal complements of non-ergative verbs, as in (32), does not involve the context in (31). In contrast, ergatives lack the thematic vP layer. This means that VP is the highest (and only) projection in the relevant thematic domain hence a phase in (33). (33) then involves a double-phase configuration, i.e. the context from (31).¹¹

(32) How_i did you [_{vP} [_{VP} think [_{CP} that [_{IP} John fixed the car t_i]]]]?

(33) *How_i did it [_{vP} appeal to Mary [_{CP} that [_{IP} John fixed the car t_i]]]]?

Extraction is thus disallowed in the configuration in (31), where a phasal head takes a phase as its complement. We can then restate (30) as in (34). ((34) will be slightly revised below).

(34) The Phase-over-Phase Constraint

Extraction is banned from phases that function as complements of phasal heads (i.e. the double-phase configuration from (31)).

Recall now our initial question: why is it that there is no Complex VP Constraint, in contrast to the Complex NP Constraint as well as the Complex AP Constraint and the Complex PP Constraint. A clue for the answer to the question is provided by the existence of Complex VP Constraint effects with ergatives. The obvious difference between ergative and non-ergative verbs is the existence of vP with the latter. (34) capitalizes on this: the current approach to phases yields a principled difference (which will be deduced below) between ergative and non-ergative verbs given the presence of (θ-assigning) vP with the latter. Generalizing this, the reason for the different behavior of non-ergative VP and NP/AP/PP/ergative VP regarding the Complex XP Constraint is the presence of vP, i.e. the assignment of the external θ-role in a projection distinct from VP. There is then no such projection with NP/AP/PP. nP/pP/aP are sometimes posited merely for the sake of uniformity with VP. But the fact is that there is actually no uniformity here when it comes to extraction.¹²

¹¹ Phases are given in boldface. For ease of exposition, I ignore V-movement here since it does not affect anything.

¹²It is important to note that n/p/aP could still exist, but they would not be part of the thematic domain (i.e. they would not be assigning a θ-role).

I now turn to a deduction of (34), a restatement of (30) made possible by the approach to phases where the highest projection in thematic/non-thematic domains functions as a phase.

3.2. Deducing the Complex XP Constraint: Only phrases can be phases

As discussed above, all the examples that instantiate (30) involve the context from (31), repeated here as (35), a configuration where a phasal head takes a phase as its complement (e.g. [NP]_{CP} in (2); [NP]_{DP} in (9); [VP]_{CP} in (24)). In light of this, (30) can be restated as in (34), repeated here as (36).

(35) [XP=Phase [YP=Phase]]

(36) The Phase-over-Phase Constraint

Extraction is banned from phases that function as complements of phasal heads (i.e. the double-phase configuration from (35)).

We are now ready to turn to the deduction of the locality effect in question. In what follows, I will adopt the phase-based approach to the cycle, where cyclicity is defined on phases. In this approach to the cycle, movement need not target the top of the structure as long as it does not return to lower phasal domains. The standard assumption that spell-out proceeds cyclically, with complements of phasal heads being sent to spell-out, in fact imposes natural cyclicity: when something is spelled out its cycle is “left behind”, hence nothing can be moved within it or from it.

In a contextual phasehood approach, and the approach to phasehood argued for here is contextual, (at least in some cases) whether XP is a phase or not can be determined only after it is embedded into larger syntactic structure, since context determines phasehood. More precisely, the next merger determines the phasehood of XP. To illustrate, given that, as discussed above, the highest projection in the non-thematic/functional domain functions as a phase, if IP is merged with a non-thematic, purely functional head like C, IP will not be a phase, but if IP is merged with a lexical head like N, IP will be a phase (as the highest projection in the non-thematic/functional domain; see section 5 for empirical evidence to this effect).

To capture the next-merger property of phasehood in the contextual phasehood approach, I then adopt (37): in the Bare Phrase Structure system (see Chomsky 1995), X is a phrase if it no longer projects; X is then unambiguously a phrase only if it is merged with Y, with Y projecting.

(37) X is a phrase only if it is an unambiguous X^{\max} .

The underlying intuition here is that only phrases can be phases.¹³

I also make the natural assumption that X can be targeted by movement due to the need to undergo successive-cyclic movement without violating the PIC (see Chomsky 2000, 2001), which I will refer to as phasal edgehood, only if X is a phase (see Kang 2014 for evidence to this effect), which, given (37), means only after the first merger of X, i.e. after X is embedded in larger structure.

Consider now the derivation of (3) (*How_i did you think [that a dog bit John t_i]*) under the above assumptions, starting at the point when the embedded clause is built.

- (38) a. [CP [IP..... how]] *How* cannot move to SpecCP since CP is still not a phase.
 b. V [CP [IP how]] *How* can now move to SpecCP.
 c. v [VP [CP how [IP]]] IP is spelled out.

¹³ I assume that (37) always applies, regardless of whether or not a particular instance of phasehood is affected by context.

How cannot move to SpecCP at the point when the embedded C is merged into the structure (38a). Since we would be dealing here with movement driven by phasal edgedhood, the movement cannot take place until C is merged with another element which then projects; only at that point CP becomes a phase.

After V is merged into the structure, with V projecting, the projection of C becomes a phase hence can be targeted by movement of *how*, driven by phasal edgedhood (38b). Given phase-based cyclicity, there is no violation of the cycle here.

Following Chomsky (2001), I assume that insertion of a higher phasal head triggers spell-out of the complement of the lower phasal head.¹⁴ More precisely, as argued in Bošković (2014), I assume that spell-out takes place as soon as the higher phasal head is introduced into the structure. This means that the merger of *v* in (38c) triggers immediate spell-out of the IP (in other words, it starts a new cycle). Since *how* is outside of the spelled-out unit, it is available for later movement.

Consider now the derivation of (2) (**How_i did you hear rumors [that John bought a house t_i]*), an instance of a CNPC violation.

- (39) a. [CP [IP..... *how*]] *How* cannot move to SpecCP since CP is still not a phase.
 b. N [CP [IP *how*]] IP is spelled out.
 c. N [CP [IP *how*]] *How* cannot move since it is contained in a spelled out domain.

As in the case of (3), *how* cannot move to SpecCP right after C is merged into the structure in (2) (step (39a)). However, merger of the next head has a very different effect in (2) than in (3). Since the next head to be merged in (2) is a phasal head, it immediately triggers spell-out of IP (39b). Since *how* is contained within a spelled-out unit, it is then no longer available for movement (39c), hence the ungrammaticality of (2).

Under the analysis presented above, movement to the edge of a phase which is driven by the need to undergo successive-cyclic movement without violating the PIC (i.e. phasal edgedhood) is delayed until after the phrase to be targeted by the movement, call it X, is merged (i.e. embedded) into the structure. Since merger of a phasal head triggers immediate spell-out for the lower phase, movement from X is then possible only if X is merged with a non-phasal head (i.e. if the embedding of X involves merger with a non-phasal head). If X is merged with a phasal head, spell-out will take place before the relevant element, call it Y, moves to the edge of X, as a result of which Y will not be available for movement outside of X.

Wh can then move out of the CP in (40) only in the absence of Y (the bolded elements are phasal heads in (40)).

- (40) **H** L (**Y**) [CP **C** [IP **wh**]]

Extraction is thus banned in a phase-over-phase configuration. In other words, we have just deduced the Phase-over-Phase Constraint from (34) and the Generalized XP Constraint from (30) on which (34) was based. We will actually see below that there are some exceptional cases where (30)/(34) do not appear to hold. However, we will also see below that the above deduction of (30)/(34) does leave room to accommodate those exceptional cases; what is important for our purposes right now is that, as the reader can verify, all the ungrammatical cases that have motivated positing (30)/(34) in section 2 can be ruled out by the approach to phases argued for here.

3.3. Phase complement movement and P-stranding

¹⁴ Note here that, assuming that whether or not an external θ -role is to be assigned is indicated in the θ -grid of the verb (even when it is assigned in SpecvP; see in this respect Sawada 2015), phasal heads in the thematic/lexical domain can be determined locally (phasal heads being N, ergative V, A, P, and v), based on the θ -grid (only a V with an external θ -role does not close the thematic domain with its projection, which means only a V with an external θ -role is not a phasal head).

We are now in the position to understand why P-stranding does not matter in the contrast between (6)/(4) vs (7)/(5), more precisely, to understand why (6) is grammatical in spite of the Generalized Complex NP Constraint from (12). I will first show that another construction raises a similar issue as (6) and then offer a unified account for that construction and (6).

Recall that, putting aside non-ergative verbs, extraction is not possible from the complement of a lexical head. The complement itself can however move (unless factors independent of those considered here interfere, as in the attempt to move the CP complement of a noun; see Stowell 1981 and Bošković 1995). Thus, while movement from the nominal complement in Greek (9) is not possible, movement of the complement itself, as in (8), is possible.¹⁵

Consider then the case where the complement of a noun moves, as in (4), (8), and (10). The relevant configuration is shown abstractly in (41), where K is the complement of N. NP and DP are phases in (41) under the current approach to phases. A number of authors have argued that there is additional structure between NP and DP, hence the presence of XP in (41) (the exact labels and the number of projections in this domain do not matter here, hence I simply use XP).

(41) $[_{DP} D [_{XP} X [_{NP} N K]]]$

When X is merged into the structure (which activates NP for phasal edgehood movement), K needs to move to a position where it will be available for movement outside of the NP phase, i.e. it needs to move to the NP edge, given the PIC. K can move to SpecNP. In SpecNP, K is accessible to D, hence it can later move to the DP edge and then outside of the DP.

(42) ... $[_{DP} K D [_{XP} X [_{NP} t_k N t_k]]]$

A number of authors have, however, argued that movement from the complement to the Spec position of the same phrase is not possible (the ban on movement that is too short, often referred to as antilocality; for relevant discussion, see Bošković 1994, 2013a, Saito and Murasugi 1999, Abels 2003, Grohmann 2003, Ticio 2003, Boeckx 2005, among others). If this is indeed the case, the derivation just sketched is not an option (see, however, Chomsky 2015, who crucially argues that such movement is allowed). There is, however, an alternative account which does not require movement from the complement to the Spec of NP. The account allows extraction of the complement of the lower phase in a double-phase configuration; however, it still bans extraction out of the complement. As a result, the account extends to the P-stranding case in (6), which also involves extraction of the lower phase complement in a phase-over-phase configuration.

I will first discuss the account with respect to extraction of the nominal complement, i.e. (41). The account is based on a new conception of the Phase-Impenetrability Condition (PIC), also adopted in the alternative analyses of the Complex XP Constraint in Bošković (2015a,b): While for Chomsky (2000, 2001), only the Spec/adjunct of phase KP and its head K are accessible for operations outside of KP, I suggest that Spec/adjunct, head K as well as the complement of K are

¹⁵ Note that (8) involves movement of a phasal head complement. In fact, a number of examples discussed above involve movement of the complement of a phasal head (e.g. (4), (8), (10), (14a), (18a); in fact the same holds even for simple cases like *John_i arrived t_i*). The current discussion then indicates that such movement is in principle possible, contra Abels (2003), who argues that it is not. I will discuss the derivation of examples like (8) directly below. For discussion of Abels's claim in this respect, see Bošković (2015a); I merely note here that the issue with most Abels's examples is that the element that undergoes movement is not a phase itself; such examples are then independently ruled out if only phases can undergo movement, as argued in Chomsky (2000, 2001), Rackowski and Richards (2005), Matushansky (2005), Cheng (2012), Harwood (2014), and Bošković (2015c), among others. This is for example the case with (i), where the IP complement of C is not a phase itself. Note in this respect that the problem in question does not arise in the acceptable examples of phasal complement movement noted in this footnote; in all these cases the moved element is a phase.

(i) * $[_{IP}$ Everyone likes Bill]_i; John thinks that t_i.

accessible for operations outside of KP. Nothing within the complement is, however, accessible outside of KP. In other words, I assume the following:

(43) The Phase-Impenetrability Condition

In a phase α with head H, only the immediate domain of H is accessible to operations outside α , where K is in the immediate domain of H if the first node that dominates K is a projection/segment of H.

Since the first node that dominates SpecHP, HP-adjuncts, H-adjuncts, H, and the complement of H is a projection of H, these positions, but nothing else, are accessible to operations outside of HP if HP is a phase. I assume that what is sent to spell-out is the first phrase that is merged with H, i.e. the lowest phrase in the immediate domain of H that is not a projection of H (or simply the complement of H).

This conception of the PIC actually fits more naturally with multiple spell-out than Chomsky's and in fact follows Uriagereka's (1999) original conception of multiple spell-out. Uriagereka (see also Nunes and Uriagereka 2000) argues that when a phrase is sent to spell-out, nothing within that phrase is available for further syntactic operations but the phrase itself is available. In Uriagereka's terms, sending X to spell-out, which results in establishing word order within X, turns X essentially into a compound/lexical item whose internal structure is inaccessible to the syntax. X itself is, however, accessible to the syntax. In his conception of the PIC, Chomsky departed from this aspect of Uriagereka's original proposal. The suggestion made here is to return to it.¹⁶

A side-effect of this approach to the PIC is that it captures Hiraiwa's (2005) claim that what is located at the edge of the edge of phase HP is not at the edge of HP for the purpose of the PIC. Thus, based on a number of cases, Hiraiwa argues that in (44), what is located in SpecXP or adjoined to XP is not located at the edge of HP, i.e. it is not accessible to operations outside of HP. This in fact follows from (44) since the first node that dominates the positions in question is not a projection of H.

(44) [_{HP} XP [_{H'} H ...]]

If we put aside (44)/Hiraiwa's claim, as noted in footnote 16, under the current proposal, the PIC (i.e. (43)) is actually not needed as an independent principle in the syntax. The assumption that the internal structure of what is sent to spell-out is inaccessible to the syntax is in fact enough, there is no need to adopt any other assumptions regarding accessibility domains within syntax beyond that. While in what follows I will still use the term PIC for ease of exposition, the reader should bear this in mind.

Returning to the configuration in (41), under (43) D can attract K in (41) even after the complement of N is sent to spell-out. In other words, under Uriagereka's original conception of spell-out (and dispensing with the PIC in the syntax), while nothing within K, which is sent to spell-out, is accessible to D, K itself is accessible to D. As a result, there is no need for K to move to SpecNP prior to moving to the edge of DP (such movement can then be assumed to be banned by antilocality). I emphasize here that while under the above approach to the PIC/spell-out, K is accessible to D, nothing within K is accessible to D. As a result, nothing changes in the previous discussion of the cases that have motivated positing (34).

The analysis also extends to the P-stranding case, without needing to make a recourse to a reanalysis/pruning-style operation for P-stranding (see Bošković 2015a for discussion of that operation). Consider the structure of (6) in (45).

¹⁶ Actually, under this conception of the PIC we do not even need the PIC as an independent principle. The assumption that the internal structure of what is sent to spell-out is inaccessible to the syntax is in fact enough.

(45) Who_i did you see $[_{DP} t_i [_{XP} [_{NP} t_i \text{ friends } [_{PP} \text{ of } t_i]]]]?$

Merger of N triggers the spell-out of the complement of the preposition (PP being a phase), which is the wh-phrase. However, the wh-phrase itself is still accessible to the higher phasal head, namely N. After X enters the structure, NP is activated for phasal edgehood movement; the wh-phrase then moves to SpecNP. D will induce the spell-out of the PP (PP being a phasal complement), but the wh-phrase will still be available for movement outside of the NP.

Note that (46) is still ruled out: when the higher *of* is merged in (46), the complement of the D phasal head is sent to spell-out. Since this happens before the wh-phrase moves to the edge of the DP phase, the wh-phrase cannot move out of this spell-out domain.

(46) $?*\text{Who}_i$ did you see enemies $[_{PP} \text{ of } [_{DP} [_{XP} [_{NP} t_i \text{ friends } [_{PP} \text{ of } t_i]]]]]]?$

In light of the above discussion, (34) then needs to be modified. We have seen that the system argued for here deduces a slightly weaker version of (34), which is empirically more adequate than (34): in a configuration where a phasal head takes a phase as its complement, extraction is banned from the complement of the lower phasal head, but the complement itself can move. I therefore modify (34) as follows, also upgrading the relevant constraint to a theorem, to reflect its deduction.

(47) The Phase-over-Phase Theorem

In a double-phase configuration, extraction is banned from the complement of the lower phase.

An important remark is in order at this point though. As noted in footnote 3, Bošković (2015a) and Bošković (2015b) present alternative accounts of the Generalized Complex XP Constraint. The account presented in this paper adopts the same approach to phases as the accounts presented in Bošković (2015a,b); still, theoretically it is rather different from the accounts presented in Bošković (2015a,b). The account presented in Bošković (2015a) crucially relies on a treatment of successive-cyclic movement where successive-cyclic movement involves either creation of unlabeled projections or adjunction (thus, movement targetting the embedded CP in (3) involves either creation of an unlabeled object or adjunction to the embedded CP); antilocality also plays an important role in the account presented in Bošković (2015a). This is not the case with the analysis presented here. Successive-cyclic movement can proceed via SpecCP and antilocality was not needed in the analysis presented above. Also, the analysis presented in Bošković (2015b) is rather different from the analysis presented here in that the analysis presented in Bošković (2015b) crucially relies on the assumption that what is sent to spell-out is the phase itself, not the complement of a phasal head, while the analysis presented here adopts phasal head complement spell-out.

However, it should be pointed out that the analysis presented here differs from Bošković (2015a,b) in one empirical respect. Under the analysis of extraction from double-phase configurations presented here, extraction from the lower phase in a double-phase configuration is actually not banned for elements that are base-generated at the edge of the lower phase, like K in (48) (where XP and YP are phases).¹⁷

(48) $[_{XP} [_{X'} [_{YP} K [_{YP/Y'}]]]]$

In all the unacceptable cases of extraction out of double-phase configurations discussed above, the problem arose with movement to the edge of the lower phase (hence only for elements base-generated within the complement of the lower phase) because the merger of the higher phasal head

¹⁷ The analysis given in Bošković (2015b) blocks such extraction; the account developed in Bošković (2015a) blocks it for YP-adjuncts, but not necessarily for all YP-Specs.

was making that movement impossible. Since the movement to the edge of the lower phase was blocked, movement out of the lower phase was blocked too, the former being a prerequisite for the latter. No problem (at least not with respect to the locality issues discussed here) would then arise if the extracted element is base-generated at the edge of the lower phase--merger of the higher phasal head would have no effect on it; it would still be accessible for movement to a higher position.

Bošković (2015a,b) does present several unacceptable cases that are analyzed as involving the configuration where the extracted element is base-generated at the edge of the lower phase, as in the following examples involving *combien*-extraction in French, taken from Bošković (2015b). (49)-(50) show that simple *combien*-extraction, where the DP from which *combien*-extraction takes place is a verbal complement, is allowed (49), while deep *combien*-extraction, where the relevant DP is a complement of a noun, is not (50).

- (49) *Combien_i a-t-il consulté [DP t_i de livres]?*
 how-many has-he consulted of books
- (50) *?*Combien_i a-t-il consulté [DP (plusieurs/des) préfaces [DP t_i de livres]]*
 how-many has-he consulted several/some prefaces of books
 ‘How many books did he consult several/some prefaces of?’

If examples like (50) (and other cases of this sort from Bošković 2015a,b) are to be analyzed as involving the same kind of locality effect as the ones discussed earlier in section 3.2.,¹⁸ *combien* would not be generated at the edge of the DP; it would be generated in a lower position (i.e. within the complement of D) and move to SpecDP in constructions where it undergoes movement out of the DP. The above discussion would then straightforwardly extend to this case.

Alternatively, if *combien* is generated in SpecDP, antilocality could be appealed to; in fact, (50) would be ruled out by antilocality in the current system if Erlewine's (in press) approach to antilocality, where A'-movement from SpecXP must cross a phrase other than XP to satisfy antilocality, is adopted; or we could assume that *combien* is generated adjoined to DP, with antilocality requiring that movement crosses a full phrase, not just a segment (see Bošković 2013a; note, however, that, in contrast to Bošković (2015a), where antilocality plays a major role in the deduction of the Complex XP Constraint, the account presented above did not otherwise need to appeal to antilocality).

At any rate, I leave examining in more detail the configuration in question for future research. What is important to note here is that, as long as nothing else is interfering, the current analysis bans successive-cyclic movement through the lower phase in a double-phase configuration; it does not ban all extraction from the lower phase. This will actually be taken advantage of in section 5, where another acceptable case of movement from the lower phase will be presented; that section will also sharpen the relevant notion of successive-cyclic movement.¹⁹

¹⁸ To determine whether this should be done (i.e. whether we are dealing with the same effect here), it may be worth checking *combien*-extraction with ergative verbs. The situation is, however, not completely clear here. There is some locality effect, but it is quite weak, as illustrated by the following examples provided by Amélie Rocquet (p.c.) (the same holds for the inversion strategy for wh-questions; note that the degradation is slightly stronger with the passive counterpart of (i), see here footnote 9).

- (i) *Combien_i il a consulté [DP t_i de livres]?*
 how-many he has consulted of books
 ‘He consulted how many books?’
- (ii) *?Combien_i il est arrivé [DP t_i de livres]?*
 how-many there is arrived of books
 ‘There arrived how many books?’

¹⁹The case in question will actually involve movement from the complement of the lower phase in a double-phase configuration, which will, however, be shown to be allowed in that particular context under the current deduction of (47) (see in this respect footnote 29; for ease of exposition, below I will put aside the exceptional context in question unless it is directly relevant and will keep referring to (47)).

4. Phase collapsing

Bošković (2015a) observes one context in which the CNPC effect is voided, involving what is referred to as phase collapsing in that work. In this section I discuss one relevant case of this type, showing that the current analysis can also capture the phase-collapsing effect.

A number of Bantu languages do not display Complex NP Constraint effects, as illustrated by the Setswana example in (51), taken from Bošković (2015a).

- (51) Ke m-ang yo o utlw-ile-ng ma-gatwe a gore ntša e lom-ile?
it C1-who C1Rel 2sgSM hear-Perf-Rel C6-rumor C6SM that C9-dog C9SM bite-Perf
'Who did you hear rumors that a dog bit?'

As in other Bantu languages, in Setswana the noun always precedes all other NP-elements, which is analyzed in terms of N-to-D movement (see Carstens 2010 on the N-to-D analysis of the N-initial word order in Bantu). I argue that this is what is responsible for the lack of the Complex NP Constraint effect in Setswana.

Consider the configuration in (52), where X and Y are phasal heads.

- (52) [_{XP} Y_i+X [_{YP} t_i K]]

Bošković (2015a) proposes that in the case of a complex phase, i.e. a phasal projection that is headed by two phasal heads (due to the head-movement of the lower phasal head to the higher phasal head), we are dealing with phase collapsing, i.e. the two phases are collapsed into one. Since we are dealing with one phase in such contexts (YP not being a phase), this means that the complement of Y is not sent to spell-out in (52) (note that I assume that there is a feature on Y and X which drives the movement in question; this feature indicates that the phasehood of YP will be voided hence K is not sent to spell-out when Y enters the structure).²⁰

The exceptional behavior of Setswana with respect to the Complex NP Constraint can be captured under phase collapsing given that Setswana has N-to-D movement, as indicated by the N-initial nature of DPs in Setswana. As a result of N-to-D movement, the object DP in (51) is a complex phasal domain, headed by two phasal heads, D and N. (I assume that XP from the earlier discussion of English is either not present in Setswana, or it is present, with X undergoing movement to D and N moving to the X+D head.)²¹ Since we are dealing here with one phase, the NP is not a phase, hence it does not induce spell-out. This means that the N does not cause spell-out for its CP complement, hence wh-movement out of the CP is possible. Since the first phasal head above the embedded CP in (51) is D, the complement of the CP will not be sent to spell-out before D is merged. Given that there is at least one non-phase between CP and DP (NP; as noted above, XP may also be present in this domain), the wh-phrase can move to the edge of the CP phase before D enters the structure, i.e. before the spell-out of the C-complement. The wh-phrase is then available for movement to SpecDP.

Bošković (2015a) discusses a number of other cases of phase collapsing. All of them can be captured by the contextual phasehood analysis argued for here. As an illustration, consider one such case from Galician.

²⁰ While phase collapsing is somewhat similar to phase sliding/extension (see den Dikken 2007, Gallego and Uriagereka 2007, Wurmbrand 2013a), where head movement extends the phase to the next projection, it is actually a much more constrained mechanism (note that it arises only when a phasal head moves to a phasal head) with very different empirical effects; see Bošković (2015a) for a comparison.

²¹ Note that Bošković (2015a) assumes that in the phase-collapsing configuration, the moved phase head must be a sister to a segment of the higher phase head.

Galician has a rather interesting phenomenon of D-to-V incorporation which, as demonstrated in Uriagereka (1988, 1996) and Bošković (2013b), voids islandhood effects. As an illustration of the island-voiding effect of D-to-V incorporation, consider the specificity effect. Like English, Galician disallows movement from definite NPs, as in (53a). However, the violation is voided when the head of the DP incorporates into the verb, as (53b) shows.²²

- (53) a. *e de quén_i viche o retrato t_i?
 and of who saw(you) the portrait
 b. e de quén_j viche-lo_i [DP [D' t_i [NP retrato t_j]]]?
 and of whom saw(you)-the portrait
 'so, who have you seen the portrait of?' (Uriagereka 1988)

Regarding (53a), a definite DP island effect, I simply assume that a definite D cannot work as an attractor (i.e. movement to SpecDP is not possible here), whatever the reason for that is. Since the wh-phrase then cannot move to the edge of DP, it is not available for movement out of the DP, given the PIC.

Consider now (53b). As a result of D-movement, vP is a complex phasal domain, which means that DP does not function as a phase here. The merger of v causes the spell-out for the NP phase, i.e. it triggers the spell-out of the N-complement. However, given the above approach to spell-out/the PIC, v can still attract the complement of N (even if we assume that the complement cannot move to SpecNP). The analysis thus unifies the contrast in (53) with the lack of the CNPC effect in Setswana (51).²³ The other cases of phase collapsing discussed in Bošković (2015a) can also be captured under the approach to phases argued for here.

5. Infinitives

I now turn to infinitives, which raise a number of interesting issues.

Consider first control infinitives.²⁴ Adjunct extraction is banned from non-verbal control infinitival complements, as illustrated by (54).

- (54) a. *How did he witness an [NP attempt [to fix the car t]]?
 b. *How is John [AP able [to fix the car t]]?
 c. *How is it [AP/NP possible/time [to fix the car t]]?

Such cases instantiate the general pattern of the Complex XP Constraint/Phase-over-Phase configuration and can be accounted for in the same way as other such cases discussed above.

It is standardly assumed that control infinitives are phases. Then, *how* has to move to the edge of the infinitive to be able to move out of it. However, since the head merged with the infinitive in (55), which gives the structure of (54a-b), is a phasal head, the complement of Inf is sent to spell-out before the wh-phrase is able to move to the edge of the infinitive. (InfP is used for ease of exposition, it stands for whatever the category of the infinitive is; see Wurmbrand 2014 for relevant discussion.)

²² Note that I assume that V moves to v, and D incorporates into the V+v head. Since traces do not count as interveners (see Chomsky 1995; see also Bošković 2011 for an account of the generalization), there is no locality violation here.

²³ As noted in Bošković (2015a), D-incorporation does not rescue CNPC violations in Galician, which is expected: what is responsible for the CNPC effect is the phasehood of NP, which is not affected by D-incorporation.

²⁴ Since some islands are completely weakened with argument extraction out of infinitives (this is e.g. the case with wh-islands; for most speakers of English argument extraction out of wh-infinitives is fully acceptable, while adjunct extraction is disallowed even from infinitival wh-islands), in what follows I will focus on adjunct extraction (for another interfering factor that arises with argument but not adjunct extraction out of infinitives which is related to phase collapsing, see Bošković 2015a).

- (55) a. *How_i did he witness an [_{NP} attempt [_{InfP} to fix the car t_i]]
 b. *How_i is John [_{AP} able [_{InfP} to fix the car t_i]]

Consider now raising infinitives. Li (2003) observes that, in contrast to examples like (54), adjunct extraction is allowed out of raising infinitives, i.e. *how* can modify the infinitive in (56).

- (56) How is John likely [to fix the car t]?

This is expected in Chomsky's (2000) phasal system, where control infinitives are phases, but raising infinitives are not, the reason for this difference being that control infinitives are CPs while raising infinitives are IPs, and only CPs are phases. *How* can then move from the infinitive in (56). However, in Bošković (2014), where the highest clausal projection is a phase, the infinitive in both (54) and (56) is a phase regardless of whether it is IP or CP (for relevant discussion, see here Wurmbrand 2013b, 2014). At first sight, (56) seems to favor Chomsky's position. However, a closer scrutiny reveals that adjunct extraction from raising infinitives is impossible.

A number of authors have argued that traditional raising infinitives are actually ambiguous between the raising and the control option (see, e.g. Lasnik & Saito 1992, Martin 2001). There are several ways to disambiguate such infinitives, the most straightforward one being to use expletive *there*: since expletive *there* cannot function as a controller it is incompatible with the control option. Surprisingly, such disambiguation affects extraction. Thus, the embedded reading of *how* is not available in (57) (i.e. it is much more difficult to get it in (57) than in (56); the grammaticality judgments are indicated only for the embedded clause reading of the adjunct in (57)-(58)).

- (57) a. *How_i is there likely [to arrive someone t_i tomorrow]?
 b. *How_i does there seem [to have arrived someone t_i]?

Idiom chunks behave like expletives in this respect: the embedded-clause reading is not available in (58).²⁵

- (58) *How_i is the hatchet likely [to be buried t_i]/advantage likely [to be taken of Mary t_i]?

Consider also the scopal interaction in the examples in (59)-(61).

- (59) Some senator is likely to lie to every member of his committee.
 (60) Some senator tried to lie to every member of his committee.
 (61) How_i is some senator likely [to lie to every member of his committee t_i]?

(59) is ambiguous but (60) is not: the subject must take wide scope in (60) (i.e. in contrast to (59), the embedded clause object cannot take wide scope in (60)). (59)-(60) illustrate the well-known raising/control difference regarding scope (see May 1985). Significantly, the subject must take wide scope in (61), where *how* is extracted from the embedded clause (the low scope reading of the subject is more difficult to get in (61) than in (59) on the embedded clause reading of *how*), which confirms that adjunct extraction forces the control option.

These facts all follow if the highest clausal projection is a phase regardless of its category. This makes both control and raising infinitives phases. Martin (2001) argues that *seem* assigns subject θ -role on the control option (see Martin 2001 for discussion of the nature of this θ -role).

²⁵It should be noted here that since there are verbs that disallow expletive subjects and scope ambiguities from (59) but still allow idiom chunks as subjects (see e.g. Zubizarreta 1983, Rochette 1988), idiom chunks are not a fully reliable diagnostic of raising.

There is then a vP above VP on the control option, as in (62). No problem regarding extraction arises here. On the other hand, on the raising option, external θ -role is not assigned. This means that (θ -marking) vP is not present, hence adjunct extraction is disallowed, (63) involving a phase-over-phase configuration (with phases given in boldface).²⁶

(62) How_i did John [**vP** [**VP** seem [**Infinitive** PRO to have hit Bill t_i]]]?

(63) *How_i does there [**vP** seem [**Infinitive** to have arrived someone t_i]]?

Note that these facts confirm the existence of the Generalized Complex VP Constraint which holds only for the contexts where the verb does not assign the external θ -role.

An important question now arises regarding the subject of constructions involving ambiguous raising/control predicates like *seem* and *likely*. Given that predicates like *likely* and *seem* are ambiguous between control and raising, it appears that the simplest situation when it comes to subjects would be that such predicates are always control predicates when they have a non-lexical subject (which means such subjects would not be moving from the infinitive), and raising predicates when they have an expletive subject; there would then be no ambiguous constructions, each *likely/seem* construction would be unambiguously raising or control. This, however, will not work because of examples like (59), which contrasts with (60) in that the embedded clause quantifier can take wide scope. The raising option, which allows scopal reconstruction of the subject, must then be available here. This is confirmed by idiom chunk examples like (58), where the matrix subject should be generated in, hence moving from, the embedded clause, while the adjunct is not allowed to move from inside the infinitive, as discussed above. In contrast to A'-movement, A-movement of the subject is apparently possible out of raising infinitives. This presents us with a rather interesting situation, since A-movement is normally more local than A'-movement.²⁷

How can we then account for the fact that subjects can move out of raising infinitives, although A'-movement out of such infinitives is not possible? This can actually be done rather straightforwardly. Let us adopt the standard assumptions that raising infinitives are TPs, with the predicates taking such infinitives as complements lacking thematic vP/aP.²⁸ As the highest projection in the infinitival clause, this TP will be a phase. I also adopt Chomsky's (2000) assumption (but see Bošković 2007) that the infinitival head undergoes Agree with the infinitival subject which is followed by movement of the subject to the infinitival SpecTP, motivated by the EPP property of the infinitive. What is important here is that when it comes to subjects, movement to the edge of the infinitive is not driven by the need to undergo successive-cyclic movement without violating the PIC, which I have referred to above as the phasal edgehood property. Subject movement to the edge of the infinitive is independent of phasal edgehood. Now, above I have suggested that only unambiguous phrases can be phases, which means that XP functions as a phase only after it is merged with another element, with that other element projecting. Due to its nature, phasal edgehood can drive movement only after XP becomes a phase, i.e. after the embedding of XP. This is, however, not the case with subject movement to the Spec of the infinitive; this movement is driven independently by a formal property of the infinitival head which has nothing to

²⁶The analysis can be extended to *likely*, *likely* being verbalized on the control option with the external θ -role assigned in a separate thematic projection on a par with verbs (see Bošković 2015a).

²⁷ On object A'-movement out of such infinitives, see Bošković (2015a). As noted there, while the situation is less clear in the case of objects (especially given the general infinitival island-weakening effect, see footnote 24), they seem to pattern with adjuncts, modulo the difference in the strength of the violation. For alternative accounts of the A/A'-movement contrast with respect to extraction out of raising infinitives, see Bošković (2015a), who suggests two accounts, one based on feature sharing between the infinitival subject and T and one involving phase-collapsing, and Bošković (2015b), who suggests an account based on the presence of a dummy linker-like projection between the raising AP/VP and the infinitive.

²⁸ There is plenty of evidence that there is more than one functional projection in the inflectional domain (see for example Bošković 2015a and references therein); I also assume this to be the case. What I am referring to here as TP is the highest functional projection in this domain (I will in fact interchangeably use the terms TP and IP below).

do with phasal edgehood or the status of the infinitive as a phase. As a result, the subject can move to the Spec of the infinitive before the infinitive is embedded into other structure. This means that when V/A is merged with the infinitive, which leads to the immediate spell-out of the complement of the infinitival head, the subject is located at the edge of the infinitive hence is available for further movement. This is, however, not the case with adjuncts (i.e. A'-movement). Movement of adjuncts to the edge of the infinitive can only be driven by phasal edgehood. However, phasal edgehood cannot drive movement before further embedding of the infinitive. Since in this particular case the embedding immediately triggers spell-out within the infinitive, adjuncts (i.e. a phrase that contains them) are sent to spell-out before they get a chance to move to the edge of the infinitive. The exceptional behavior of subjects in raising contexts is thus captured.²⁹

The above discussion also resolves a potential issue that could arise in matrix clauses, for example with respect to the timing of *wh*-movement in (64).

(64) *What_i did [_{IP} John buy t_i]?

If movement of *what* in (64) were driven by phasal edgehood, CP could not be the highest projection in (64); rather it would have to be embedded in phonologically null structure, so that it could drive movement of *what* via phasal edgehood. Given the above discussion of infinitives, this is not necessary. *Wh*-movement of *what* in (64) is independent of phasal edgehood, it is driven by essentially the same considerations as the movement of the subject to the Spec of the infinitive (a strong +*wh*-feature of C in Chomsky's 1993 terms in this case), hence it can occur as soon as the C is merged into the structure.³⁰

6. Another phase-over-phase configuration: Phase as a Spec of a phase

The discussion above has focused on the context where a phasal head takes a phase as its complement, given in (65).

(65) [_{XP} [_{X'} [_{YP} ...]]]

In this section I will briefly explore the consequences of the current proposals for another context where the first maximal projection that dominates a phase is also a phase, namely, the configuration where a phase is the Spec of a phasal projection, a configuration that under standard assumptions in fact arises quite often. The question to be addressed is what consequences the proposals made here have for extraction out of YP in (66), where both XP and YP are phases.

(66) [_{XP} [_{YP} ...] [_{X'}]]

Recall that what is at the heart of the current account of (47) is the precise timing of spell-out: Complement of phase X is sent to spell-out when the next phasal head is merged into the structure. In (66), the first merger of YP is not a merger with a head at all, as in all other cases discussed above; it is a merger with another phrase, i.e. a projection of a head. If we take the above assumption that spell-out for phase XP is triggered by the merger of the next phasal head literally, then merger of the next phasal head but not merger of a projection of a phasal head will trigger

²⁹ Note that the above account of raising takes advantage of the fact that the proposed deduction of (47) does leave very narrow room for extraction to take place out of the complement of the lower phase in a double-phase configuration. (For ease of exposition I will, however, keep referring to (47) below.)

³⁰ It is a standard assumption that independently of the usual assumptions regarding spell-out domains, where only phasal complements are sent to spell-out, matrix clauses, which are phases, are sent to spell-out. However this is to be implemented it should be extendable to the current system (see, however, Bošković 2015b for an account where this assumption can be dispensed with).

spell-out. This means that the merger of YP with X' (actually XP at the point of merger) will not trigger spell-out for phase YP. As a result, all else being equal, movement out of YP should be possible;³¹ more precisely, nothing proposed above would rule it out. Merger of YP into the structure will activate YP for phasal edgehood movement. Movement to the edge of YP will then take place before another phasal head enters the structure, triggering spell-out for phase YP. On the other hand, if even merger with a projection of a phasal head triggers spell-out, YP in (66) will be impervious to extraction (for elements located within its complement) for the same reason a phase that functions as a phasal complement is. In this scenario, in a configuration where the first maximal projection that dominates a phase is a phase, regardless of whether the dominated phase is the complement or the Spec of the dominating phase, extraction will be possible only for the immediate constituents of the dominated phase, i.e. its Spec and its complement. The upshot of this is that the current analysis does not make a clear prediction regarding extraction from phase YP in (66); the extraction can be (in principle) allowed or disallowed.

It would be way beyond the scope of this paper to determine whether extraction in the context in question is indeed possible--extraction out of Specs is a notoriously murky issue, affected by many factors that are independent of those considered in this paper (i.e. the main proposal in (37) and the question of the timing of spell-out discussed above). I merely note here one relevant case: extraction from a subject of a transitive (non-ergative) construction that is located in its base-generated position in SpecvP. Assuming that vP, the highest projection in the thematic domain, is a phase here, and that the subject is a DP, hence a phase, the context in question involves the configuration in (66), as should be obvious from (67).

(67) [_{VP} [_{DP} Subject] [_{V'}]]

The question is then whether extraction is possible out of the subject in the configuration in question. It is often assumed that it is; in this respect see for example the language survey in Stepanov (2001, 2007). As discussed above, this can be straightforwardly captured if only merger of the next phasal head (not merger with a projection of a phasal head) triggers spell-out. It should, however, be noted that the issue of extraction out of subjects located in SpecvP is not completely settled. Thus, Uriagereka (2012) claims that extraction is in fact disallowed in the context in question (and out of Specs more generally).

Somewhat related is the issue of extraction from extraposed clauses. Extraposed clauses exhibit varied behavior with respect to extraction. Some extraposed clauses disallow it, like (68) and (54c), which can be easily captured under the current analysis.

(68) *How_i is it possible [that John will fix the car t_i]?

However, at least for some speakers, some extraposed clauses do allow extraction, as in (69).³²

(69) How_i is it likely [_{CP} (that) John fixed the car t_i]?

³¹ However, it is not completely clear that everything else is equal. Thus, if correct, Hiraiwa's (2005) claim that the edge of the edge of a phase is not accessible from the outside, which is captured by the formulation of the PIC in (43), may make extraction from within the Spec of a phasal head independently impossible (though the PIC could be re-defined in such a way that this issue does not arise (i.e. without taking into consideration Hiraiwa's claim) but a phasal complement is still accessible from the outside). However, the issue in question would not arise if, as suggested above, all we have is the assumption that the internal structure of what is sent to spell-out is inaccessible in the syntax, the PIC being eliminated.

³² Subject extraction is still disallowed, as in *who_i is it likely t_i fixed the car; see Bošković (2015a, in press) for alternative accounts of this fact.

Bošković (2015a) explores two alternative accounts of examples like (69), which can be adjusted to the current system. Extraposed CPs have been argued to be Specs/adjuncts (see e.g. Reinhart 1980, Stowell 1981, Bošković 2002). Assume that this is indeed the case for the extraposed clauses in question, i.e. for those that allow extraction.³³ If only merger of the next phasal head, not merger of a projection of a phasal head, triggers spell-out, since the extraposed clauses in question are merged with a projection of A/V, not with A/V, their merger into the structure will not trigger spell-out for the CP phase; i.e. the IP complement of the extraposed CP phase will not be sent to spell-out upon the merger of the extraposed CP into the structure. *How* can then move to the SpecCP of the extraposed clause in (69) before the IP of the extraposed clause is sent to spell-out. After the next phasal head, namely matrix C, is introduced into the structure, the IP of the extraposed CP will be sent to spell-out but *how* will still be available for movement outside of the extraposed CP.

However, Bošković (2015a) also gives an alternative analysis of (69) which has no bearing on the issue of whether merger with a projection of a phasal head triggers spell-out. Under that analysis, which also assumes that what is behind the varied behavior of extraposed clauses with respect to extraction is whether the expletive is generated within or outside of AP/VP (see footnote 33), following the line of research in Moro (1997), Hornstein and Witkoś (2003), and Sabel (2000), expletives that are generated AP/VP-internally, which is the case with (69), form a constituent with its associate clause. In particular, the two are generated within a dummy linker-like projection FP, as the Spec and the complement of that non-phasal projection.³⁴ Under the current analysis, the merger of the CP with F will activate the CP for phasal edgehood movement so that the *wh*-phrase can move to the edge of the CP before the adjective is merged into the structure, triggering spell-out for the CP phase.

7. Conclusion

Taking as the starting point the well-known fact that extraction from Complex NPs is banned while extraction from Complex VPs is allowed, we have seen that the former represents a pervasive pattern found in many contexts, while the latter is highly exceptional. Thus, not only clausal but all complements of nouns are resistant to extraction. Furthermore, adjectives, prepositions, and ergative verbs pattern with nouns—their complements are also resistant to extraction regardless of their categorial status. The only context where extraction from the complement of a lexical head is freely allowed involves non-ergative verbs. Adopting an approach to phases where the highest projection in the thematic domain of a lexical head as well as the highest projection in the non-thematic/functional domain function as phases, I have restated the ban on extraction from complements of lexical heads (the Complex XP Constraint) as a ban on extraction in double-phase configurations (where a phase head takes a phase as its complement), more precisely, as a ban on extraction from the complement of the lower phase head in a double-phase configuration, also proposing a deduction of the ban in question (and exploring some of its consequences).

In the spirit of contextual approaches to phasehood, where the phasal status of X is generally determined after X is embedded into larger structure, and the assumption that only phrases can

³³ If, as discussed in Bošković (2015a) and Zaring (1994), expletives can be generated either within AP/VP or outside of AP/VP, we can take generation of the expletive in the complement position of A/V to lead to the placement of the clause in the VP/AP-Spec/adjunct position. The varied behavior of extraposed clauses regarding extraction (some of them allow extraction (69), and some of them do not (68); see Bošković 2015a and references therein) can then be tied to whether or not the expletive is generated within AP/VP (it would be in (69) but not in (68)). Interestingly, in some languages (e.g. French and Dutch), this difference even has a morphological reflex, with the varied behavior of extraposed clauses regarding extraction being correlated with morphologically different expletives (see Bennis 1986, Bošković 2015a, Zaring 1994; under this analysis, English would also have two different types of expletives which would correlate with different extraction possibilities, they would just happen to have the same morphological realization in English, see Bošković 2015a).

³⁴ This may actually be den Dikken's (2006) RelatorP under Moro's (1997) expletive/CP-constituent analysis, where the expletive and the CP are generated as a small clause involving a predication relation.

function as phases, where under the Bare Phrase Structure framework the phrasal status of X can be unambiguously determined only after X is embedded into larger structure, I have argued that XP functions as a phase only after it is merged into the structure, with movement to the edge of XP driven by the need to undergo successive-cyclic movement without violating the PIC taking place after this merger. Since merger with a phasal head triggers immediate spell-out of the complement of the lower phasal head, movement from the complement of phase XP is possible only if the first head merged with XP is then not a phasal head. In Complex XP Constraint configurations, the first merged head is a phasal head, i.e. we are dealing here with a phase-over-phase configuration, which is recalcitrant to extraction. However, while the complement of the lower phasal head is recalcitrant to extraction in the configuration in question, the complement itself can be extracted, which was also shown to follow from the phasal system adopted here.

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