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Now I'm a phase, now I'm not a phase: On the variability of phases with extraction and ellipsis^{*}

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Abstract: Based on a number of cases where the status of X with respect to phasehood changes depending on the syntactic context in which X occurs the article argues for a contextual approach to phasehood where the highest phrase in the extended projection of all lexical categories, Ns, Ps, As, and Vs (passive and active), works as a phase. The relevant arguments concern extraction and ellipsis. Regarding ellipsis, it is argued that ellipsis is phase-constrained: only phases and complements of phasal heads can in principle undergo ellipsis. It is shown that A'-extraction out of an ellipsis site is possible only if the ellipsis site corresponds to a phasal complement. I also provide evidence for the existence of several AspectPs, all of which have morphological manifestation, in the VP domain of English which crucially affect the phasehood of this domain. The article provides a uniform account of a number of superficially very different constructions involving extraction and ellipsis from Serbo-Croatian, Japanese, Turkish, and English.

Keywords: phases, locality of movement, NP, ellipsis, aspect, P-stranding, numerals

1 Introduction

This article addresses the central question of the theory of phases: what counts as a phase. On Chomsky's (2000, 2001) approach to phasehood, phasehood is in a sense rigid: the phase status of a category does not depend on its syntactic context; thus CPs and vPs are always phases.¹ This goes counter to the spirit of the minimalist predecessor of phases, barriers (more precisely, blocking categories; barriers are predecessors of phases in the sense that both barriers and phases are crucially used in formulating opaque/non-opaque domains for extraction). In the barriers system (Chomsky 1986a), whether or not a particular category is a barrier depends on its syntactic context. Thus, CP is sometimes a barrier and sometimes it is not, depending on its syntactic context: If a CP is located in object position, it is not a barrier (more precisely, an inherent barrier); on the other hand, if a CP is located in subject position, or if it is an adjunct, it is a barrier. In other words, while phases are defined rigidly, barriers are defined contextually; that is, they are context sensitive (just like islandhood itself). A number of authors have recently argued that phasehood should also be defined contextually, that is, that the phase status of X can be affected by the syntactic context in which X is found (see e.g. Bobaljik and Wurmbrand 2005, Bošković 2005, den Dikken 2007, Despić 2011, Gallego and Uriagereka 2007a,b, M. Takahashi 2010, 2011 for various approaches that belong to this line of research; see also Müller 2011 for another approach to the locality of movement where the syntactic context may also matter). This article will argue for this approach to phasehood. More precisely, I will argue for a particular contextual approach to phasehood where the highest projection in the extended projection of a major (i.e. lexical) category functions as a phase. The approach is contextual because the amount of structure (including the highest phrase) projected by major categories can differ both crosslinguistically and in different constructions within a single language.

On the approach to phasehood argued for here Vs, Ns, Ps, and As all project phases. This will enable us to address a serious issue that the theory of phases has faced from its very inception: why some elements work as phases but others do not. Consider this issue with respect to Chomsky's original approach to phases, where CPs and vPs are assumed to work as phases. The obvious question here is why CPs and vPs but not other phrases. Chomsky attempted to address the issue by adopting propositionality as the definition of phasehood, i.e. by arguing that phases are essentially syntactic reflexes of the semantic notion of proposition and that CPs and vPs, but not other phrases, are syntactic reflexes of propositionhood. This approach has well-known problems. Thus, it does not really provide a unified account of the phasehood of CPs and vPs since it uses very different definitions of propositionhood for these two cases (what matters is either force indication or external θ -role assignment, a disjunction that is reminiscent of the lexical/antecedent government disjunction in the definition of the ECP). Furthermore, as discussed by a number of authors (e.g. Bošković 2002, Epstein and Seely 1999, 2006, Boeckx and Grohmann 2007), propositionhood simply does not yield the right cut. To mention just one problem, noted in Bošković (2002), Chomsky argues finite clauses (which are CPs) but not ECM infinitives (which are TPs) function as phases. Compare, however, the infinitive in *There seemed to have arrived someone* with the embedded finite clause in *It seemed there had arrived someone* or *It seemed someone had arrived*. The embedded finite clause seems to be no more of a proposition than the infinitive. (This problem becomes even more glaring when other phrases that have been argued quite convincingly to be

phases, like DPs and PPs (see the references below), are taken into consideration.) However, even if the propositionhood approach were to provide the right cut we would still be facing the question of why propositionhood, and not another syntactic, semantic, or for that matter phonological property is used as the defining property of phasehood (there are certainly numerous candidates here). In other words, the question of why phasehood is picky, that is why only some phrases work as phases, has never really been answered in a satisfactory manner. To address the question, a number of authors have explicitly or implicitly argued that phasehood is actually not picky: every phrase counts as a phase (for relevant discussion, see e.g. Bošković 2002, Boeckx 2003, 2007, Boeckx and Grohmann 2007, Epstein and Seely 2002, Fox and Lasnik 2003, Lahne 2008, Manzini 1994, Müller 2010, 2011). Conceptually, this is an appealing approach since it resolves the “choosing issue” (i.e. how to pick phases): there is nothing to choose here, everything functions as a phase. Although conceptually appealing, the approach does face some serious problems. For example, as noted by Boeckx and Grohmann (2007), given the by now standard assumption (see section 2.1) that complements cannot move to the Spec position of the same phrase, the Phase-Impenetrability Condition (PIC), which was proposed by Chomsky (2000, 2001) to allow extraction out of phasal domains, can no longer help complements move out of phasal domains. In fact, if all phrases are phases, complements are rendered completely immobile.

The general approach to phasehood argued for here, where all lexical categories project phases (so we find phases with VPs, NPs, PPs, and APs), trivially resolves the choosing issue: there is nothing to choose here.² It thus preserves to a considerable extent the major achievement of the every-phrase-is-a-phase approach. However, since it is the highest projection in the extended domain of VPs, NPs, PPs, and APs that works as a phase, the problem that arises under the every-phrase-is-a-phase approach noted above does not arise under the current approach: complements of Vs, Ns, Ps, and As can still undergo movement (we will, however, see below that in a few cases where these elements do not project any extended structure above their basic projections the complements actually cannot undergo movement, as expected).

I will provide a number of arguments that the same phrase that works as a phase in one syntactic context does not work as a phase in another syntactic context. As a result, we will end up with a superficially rather messy picture with a great deal of variation regarding what counts as a phase. We will, however, also see that there is order in the chaos. More precisely, I will argue that the superficially messy picture can be made sense of if it is the highest phrase in the extended projection of a lexical category that works as a phase. To illustrate, we will see a number of cases of the following type: X, which works as a phase, ceases to work as a phase when another phrase Y is added on top of X in the extended projection of the same lexical category (with X being the highest projection in this domain when Y is absent).

My argumentation will involve two domains: extraction and ellipsis. With respect to the former I will examine extraction of nominal complements corresponding to English *of* phrases in examples like (1), as well as extraction of complements of prepositions.³

- (1) Of which city did you witness the destruction? (Huang 1982, Chomsky 1986b)
 (2) Who did you look at?

As for ellipsis, I will examine ellipsis within traditional noun phrases, as in (3), as well as VP ellipsis in complex auxiliary/modal constructions, as in (4).

- (3) I like Peter's book, and you like Bill's.
- (4) Betsy must have been being hassled by the police, and Peter
 - a. * must too.
 - b. must have too.
 - c. must have been too.
 - d. * must have been being too.

(Sag 1976)

Regarding ellipsis, I will argue that ellipsis is affected by phasehood.⁴ More precisely, I will argue that only phases and complements of phase heads can be elided. The theory of phases enables us to privilege only two domains for ellipsis: the phase itself and the complement of a phase head (i.e. the spell out domain). There is, for example, no natural way of privileging the complement of a complement of a phase head. I will argue that phases and phasal complements are indeed the only projections that can be elided. This is a rather constrained approach to ellipsis which for example disallows ellipsis of complements of non-phasal heads (which are themselves not phases). I will also show that A'-extraction out of an ellipsis site is possible only if the ellipsis site corresponds to a phasal complement.

The analysis presented here will also have consequences for the clausal structure of English, in particular the middle field located in between the phrases hosting the surface and the deep subject position (TP and vP), which I will also refer to as the aspectual domain given that it hosts aspectual elements *-en* and *-ing*. While I will argue that several functional projections can be present in this middle field, all these projections will be morphologically motivated; there will be no projections headed by null heads; in other words, what you see is what you get, an appealing state of affairs.

The central arguments for the-highest-phrase-is-a-phase approach will involve extraction from, and ellipsis within, Traditional Noun Phrases ((TNP), I will use the term TNP to refer to noun phrases without committing myself to their categorial status, i.e. functional structure that may be present above NP) in article-less languages. A number of authors have argued that the highest layer in the TNP of a language like English, DP, is missing in languages without articles (see Appendix). As a result, in certain contexts these languages enable us to vary the actual size of the TNP. While TNPs are typically NPs in article-less languages, in certain contexts there are functional categories above NP. It turns out that the phasehood status of NP depends on whether or not another phrase dominates it, which provides a strong argument for the contextual approach to phasehood argued for here. I will therefore start the discussion by examining extraction from TNPs. In section 2.2 I discuss extraction from PPs. In section 3 I turn to ellipsis, starting with a general discussion of ellipsis and then turning to ellipsis within TNPs and finally to the traditional VP ellipsis.

2. Extraction

In this section I will discuss extraction of complements of Ps and Ns, starting with the latter. The extraction of nominal complements will be used as a tool for determining the phasehood of TNPs.

2.1 Phases in NPs

A number of authors have argued that Serbo-Croatian (SC), a language that lacks articles, does not have the DP layer (Corver 1992, Zlatić 1997, 1998, Bošković 2005, 2008, in press, Marelj 2008, Despić 2011, in press, Runić 2011). In this system, possessives, which morphologically and syntactically in every respect behave like adjectives in SC (see Zlatić 1997, 1998, Bošković 2005, 2008, in press), are treated as NP adjuncts (see Bošković 2008, in press).⁵ One argument for this analysis (see Appendix for additional discussion), noted by Despić (2011, in press), is provided by the ungrammaticality of the examples in (6), which contrast with their English counterparts in (5) in that the pronoun and the name cannot be co-indexed. Given that the possessive is an NP adjunct, and that the language lacks DP, the possessor c-commands out of the TNP, which results in Condition B and C violations in (6).

- (5) a. His_i father considers John_i highly intelligent.
 b. John_i's father considers him_i highly intelligent.
- (6) a. *[_{NP} Kusturicin_i [_{NP} najnoviji film]] ga_i je zaista razočarao.
 Kusturica's latest movie him is really disappointed
 'Kusturica_i's latest movie really disappointed him_i.'
 b. *[_{NP} Njegov_i [_{NP} najnoviji film]] je zaista razočarao Kusturicu_i.
 his latest movie is really disappointed Kusturica
 'His latest movie really disappointed Kusturica.'

As noted by Despić (2011), nothing changes in the presence of a demonstrative (7), which is then also treated as NP adjoined (demonstratives also behave like adjectives morphologically and syntactically (see Zlatić 1997, 1998, Bošković 2005, 2008, in press); however, they are treated differently from adjectives semantically, see Appendix). The same holds for adjectives, which also do not change binding relations (8). The data in (6)-(8) thus receive a uniform account if possessives, demonstratives, and adjectives (which, as discussed in the references cited above, behave in the same way in a number of other respects) are NP adjoined and the DP layer is missing in SC.

- (7) a. *[_{NP} Ovaj [_{NP} Kusturicin_i [_{NP} najnoviji [_{NP} film]]]] ga_i je zaista razočarao.
 his Kusturica's latest movie him is really disappointed
 'This latest movie of Kusturica_i really disappointed him_i.'
 b. *[_{NP} Ovaj [_{NP} njegov_i [_{NP} najnoviji film]]] je zaista razočarao Kusturicu_i.
 this his latest movie is really disappointed Kusturica
 'This latest movie of his_i really disappointed Kusturica_i.'
- (8) * [_{NP} Brojni [_{NP} Kusturicin_i [_{NP} filmovi]]] su ga_i zaista razočarali.
 numerous Kusturica's movies are him really disappointed
 'Numerous movies of Kusturica really disappointed him.'

It is by now standardly assumed that the TNP in English is a phase. It seems natural to assume that this should quite generally be the case; that is, that the TNP should be a phase in other languages too.⁶ The same should then also hold for SC, which means the TNP should be a phase in SC too. Recall now that the DP layer is missing in SC, SC TNPs being NPs. NP

should then function as a phase in SC. A consequence of this is that extraction out of NP in SC will have to proceed via SpecNP, given the PIC, which requires that movement proceed via phasal edges. Now, it is standardly assumed that complement to Spec movement is impossible, an assumption that has received a more general treatment in terms of anti-locality, a ban on movement that is too short.⁷ Abels (2003) observes that the PIC and anti-locality impose conflicting requirements on the extraction of phasal complements: the PIC requires such movement to proceed via SpecXP (with X being the relevant phase head), while anti-locality blocks such movement. The result is that phasal complements cannot move.

(9) Complements of phasal heads cannot undergo movement.

Abels (2003) provides strong evidence that this is indeed the case. Thus, he shows that IP dominated by CP, a phase, cannot undergo movement (11). As noted by Abels, this follows from a PIC/anti-locality interaction: the PIC requires IP movement through SpecCP and anti-locality blocks such movement because it is too short ((10)b is then ruled out by the PIC and (10)a by anti-locality).⁸

- (10) a. $*[_{CP} IP_i [_{C'} C \ t_i]$
 b. $*IP_i [_{CP} [_{C'} C \ t_i]$

(11) $*[His\ mother\ likes\ Mary]_i\ everyone\ believes\ that\ t_i$

Now, if NP is indeed a phase in SC, as suggested above, we make a rather surprising prediction: NP complements of nouns should be immobile in SC. This surprising prediction is borne out. Typical theme complements of nouns that are expressed as *of*-phrases in English are expressed as postnominal genitive complements in SC.⁹ Zlatić (1997) observes that, in contrast to accusative complements of verbs, such genitive complements of nouns cannot undergo movement in SC.

- (12) $?*Ovog\ studenta_i\ sam\ pronašla\ [_{NP}\ sliku\ t_i]$
 this_{GEN} student_{GEN} am found picture_{ACC}
 ‘Of this student I found the picture.’

(13) cf. *Pronašla sam sliku ovog studenta.*

The surprising immobility of genitive adnominal complements in SC can be straightforwardly accounted for if NP is a phase in SC.¹⁰ (12) is then just another instance of Abels’s generalization and can be accounted for in the same way as other cases that fall under Abels’s generalization: The PIC requires the genitive NP in (12) to move via SpecNP; this movement is, however, blocked by anti-locality. Notice also that the problem that arose with respect to (12) does not arise in (14), given the standard assumption that vP is projected above VP, and that vP, but not VP, functions as a phase (see also section 3.2; the second line gives the SC counterpart of the English example in (14).)

- (14) This student_i, I [_{vP} t_i [_{VP} teach t_i]]
 Ovog studenta ja učim

Recall that SC adnominal complement genitive is expressed as an *of*-genitive in English. It is well-known that, in contrast to SC adnominal genitive, *of*-genitive complements in English can move.¹¹

- (15) a. Of which city did you witness the destruction? (Huang 1982, Chomsky 1986b)
 b. Of whom do government employees see pictures every day? (Bach and Horn 1976)
 c. Of which cars were the hoods of damaged by the explosion? (Kuno 1987)

Given Abels's generalization, this can be taken to indicate that NP is not a phase in English. Do we then have here genuine crosslinguistic parameterization with respect to phasehood, with DP being the phase in English (see footnotes 6 and 8) and NP being the phase in SC? Recall now that English and SC differ with respect to the categorial status of the TNP: While TNP in English is a DP, in SC it is an NP. In light of this, SC and English can receive a unified treatment with respect to TNP phasehood if it is the highest projection in the extended domain of NP that counts as a phase: the highest projection in English is DP, hence DP functions as a phase, and the highest projection in SC is NP, hence NP functions as the phase. There is then no need to posit crosslinguistic variation with respect to phasehood here: the relevant differences are the result of independently motivated variation in the amount of structure that TNPs have in SC and English.¹²

Strong evidence that this analysis is on the right track is provided by constructions in which additional structure is projected in SC TNPs. Despić's binding test shows that SC TNPs are not always bare: certain numerals and quantifiers do project additional structure. When these elements precede a possessor they confine its binding domain to the TNP. Thus, (16) contrasts with (6), (7), and (8) in that the coreference reading is allowed. In other words, the possessor apparently does not c-command out of the subject TNP in (16), in contrast to (6)-(8).¹³ This indicates that the elements in question do bring in an additional projection. I will refer to this projection as QP.¹⁴

- (16) a. [_{QP} Pet/Mnogo [_{NP} njegovih_i [_{NP} filmova]]] je proslavilo Kusturicu_i.
 five/many his_{GEN} movies_{GEN} is made-famous Kusturica
 'Five/many of his movies made Kusturica famous.'
 b. ?[_{QP} Pet [_{NP} Kusturicinih_i [_{NP} filmova]]] ga_i je obogatilo.
 five Kusturica's_{GEN} movies_{GEN} him is enriched
 'Five of Kusturica's movies made him rich.'

Now, if the highest projection functions as a phase, QP rather than NP should work as a phase in examples like (16). We then make a rather surprising prediction that (12) should improve with an addition of a quantifier/numeral. The surprising prediction is borne out; the extraction indeed improves with an addition of a numeral/quantifier. Thus, (17)a is better than (17)b, which indicates that NP is not a phase in the QP context, as expected under the highest-phrase-is-a-phase approach.

- (17) a. Ovog studenta_i sam pronašla mnogo/deset slika t_i.
 this_{GEN} student_{GEN} am found many/ten pictures_{GEN}

- b. *Ovog studenta_i sam pronašla sliku t_j.
 this_{GEN} student_{GEN} am found picture_{ACC}

These data have rather important theoretical consequences; they help us tease apart the rigid, once a phase always a phase approach, where phasehood of a phrase does not depend on the syntactic context in which it occurs (Chomsky 2000, 2001), and the dynamic approach to phases, where what counts as a phase is determined contextually. Under the dynamic phasehood approach, a particular phrase can function as a phase in one, but not in another context; such a situation cannot arise under the rigid phasehood approach, where a phrase is always a phase (in all contexts), or never a phase (in any context). Taking for granted that NP is a phase in SC, given the ungrammaticality of (12), consider how numeral constructions would be treated under the rigid approach to phasehood and the particular implementation of the dynamic approach argued for here, where the highest phrase in the extended projection of the NP works as a phase. (18) and (19) are the representations of a numeral and a non-numeral construction respectively. If the highest projection in a TNP counts as a phase, NP1 will function as a phase in (19). However, NP1 will not function as a phase in (18) under this approach (rather, QP will be the phase).¹⁵ On the other hand, if NP is always a phase, as in the rigid phasehood approach, NP1 should function as a phase in both (18) and (19). The data in (17) are in fact the actual illustrations of the abstract structures in (18)-(19) and they provide a confirmation of the superiority of the dynamic approach.¹⁶

(18) [QP [NP1 [NP2

(19) [NP1 [NP2

To summarize the discussion of SC TNPs, there is a difference in the phasal status of NP in the QP and the non-QP context in SC: NP functions as a phase only in the latter context. This can be captured if the highest phrase in the TNP functions as a phase. Since in a QP context the highest phrase is QP rather than NP, NP does not function as a phase in this context even in an NP language like SC. As a result, the complement of *pictures* can be extracted in (17)a, where the NP headed by *pictures* is not a phase, in contrast to (17)b, where the NP headed by *pictures* is a phase. What we are seeing here is that the numeral essentially voids the phasehood of the NP in SC (just like DP quite generally does it in English). That the numeral phrase has such an effect provides evidence for the contextual, highest-phrase-is-a-phase approach, where adding a phrase on top of X within the same extended projection can change the phasal status of X.

To sum up section 2.1, English and SC as well as the seemingly different behavior of numeral and non-numeral contexts regarding phasehood within SC receive a uniform account under the highest-phrase-as-a-phase approach, which furthermore does not require positing any variation regarding phasehood of TNPs. In both English and SC, TNP (i.e. the highest projection in the TNP) works as a phase. As a result, in English DP works as a phase; NP is not a phase. In SC, on the other hand, NP is sometimes a phase, and sometimes it is not. When NP is the highest projection in the TNP, it works as a phase; otherwise it does not. What was particularly informative in the above discussion was the possibility for varying the size of the TNP in the contexts where phasehood tests can be run in SC. The outcome of those tests has

provided evidence for the contextual approach to phasehood; more precisely, it has provided evidence that the highest projection in a TNP works as a phase.

In the next section I discuss PPs, providing additional evidence for the highest-projection-as-a-phase approach. More precisely, it will be argued that, as in the nominal domain, the highest projection in the extended projection of PP functions as a phase.

2.2 Phases in PPs

In his discussion of languages that disallow P-stranding, such as SC, Abels (2003) argues that PPs are phases. P-stranding in (20) is then straightforwardly ruled out by the PIC/anti-locality conspiracy: the NP in (20) has to move to SpecPP, given the PIC, which in turn violates anti-locality. In other words, we are dealing here with another instance of Abels's (2003) generalization in (9).

- (20) *Njoj_i on hoda prema t_i.
 her he walks toward (SC)

What about languages like English, which allow P-stranding?

- (21) What are you looking at?

Abels (2003) argues that PPs are not phases in English, hence the problem noted above with respect to SC does not arise in English. The discussion in section 2.1 opens up another way of looking at this issue. We have seen in section 2.1 that the apparent difference in the phasehood of NP between English and SC can be accounted for without positing any crosslinguistic parameterization in the theory of locality itself; that is, regarding what counts as a phase. The strategy pursued in section 2.1 regarding superficial differences with respect to phasehood is that what is responsible for the variation with respect to locality is the amount of structure that is projected in a particular domain, which under the highest-phrase-is-a-phase dynamic approach affects phasehood without the need to posit any crosslinguistic variation with respect to what counts as a phase. A natural way of accounting for the SC/English difference with respect to P-stranding that preserves Abels's account of SC under this approach is that the relevant difference between English and SC is that English PPs have a richer structure than SC PPs (this possibility was in fact acknowledged by Abels 2003). If there is an additional projection above PP in English, call it XP, under the highest-phrase-is-a-phase approach XP rather than PP will work as a phase in English. As a result, the NP will have to move to SpecXP, not SpecPP, to satisfy the PIC, which will not involve an anti-locality violation.¹⁷

A strong argument that this type of analysis is on the right track is provided by Turkish. Turkish is particularly interesting in this context in that in Turkish some prepositions disallow and some prepositions allow P-stranding; in other words, we have both the SC pattern and the English pattern at work here within a single language. Significantly, P-stranding is allowed only where there is overt evidence for rich internal PP structure. More precisely, as noted by Şener (2006), Turkish, which normally disallows P-stranding, allows P-stranding when there is evidence for a richer PP structure. Thus, P-stranding is disallowed in (22)a, which contains

a simple preposition, but allowed in (22)b, which involves a complex preposition that contains an agreement morpheme.

- (22) a. *Biz [_{NP} Pelin-in arkadaş-ı]_i dün [_{PP} t_i için] para topladı-k.
 we_{NOM} Pelin_{GEN} friend_{POSS} yesterday for money collect_{PAST.1PL}
 ‘Yesterday, we collected money for Pelin’s friend.’
 b. Ben araba-nın_i dün [_{PP} t_i önün-de] dur-du-m.
 I_{NOM} car_{GEN} yesterday in.front.of_{3SG.POSS.LOC} stand_{PAST.1SG}
 ‘Yesterday, I stood in front of the car (not behind it).’

The anti-locality analysis of SC adopted above can be straightforwardly applied to (22)a: PP being a phase, P-complement must move to SpecPP, which results in an anti-locality violation (see (23)a). The problem will not arise in (22)b under the highest-phrase-is-a-phase approach if the PP has a richer structure here, as indicated by its morphological make-up. Şener (2006) in fact posits three projections within this PP, as in (23)b ((23)b gives Şener’s structure; one additional projection suffices for our purposes), in contrast to (22)a, where Şener (2006) argues for a simple PP structure. Given that the highest phrase within the extended PP projection counts as a phase, movement of the P-complement then does not induce an anti-locality violation in this case (see (23)b).

- (23) a. [_{PP} NP_i [_{P'} t_i]
 b. [_{CplacP} NP_i [_{AgrP} [_{PP} t_i]]]

What we are witnessing here is the same pattern as the one discussed in section 2.1 with respect to extraction from SC TNPs. Recall that movement of a nominal genitive complement in SC is unacceptable, but additional structure on top of NP improves such extraction. We have the same situation with P-stranding in Turkish: movement of the P-complement in Turkish is disallowed, but additional structure improves such extraction. If the original unacceptable examples are to be treated in terms of phasehood, we have here strong evidence for the contextual approach to phasehood: the phasehood of XP changes with an addition of YP on top of it. Given that in both the Turkish and the SC case XP and YP belong to the same extended projection, the data under consideration receive a unified account if the highest phrase in the extended projection of a major category (PP and NP in the examples under consideration) counts as a phase.

Turkish is also important in that it gives us a clue regarding what may be behind the crosslinguistic variation with respect to P-stranding: it’s the richness of PP structure. Since Turkish exhibits both the SC pattern and the English pattern, extending the account of the two patterns in Turkish to SC and English seems to be a natural move. This in turn means that English, and P-stranding languages in general, have a richer PP structure than non-stranding languages (which does not have to be transparent morphologically the way it is in Turkish), as a result of which the anti-locality problem that arises with P-stranding in languages like SC does not arise in English. This analysis departs from Abels (2003), who does not assume a structural difference between English and SC. Abels assumes a bare PP structure for both, placing the relevant point of variation in the domain of phases: PP is a phase in SC, but not English. This parametric approach has a difficulty handling Turkish, where it appears that

both (in fact conflicting) values of the parameter in question would have to be posited for a single language. The problem does not arise under the above analysis, which also captures in a natural way the relevance of the richness of PP structure for P-stranding that is overtly manifested in Turkish. Furthermore, the above analysis is in line with the overall approach adopted here, which does not posit any crosslinguistic differences regarding phasehood, the relevant locality differences resulting from structural differences; that is the amount of structure languages project within particular phrases. Significantly, Drummond, Hornstein, and Lasnik (2010) provide very interesting evidence that the traditional PP (TPP) is indeed a phase in English. This favors the above analysis, on which TPP is a phase even in English.

Another otherwise puzzling set of facts can also be accounted for under the current analysis. It is well-known that prepositions can also take PP complements in English. Interestingly, Hornstein and Weinberg (1981) observe that a PP complement of P cannot be extracted in English, as in (24).

- (24) a. They took a shot at him from behind that car.
 b. *[Behind which car]_i did they take a shot at him from t_i (Cinque 1990)

If the additional PP structure is case/agreement related, as was in fact suggested by Şener (2006) for Turkish, we may expect it not to be present when a P takes a PP complement. (24)b is then straightforwardly ruled out by the PIC/anti-locality conspiracy: Due to the absence of the higher structure (referred to below as XP), the higher PP functions as a phase in (24), as a result of which movement of the PP complement of the higher P inevitably violates either the PIC or anti-locality (see (25)).

- (25) [_{PP1} [_{PP2} Behind which car]_i [_{P1'} from t_i]]

An obvious alternative would be that the PP in (24) is an island. However, if the PP were an island then no extraction out of it should be possible. Significantly, the second preposition can be stranded in this type of examples, as in *Which car did they take a shot at him from behind*.¹⁸ This is exactly what is predicted under the analysis suggested above (see (26) below): XP is present above PP2 given that the head of PP2 takes an NP complement. XP rather than PP then functions as a phase here. NP can move to SpecXP without violating anti-locality (see footnote 7). Given the PIC, from this position the NP must move to the Spec of the higher PP, which is a phase, as discussed above. This movement is, however, also legitimate with respect to anti-locality (i.e. it does not violate Abels's generalization). The relevant part of the structure is given below, with the phases given in bold.

- (26) [_{PP1} [_{NP} Which car]_i [_{P'} from [_{XP} t_i [_{PP2} [_{P'} behind t_i]]

It is worth noting here that the P-stranding violation from (24)b can be repaired under ellipsis.

- (27) ?They took a shot at him from behind one of these cars, but I don't know behind which car.

This indicates that P-stranding, and more generally PIC/anti-locality violations (recall that

there are two derivations involved in (24)b, one violates the PIC and the other one violates anti-locality), can be repaired under sluicing. This argues against the spirit of Merchant's (2001) claim that P-stranding under sluicing is allowed iff it is allowed under *wh*-movement. (For other counterexamples, see Almeida and Yoshida 2007 and Bošković 2012c; note that Turkish (22)a also improves under sluicing, see Bošković 2012c.)

To summarize, I have argued that the richness of the internal structure of TPP has the same effect on the extraction out of TPPs as the richness of the internal structure of TNP has on the extraction out of TNPs. These extraction patterns can be all unified under the highest-phrase-as-a-phase approach, which furthermore enables us to account both for crosslinguistic variation and for variation within individual languages with respect to extraction out of TNPs and TPPs discussed above without positing any variation in phasehood itself: NPs and PPs always project phases, with the highest phrase in the extended projection of N and P working as a phase.

3 Ellipsis

I now turn to ellipsis. I will show in this section that the possibilities for ellipsis provide additional evidence for the highest-phrase-as-a-phase approach. In addition to further investigating the issues I have been concerned with so far, in this section I will also argue that ellipsis is phase-governed, i.e. that it is constrained by phases. More precisely, I will argue that only phases and complements of phase heads can be elided, which gives us a rather constrained theory of ellipsis (see also footnote 4). As noted by Rouveret (2012), the theory of phases enables us to privilege only two domains for ellipsis: the phase itself and the complement of a phase head (i.e. the spell-out domain). There is, for example, no natural way of privileging the complement of a complement of a phase head.¹⁹ A comparison with case and X-bar theory may be helpful here. For a while it was a standard assumption that case can only be licensed under core X'-theoretic relations. This means a head can assign case to its Spec and to its complement, but not to the Spec of its complement. This approach led to a particular analysis of ECM in early minimalism; with ECM, a verb appears to assign case to the Spec of its complement, which is not a core X-bar theoretic relation. This has then prompted a re-analysis of ECM constructions where the object undergoes movement that brings it into a core X-bar relation with the higher verb (Spec-Head). In other words, assuming that case is assigned in core X-bar theoretic configurations allows X to assign case to its Spec and complement, but not to the Spec of its complement. That gave us a rather constrained theory of case assignment.²⁰ Returning to phases, as noted above, assuming that phasehood constrains ellipsis, we can privilege only two domains for ellipsis: the phase itself and the complement of the phase head.²¹ I will argue that phases and phasal complements are indeed the only projections that can undergo ellipsis. This is a rather constrained approach to ellipsis which, for example, disallows ellipsis of complements of non-phasal heads.

There is also rather straightforward empirical evidence that both phases and complements of phasal heads can undergo ellipsis. It is quite clear that ellipsis of phasal complements is in principle possible (see here Boeckx 2009, van Craenenbroeck 2010, Gengel 2009, Takahashi 2011, Rouveret 2012, Cheng in preparation, among others). The most straightforward example of such ellipsis is sluicing, which involves IP ellipsis, i.e. ellipsis of the complement of C, a phasal head.

(28) They arrested someone, but I don't know [_{CP} who C [_{IP} ~~they arrested~~]]

Another relevant example concerns NP ellipsis cases like (29), given the assumption that DP is a phase. (29) then involves ellipsis of the NP complement of the D phase head.

(29) You like Jane's book, and I like [_{DP} Peter' s [_{NP} ~~book~~]]

It is also clear that ellipsis of full phases needs to be allowed. Many languages allow so-called argument ellipsis. Thus, Oku (1998), Kim (1999), Saito (2001, 2004, 2007), Tomioka (2003), Sugawa (2008), Şener and Takahashi (2010), D. Takahashi (2008a, b, 2010), Bošković (2011), Koulidobrova (2011), Takita (2011a,b), Cheng (in preparation), among many others, show that argument ellipsis is allowed in Japanese, Korean, Turkish, Chinese, and American Sign Language. Consider (30)-(31). The null object in Japanese (30) can have either the strict or the sloppy reading, i.e. Hanako can respect either the same teachers Taro does, or different teachers. Pronouns do not support sloppy readings in this context, while ellipsis does; thus, whereas (31)b (as a response to (31)a) does not allow the interpretation where Mary respects different teachers from John, (31)c allows such interpretation. This is one of the arguments given in the literature that Japanese has argument ellipsis, i.e. that (30) involves a full NP object that undergoes ellipsis (notice that (31)d allows sloppy interpretation) rather than a phonologically null pronoun. (The alternative analysis would be that (30) involves remnant VP ellipsis, with the V undergoing movement out of VP prior to ellipsis (see Otani and Whitman 1991); there is, however, conclusive evidence that argument ellipsis cannot be reduced to remnant VP ellipsis, see the references given above).

- (30) a. Taroo-wa sannin-no sensei-o sonkeisiteiru.
 Taro-TOP three-GEN teacher-ACC respects
 'Taro respects three teachers.'
 b. Hanako-mo e sonkeisiteiru.
 Hanako-also respects
 '(Lit.) Hanako respects e, too.' (Şener and Takahashi 2010)
- (31) a. John respects three teachers.
 b. Mary respects them, too.
 c. Mary does, too.
 d. Mary respects three teachers.

Japanese in fact allows ellipsis of all arguments, TNPs, CPs (see (35)), and PPs (see Saito 2007 and D. Takahashi 2010, who show all of these pass argument ellipsis tests). As discussed above, these projections in fact correspond to phases; argument ellipsis thus involves phasal ellipsis. I conclude, therefore, that ellipsis of full phases is also in principle possible.²²

Another argument for allowing ellipsis of both phases and phasal complements concerns extraction out of ellipsis sites. It is well-known that such extraction is sometimes possible and sometimes not. The standard assumption is that this is by and large arbitrary. I would like to suggest that this is not the case: whether extraction out of an ellipsis site is possible or not

depends on whether it takes place out of an elided phase or an elided phasal complement. More precisely, I put forward the conjecture in (32) (to be refined and deduced below).

- (32) Extraction from an ellipsis site is easier if it takes place from an elided phasal complement than an elided phase.

As an illustration of (32), extraction is allowed with sluicing, which, as discussed above, involves ellipsis of a phasal complement (see (33); phases are given in bold). Also relevant is possessor-stranding ellipsis, another case of phasal complement ellipsis (see (34)), given that a number of authors (e.g. Alexiadou 2005, Munn 1995, Radford 2000) have argued that English possessors undergo movement to SpecDP. (34) then also involves movement out of an elided phasal complement.

- (33) They arrested someone, but I don't know [_{CP} who_i C [_{IP} ~~they arrested t_i~~]]

- (34) You like Faulkner's novel, and I like [_{DP} Joyce_i's [_{NP} ~~t_i novel~~]]

Turning now to extraction out of elided phases, as discussed above, one clear case of full phase ellipsis is argument ellipsis in Japanese. Significantly, Shinohara (2006) and Saito (2007) show that extraction out of argument ellipsis sites is not possible based on the following examples.

- (35) Hanako-wa [_{CP} zibun-no teian-ga saiyoo-sareru to] omotteiru ga, Taroo-wa _omotte inai
 -TOP self-GEN proposal-NOM accepted-be that think though -TOP think not
 'Hanako_i thinks that her_i proposal will be accepted, but Taroo_j does not think that her_i/his_j proposal will be accepted.'

- (36) a. *Hon-o_i Taroo-wa [_{CP} Hanako-ga t_i katta to] itta ga, zassi-o_j Zi-roo-wa _ itta.
 book-ACC -TOP -NOM bought that said though magazine-ACC -TOP said
 'Taroo said that Hanako bought a book, but Zi-roo said that she bought a magazine.'

- b. *Sono hon-o_i Taroo-wa [_{CP} Hanako-ga t_i katta to] itta si, sono hon-o_j Zi-roo-mo _ itta
 that book-ACC -TOP -NOM bought that said and that book-ACC -also said
 'Taroo said that Hanako bought that book, and Zi-roo also said that she bought that book.'

- c. *Taroo-wa [_{CP} Hanako-ga sono hon-o katta to] itta si, sono hon-o_j Zi-roo-mo _ itta
 -TOP -NOM that book-ACC bought that said and that book-ACC -also said

- (37) a. Taroo-wa [_{CP} Hanako-ga sono hon-o katta to] itta si, Zi-roo-mo _ itta.
 -TOP -NOM that book-ACC bought that said and -also said

- b. Sono hon-o_i Taroo-wa [_{CP} Hanako-ga t_i katta to] itta si, Zi-roo-mo _ itta.
 that book-ACC -TOP -NOM bought that said and -also said

(35) shows that argument CPs can be "dropped" under argument ellipsis in Japanese, with the availability of a sloppy reading indicating that we are indeed dealing here with ellipsis. (36) shows that scrambling out of an argument ellipsis site (i.e. the object CP of the second clause) is not possible, regardless of whether the first clause involves scrambling (of the same element or a different element) or not. Note also that (37)a-b, which do not involve movement out of

an argument ellipsis site, are acceptable. I conclude therefore that (36) provides evidence that extraction out of elided phases is not possible.

The cases discussed above provide initial motivation for (32). Below I will provide additional evidence for it. Before doing that I will show that the generalization in question can be deduced, which will also help us refine it (we will see that extraction out of elided phases is not always disallowed).

Chomsky (2001) proposes that a phasal domain Y is essentially activated only when a higher phasal head K is merged into the structure. Essentially following Holmberg (2001) and Aelbrecht (2010), I assume that ellipsis involves marking the relevant element for ellipsis in the syntax, which freezes the element in question for any syntactic operations (see also Chomsky 2001, Heck and Müller 2003, Müller 2011 for evidence that the marking must be done in the syntax since it has syntactic effects). Given that in the current system both full phases and phasal complements can be elided, this can be implemented as follows. When the higher phasal head K is merged into the structure, ellipsis can take place in one of the following two ways: phase YP is marked for ellipsis, which means it is not assigned phonological realization (this can be quite easily implemented in the Distributive Morphology framework) and closed off for syntactic computation, or at this point Y triggers usual spell-out, transferring its complement, marked for ellipsis, to PF, which then fails to be phonologically realized. Let us apply these assumptions to the structure in (38), which collapses all the cases discussed above, where YP is the phase to be elided, ZP is its complement, X is the next higher phasal head, and α is the element undergoing movement outside of YP/ZP. Following standard assumptions regarding successive cyclic movement and the effect of phases/PIC on such movement, α moves to SpecYP (phasal edge) before X is merged.

(38) $X \dots [_{LP} [_{YP} \alpha_i [_{ZP} [_{KP} \dots t_i \dots$

As soon as X is merged, the lower phase YP is activated for ellipsis marking. (I assume that the marking has to be done as soon as X is merged.) As discussed above, there are two possibilities here: either the whole YP is marked for ellipsis or only its complement, ZP, is marked for ellipsis. Crucially, only on the latter option α ends up being outside of the ellipsis-marked site, hence it is available for movement to X (recall that ellipsis marking freezes the marked phrase for further syntactic computation). We thus account for the different behavior of phasal ellipsis and phasal complement ellipsis with respect to extraction, deducing (32). Notice, however, that the above deduction does not ban all extraction out of elided phases. Such extraction is banned only after a higher phasal head enters the structure. If the target for extraction is a head located in between X and YP in (38) extraction out of YP should be possible. We will see below that there are cases of this type and that extraction is indeed possible in such cases. Pending this discussion, it should be emphasized that what is particularly important in the current discussion is that we are dealing here with a difference between phasal ellipsis and phasal complement ellipsis, which should be interpreted as indicating that both of these options need to be allowed. In fact, once both of these options are allowed, we can make sense of the otherwise puzzling interaction between movement and ellipsis, i.e. we can understand why extraction out of ellipsis sites is not always allowed.

Turning to additional arguments for (32), another argument is provided by the Dutch

modal ellipsis data noted in Aelbrecht (2010). Aelbrecht shows that examples like (39) should not be analyzed as involving ellipsis of the complement of the modal, since the infinitival subject and adverbials modifying the infinitival TP can survive the ellipsis process in question, as in (40)-(41). (*Iemand* is located in the infinitival SpecTP in (40)B, and the adverb is adjoined to the infinitival TP in (41).)

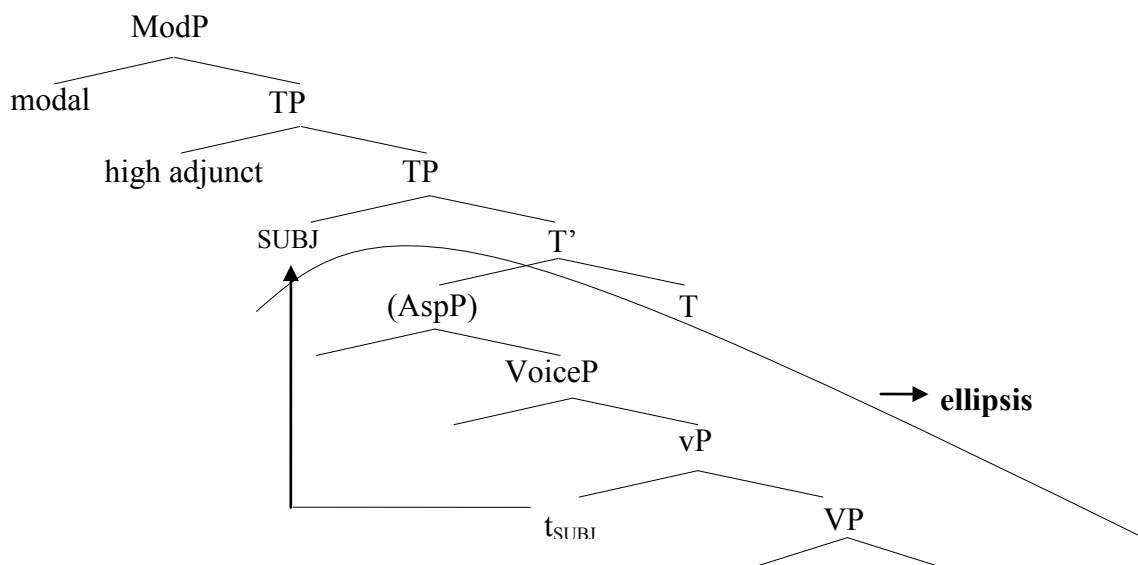
(39) Ik wou hem dat boek helemaal niet geven, maar ik moest [~~hem dat boek geven~~].
 I wanted him that book at.all not give but I must.PAST him that book give
 ‘I didn’t want to give him that book at all, but I had to.’ (Aelbrecht 2010:51)

(40) A: Gaat er iemand naar het feestje morgen?
 goes there someone to the party tomorrow
 B: Er moet toch [**iemand** [~~naar het feestje gaan~~]].
 there must still someone to the party go
 ‘Is anyone going to the party tomorrow?’ – ‘Well, SOMEONE has to.’
 (Aelbrecht 2010:56)

(41) Gisteren moest ik vandaag komen en vandaag moet ik **volgende week pas**.
 yesterday must.PAST I today come and today must I next week only
 ‘Yesterday I had to come today and today I only have to next week.’
 (Aelbrecht 2010:57)

In light of this, Aelbrecht analyzes examples like (39) as involving ellipsis of the complement of the infinitival T, which in the current system (see below) means that (39) involves ellipsis of a full phase. (The actual label of the complement of T does not really matter here, I am simply giving here Aelbrecht’s structure; we will see below that the phrase in question is a phase—it will be argued below that the highest phrase in the extended domain of VP, which is AspP when present (TP will be argued not to belong to the VP domain) functions as a phase.)

(42)



Significantly, Aelbrecht shows wh-movement is not possible out of the ellipsis site in question

- (43) *Ik weet niet wie Thomas moet uitnodigen, maar ik weet wel **wie** hij niet mag.
I know not who Thomas must invite but I know AFF who he not is.allowed
'I don't know who Thomas HAS to invite, but I do know who he isn't ALLOWED to.'
(Aelbrecht 2010:128)

(43) falls in line as another instance of (32): (43) is unacceptable because it involves wh-extraction out of phasal ellipsis. Note that movement out of the ellipsis site here is not in general impossible: thus, the infinitival subject moves out of the elided site to the infinitival SpecTP in (40)B (see (42)). This is actually expected under the above deduction of (32): as discussed above, movement out of phasal ellipsis is possible if its landing site is located below the next phasal head, which is the case here. T attracts the subject to SpecTP here before the next phasal head enters the structure, freezing AspP for further syntactic operations (see also Aelbrecht 2010). The subject can then move to SpecTP in (40)B. In fact, as discussed below, since movement out of an ellipsis site that targets a position below next phasal head typically involves A-movement we will end up with a situation where phasal and phasal complement ellipsis differ only regarding A'-movement.

Another paradigm that may be analyzable in terms of phase/phasal complement ellipsis involves extraction with traditional VP ellipsis (TVP) and British English *do*-ellipsis, where *do* co-occurs with a finite auxiliary. (Ellipsis is obligatory in (44); (44)-(47) are taken from Baltin 2007).

- (44) Luis will run the race and Nana will do too
(45) cf. Luis will run the race and Nana will too.

It is well-known that wh-movement is possible out of TVP sites, as in (46). This is not surprising in light of the current discussion given that examples like (45) and (46) will be analyzed below as involving ellipsis of the VP complement of the *v* phasal head: (46) then involves extraction out of an ellipsis site that corresponds to a complement of a phasal head.

- (46) Although I don't know who Thomas will visit, I do know who Aga will.

Interestingly, Baltin (2007) observes that wh-movement is not possible out of *do*-ellipsis sites.

- (47) *Although I don't know who Thomas will visit, I do know who Aga will do.

The contrast between (46) and (47) can be accounted for, in fact follows from (32), if English *do*-ellipsis involves full phase ellipsis.²³

To summarize, it seems clear that both phasal ellipsis (as in e.g. argument ellipsis) and ellipsis of phasal complements (as in e.g. sluicing) are in principle possible.²⁴ Obviously, not all languages avail themselves of all the possibilities for ellipsis. Thus, it is well-known that many languages for no apparent reason disallow traditional VP ellipsis. Why some options are not used or are restricted to particular contexts in some languages is a serious but an

independent issue from the one we are dealing with here.²⁵ The goal of this article is to establish what kind of ellipsis is in principle available (see footnote 22).

3.1 NP Ellipsis in Japanese

In this section I will discuss ellipsis within Japanese TNPs. We will see that certain data regarding NP ellipsis in Japanese provide additional evidence that the highest phrase in the extended projection of an NP functions as a phase. What is particularly interesting is that Japanese basically replicates the paradigm we have seen above in the discussion of extraction out of SC TNPs but with respect to a very different phenomenon, namely ellipsis. The phenomenon under consideration is illustrated by (48), which involves partial TNP ellipsis with a possessor remnant.²⁶

- (48) [Taro-no taido-wa] yo-i ga, [TNP Hanako-no [NP ~~taido~~]-wa] yoku-na-i.
 Taro-GEN attitude-TOP good-PRES though Hanako-GEN attitude-TOP good-not-PRES
 ‘Though Taro’s attitude is good, Hanako’s isn’t.’ (Saito, Lin, and Murasugi 2008)

Partial TNP ellipsis is also possible with numerals, i.e. such ellipsis can also strand numerals.²⁷

- (49) Amerikagun-wa nizyu-pun-no kougeki-o keikakusi-ta-ga
 U.S. Army-TOP 20-minute-GEN attack-ACC plan-PAST-though
 nihongun-wa [rokuzyu-pun-no [kougeki]-o] keikakusi-ta.
 Japan Army-TOP 60-minute-GEN attack-ACC plan-PAST
 ‘lit. the U.S. army planned attack of 20 minutes, but the Japanese army planned attack of 60 minutes.’ (Takahashi 2011)
- (50) Taro-wa yon-satsu-no hon-o kat-ta ga, sono-uti
 Taro-TOP four-CL-GEN book-ACC buy-PAST though that-out.of
 [ni-satu [hon]-o] sudeni yomi-oe-ta.
 two-CL book-ACC already read-finish-PAST
 ‘Taro bought four books, but he already finished reading two of them.’
 (Watanabe 2010)

Note now that, as noted in Bošković (in press) (see also Cheng in preparation and Takahashi 2011), Japanese, an article-less language, patterns with SC regarding the binding tests from section 2.1, which provides evidence that a projection is present above the possessor only with numerals.²⁸ Following the account of SC from section 2.1, the possessor would be NP adjoined in both (51) and (52). However, a QP above the NP in (52) confines the c-command domain of the possessor in (52).

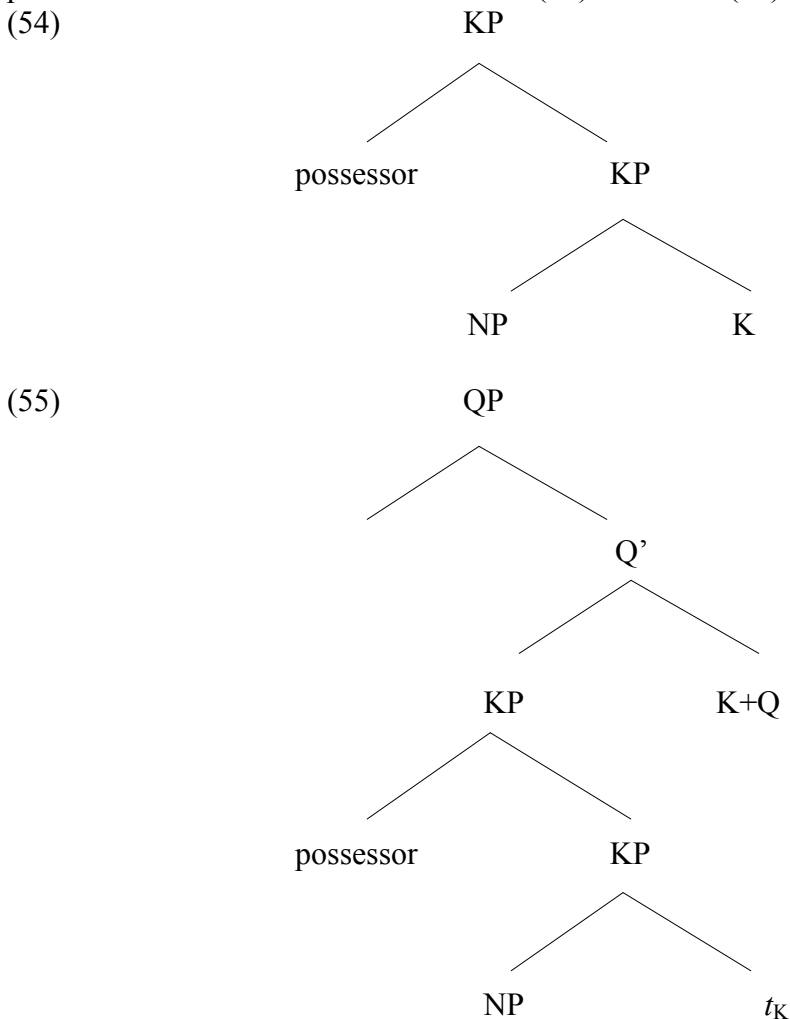
- (51) *Kare_i-no saisin-no eega-wa Kurosawa_i-o hontooni rakutans-ase-ta.
 him-GEN latest-GEN movie-TOP Kurosawa-ACC really disappoint-CAUSE-PAST
 ‘His latest movie really disappointed Kurosawa.’ (Bošković, in press)
- (52) Itu-tu-no kare_i-no saisin-no eega-ga Kurosawa_i-o hontooni
 five-CL-GEN he-GEN latest-GEN movie-NOM Kurosawa-ACC really
 rakutans-ase-ta.
 disappoint-CASUE-PAST

‘Five of his latest movies really disappointed Kurosawa.’ (Masahiko Takahashi, p.c.)

Note now that the topic particle in (48) survives ellipsis (case particles survive it too). In fact, such ellipsis is also possible without a possessor, in which case the particle is the only surviving element (see e.g. Sato and Ginsburg 2007, Sato 2012, Otaki 2011; note that topic particle *-wa* can also be stranded this way).²⁹

- (53) Naomi-mo moo tsuki-masi-ta ka? ~~Naomi~~-Ga mada tsuki-mase-n
 Naomi-also already arrive-POL-PAST Q Naomi-NOM yet arrive-POL-NEG
 ‘Has Naomi already arrived? She has not arrived yet.’ (Otaki 2011)

Since the particle survives ellipsis it appears that it should be placed in a separate projection outside of the ellipsis site, which is the NP. Takahashi (2011) argues that Japanese topic/case particles are located in the head position of KP (which takes NP as its complement), moving to Q in (49)-(50).³⁰ The possessor is then adjoined to KP (instead of NP, as in SC), which enables us to extend Despić’s account of possessor binding in SC to Japanese: a KP adjoined possessor c-commands out of the TNP in (54) but not in (55).

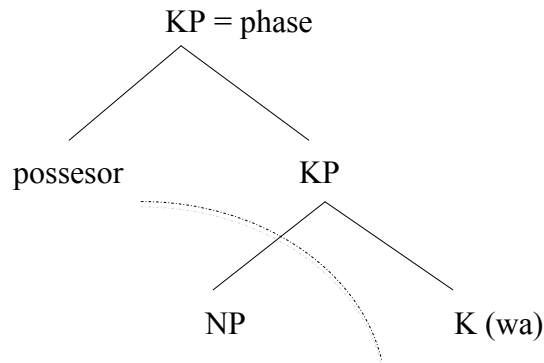


Let us now turn to the account of (48). The crucial ingredients are the following assumptions:³¹

- (56) a. Only phases and complements of phase heads can undergo ellipsis.
- b. The highest projection in a TNP is a phase.

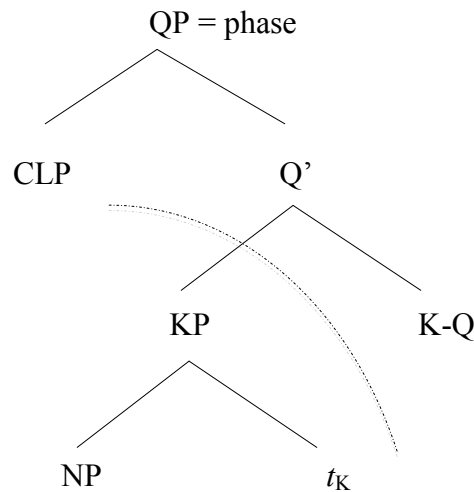
(56)a was discussed earlier in section 3, while (56)b is one of the main claims of this article. Consider now example (48) in light of (56). In (48), KP is the highest projection in the TNP involving ellipsis, hence a phase. (48) then involves ellipsis of the complement of a phase head, in accordance with (56)a.

(57)



In (49)-(50), on the other hand, the highest phrase is QP (cf. the binding data in (51)-(52)). This projection, rather than KP, then functions as a phase here, given (56)b. The examples then again involve ellipsis of a phase head complement, in accordance with (56)a.³²

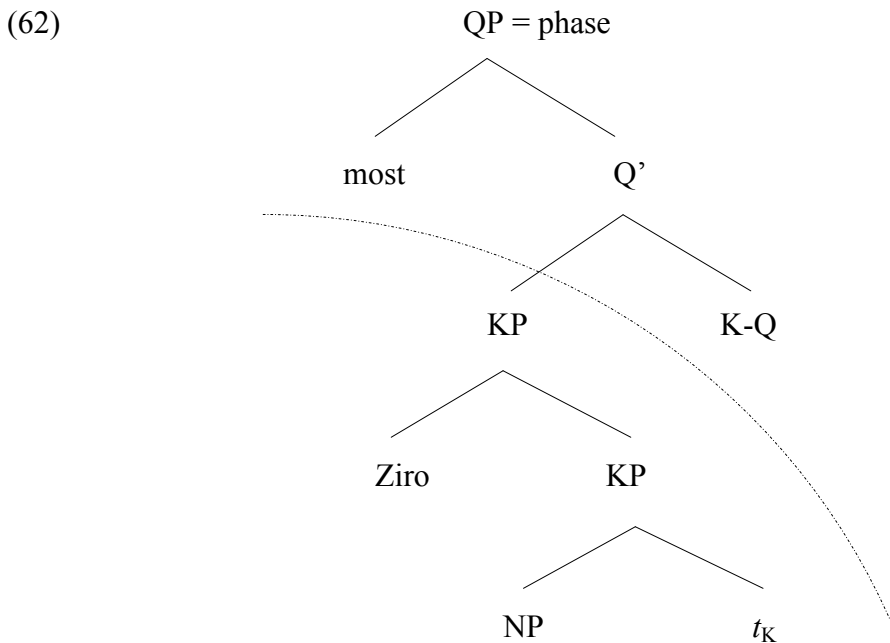
(58)



The crucial data are given in (59)-(61), (59) being the antecedent sentence for the examples in (60)-(61).³³ (60)-(61) show that when both QP and a KP possessor are present, the QP element can survive ellipsis but the possessor cannot.

- (59) A sensei-wa subete-no Taroo-no tikoku-o yurusi-ta.
 Prof. A-TOP all-GEN Taro-GEN tardiness-ACC forgive-PAST
 ‘lit. Prof. A forgave all Taro’s tardiness.’
- (60) *B sensei-wa hotondo-no Ziroo-no ~~tikoku-o~~ yurus-anakat-ta.
 Prof. B-TOP most-GEN Ziro-GEN tardiness-ACC forgive-NEG-PAST
 ‘lit. Prof. B didn’t forgive most of Ziro’s tardiness.’
- (61) B sensei-wa hotondo ~~Ziroo-no~~ ~~tikoku-o~~ yurus-anakat-ta.
 Prof. B-TOP most Ziro-GEN tardiness-ACC forgive-NEG-PAST (Takahashi 2011)

This is exactly what is expected under the highest-phase-is-a-phase approach: Here QP is the phase (QP is the highest phrase in the TNP), hence KP, its complement, can be elided, which yields (61).



Notice, however, that, in contrast to (48)/(57), where KP is the highest phrase in the TNP hence its NP complement can be elided, KP is not the highest phrase in the TNP in (60)-(61) (see the structure in (62)), which means that KP does not function as a phase in (60)-(61). As a result, the NP complement of K in (60)-(61) is not a phasal complement hence it cannot be elided, in contrast to the NP complement of K in (48) (compare the structures in (57) and (62)). As a result, the possessor cannot survive ellipsis in (60), in contrast to (48).

The data under consideration provide strong evidence for the claim that the highest head in a TNP functions as a phase, and for the contextual approach to phasehood in general (see also Takahashi 2011). As discussed above, this approach provides a straightforward

explanation for why NP can be elided in (48) (and (61) as part of a larger ellipsis operation) but not in (60) (i.e. why the possessor can survive ellipsis in (48) but not in (60)). Most importantly, we now have converging evidence from two very different domains. Japanese ellipsis basically replicates the paradigm discussed with respect to extraction from TNPs in SC: adding the same elements that change the possibilities for extraction out of SC TNPs changes the possibilities for ellipsis within Japanese TNPs, in fact in pretty much the same way. (Recall that the elements in question also change binding relations in exactly the same way in both Japanese and SC.) The highest-projection-as-a-phase analysis enables us to explain the SC extraction paradigm and the Japanese ellipsis paradigm in exactly the same way, unifying the two phenomena.

Before concluding this section, let me note that there is actually crosslinguistic variation among NP-languages regarding possessor-stranding examples like (48). Turkish, for example, disallows them.

- (63) *[Pamuk-un kitab-ı-nı] oku-du-m, ama [Oe-nin ~~kitab-ı-nı~~] oku-ma-dı-m.
P.-GEN book-3SG.POSS-ACC read-PAST-1SG but O.-GEN read-NEG-PAST-1SG
‘I read Pamuk’s book, but I didn’t read Oe’s.’ (Bošković and Şener 2012)

Bošković and Şener (2012) show that this can be easily accounted for under the NP analysis: given that Turkish possessors are NP-adjoined (see section 2.1), the NP cannot be elided without a possessor.

- (64) [_{NP} POSS [_{NP} N

Significantly, NP ellipsis is not always disallowed in Turkish. Thus, Bošković and Şener (2012) note that with numerals, where there is extra structure in the TNP (see section 2.1 and footnote 13), ellipsis is possible. This is expected: in contrast to (63), where the possessor is NP-adjoined (see (64)), due to the presence of the additional structure the possessor is QP-, not NP-adjoined in (65) (see (66)). Consequently, in contrast to (63), full NP can be elided in (65) and still strand the possessor (as expected, (65) is also acceptable without the possessor, see Bošković and Şener 2012).

- (65) ?Pelin [Chomsky-nin üç tane kitab-ı-nı] oku-muş,
P.-NOM C.-GEN three CLL book-3SG.POSS-ACC read-evidential.PAST
ama [Foucault-nun iki tane ~~kitab-ı-nı~~] oku-muş.
but F.-GEN two CLL read-evidential.PAST
‘S/he read 3 books of Chomsky’s, but s/he read 2 books of Foucault’s.’
(Bošković and Şener 2012)

- (66) [_{QP} POSS [_{QP} Num [_{NP} [_N ' books

An obvious possibility then presents itself: the culprit for the different behavior of Turkish and Japanese with respect to simple possessor stranding ellipsis may be the presence of the particle projection in Japanese, which is independently motivated.³⁴

3.2 VP Ellipsis

I now turn to complex VP ellipsis in English. The goal will be to account for the data in (4) noted by Sag (1976), repeated here with the relevant elided part indicated.

- (67) *Betsy must have been being hassled by the police, and Peter must ~~have been being~~
~~hassled~~.
- (68) Betsy must have been being hassled by the police, and Peter must have ~~been being~~
~~hassled~~.
- (69) Betsy must have been being hassled by the police, and Peter must have been ~~being~~
~~hassled~~.
- (70) *Betsy must have been being hassled by the police, and Peter must have been being
~~hassled~~.

I emphasize here that my goal in this section is not to provide a comprehensive account of the full paradigm pertaining to the domain of VP ellipsis in English (hence I will not discuss alternative approaches); rather, I will focus here on certain constructions that will help us shed light on the larger theoretical issues that are the main topics of this article which concern the theory of phases and the theory of ellipsis, namely what exactly counts as a phase and what determines the possibilities for ellipsis.³⁵ Regarding the former issue, I will use VP ellipsis to investigate how the general contextual approach to phases argued for so far applies to the VP domain (which will require investigating the issue of where the verbal phasal domain stops). Regarding the latter issue, in line with the discussion in the beginning of section 3, I will argue that the VP ellipsis constructions considered here confirm that ellipsis is phase-constrained; furthermore, these constructions require that complements of phasal heads as well as phases themselves be in principle elidable.

In the following sections I will lay down the ingredients for the analysis of (67)-(70) to be proposed below.³⁶

3.2.1 Ellipsis and Phases

We have seen above that if ellipsis is determined by phasehood, only phases and complements of phasal heads can in principle undergo ellipsis; phrases that are neither phases nor complements of phasal heads cannot undergo ellipsis. This approach will be tested below with respect to ellipsis in the middle/aspectual field of English. The beauty of the phenomenon, and this is what makes traditional VP ellipsis in English particularly enlightening in this respect, is that it is very productive: English does not appear to have any arbitrary constraints on the availability of ellipsis in this domain (recall that some languages for no apparent reason completely disallow ellipsis in this context; for some relevant discussion regarding crosslinguistic variation with respect to VP ellipsis, see Zagana 1988, McCloskey 1991, Lobeck 1995, Aelbrecht 2010, among others). In fact, I will argue below that in this domain English avails itself of all the options for ellipsis that are in principle allowed by the grammar: ellipsis of both phases and phasal complements is always possible. This is then a perfect testing ground for what kind of ellipsis should not ever be allowed (even in principle). The claim defended below is that English in fact allows all cases of ellipsis of phases and phasal

complements in its aspectual/middle field, but nothing else: it is a perfect instantiation of the possibilities for ellipsis that are claimed here to be in principle available by UG.

3.2.2 On the Structure of the Aspectual Field: What You See Is What You Get

Before we can dive into the complex paradigm of ellipsis within English middle field, a note is in order regarding the structure of the constructions we will be examining. Constructions with complex middle fields will obviously require positing additional structure between vP and TP. Additional structure has in fact been sometimes assumed even for simple finite constructions. There is nothing wrong in principle with positing projections that are phonologically null; such projections do indeed exist. However, positing such projections requires independent evidence. In the absence of such independent evidence they should not be posited. The null hypothesis is then always that what you see is what you get. I will show below that this null hypothesis in fact suffices to account for the complex patterns of VP ellipsis in English.³⁷

Assuming only morphologically motivated projections for the middle/aspectual field gives us the following structure for (67)-(70): the modal should be generated under T, and the auxiliaries, being verbal-like elements, should be generated under VP. (The exact label of the phrase will reflect the featural make up of the auxiliaries, which are not true lexical verbs. I will use VP_f to indicate their functional nature.) The only other projections should be those headed by *-en* and *-ing*. This yields the structure in (71) for constructions like (4). (Since *-en* and *-ing* are aspectual elements I am labeling the phrases where they are located AspectP. Note that since I am focusing here on the structure of the middle, i.e. T/Aspect field, I am omitting the internal structure of the projection(s) where the main verb is located, simply using VP for this part of the structure. As is standard, I do assume additional projections are present in this part of the structure when the main verb is inflected for *-en* or *-ing*. However, apart from a few cases noted below, the presence of these projections has no effect on the analyses to be proposed, hence they are omitted here to simplify exposition.)

(71) [TP must [VP_f have [AspectP₁ en [VP_f be [AspectP₂ ing [VP_f be [VP

All the projections in (71) are morphologically motivated, there are no null AspectPs (see below for evidence against the existence of null AspectPs in English), in fact no null projections at all.³⁸

3.2.3 Phases in the Middle Field

The question that needs to be addressed now is which projections should function as phases in this structure under the general approach to phasehood argued for here, a contextual approach where the highest phrase in the extended projection of a major/lexical category counts as a phase. Above we have discussed NPs and PPs. What about VPs? The standard assumption is that vP, which can be naturally considered to be part of the extended projection of VP, is the phase here. Considering vP but not VP a phase thus fits rather naturally into the approach to phasehood argued for here. CPs are, however, also considered to be phases. In the current system, it must then be the case that CP is not part of the extended projection of VP. In fact, given Chomsky's (2008) CP-TP association approach, where C and T basically work together

with respect to a number of phase-sensitive phenomena, TP should belong to the CP domain. The traditional CP may need to be split into several phrases at least in some cases (Rizzi 1997).³⁹ An issue that still needs to be addressed is what precisely is behind the cut between the two phasal domains here: the VP domain and the TP/CP domain. The real issue here is actually what makes the TP/CP domain a phasal domain. Given that all major categories project phases, the NP, PP, AP, and VP domain are expected to project phases; the TP/CP domain, which below I will refer to as the clausal domain, still awaits principled incorporation into the system, an issue that unfortunately I will not be able to address here. The highest projection within the clause may be expected to function as a phase in the current system due to its being the highest projection in the domain of X, but how to precisely determine the X in a way that would capture its relation with other phrases in the domain in question in a principled manner still remains to be determined. It is, however, possible that CP should remain at least somewhat outside of the system, with CP being the phase simply because it is the highest projection in general. The notion highest would then still matter, but there would be no issue of X-CP connection. I will leave the choice between these two possibilities open here. Where this does not matter, I will adopt the latter for ease of exposition, but the reader should bear in mind that full integration of CP into the current system is left for future research, the focus of this article being on non-clausal phasal projections.

This uncertainty regarding CP has some consequences for the status of projections that lay on the border of the clausal and the VP domain. Under the X-CP connection option, given the unclear nature of the X-CP connection, it is really not possible to determine strictly on theoretical grounds whether the frontier projections should belong to the VP domain or the clausal domain. In this article, I will argue for a particular position regarding this issue primarily on empirical grounds.⁴⁰ In particular, I will argue that AspectP belongs to the VP domain (the claim was actually originally made in Wurmbrand 2011 based on rather interesting evidence concerning aspectual interpretation and successive cyclic movement). The intuition here is that temporal-related information/structure is split into two domains, with tense belonging to the clausal domain and aspect to the verbal domain. (In fact, as noted below, aspect is quite clearly much more tightly related to the verb than tense.) Given that aspectual projections are often interspersed with various verbal projections, the fact that in many languages aspect is expressed through derivational verbal morphology (e.g. in Slavic) or through free standing particles in the VP domain (e.g. English particles like *up*) as well as the well-known fact that aspect in many languages affects case assignment, more precisely, the case that is supposed to be assigned by v-V (in fact, Aspect, not v, has been argued by many authors to be the source of verbal case assignment; for the effect of aspect on case assignment to the object see Borer 1994, 2005, Dubinsky and Hamano 2003, Kiparsky 1998, 2001, Kratzer 2004, Laka 2006, Nelson 1998, Ramchand 1993, Svenonius 2002a,b, Tamm 2006, Tenny 1987, Travis 2010, and van Hout 1996, among many others), it seems natural to assume that Aspect belongs to the VP domain. Under the current proposal that the highest projection within the extended domain of a major category works as a phase, this means that in a structure where AspectP dominates vP, it will be AspectP, not vP that will work as a phase. Furthermore, if there is a series of AspectPs, it is the highest AspectP that will work as a phase. The claim is then that AspectP closes the lexical VP domain, with the clausal domain starting right above the highest AspectP. Regarding the structure in (71), the only phase in the

middle field of this structure will then be AspectP1, with the clausal domain starting right above this phrase.⁴¹

(72) [TP must [VP_{f1} have [AspectP1 en [VP_{f2} be [AspectP2 ing [VP_{f3} be [VP

While the above reasoning concerning the phasal delineation of the middle field seems rather intuitive, admittedly the theoretical reasoning behind the proposal is not sufficient to justify it conclusively; the burden of argumentation will therefore lie in the empirical domain. I will in fact show below that the end result that the above reasoning has led us to enables us to explain several otherwise puzzling facts regarding complex VP ellipsis. To the extent that the analysis given below is successful, it can therefore be taken as an argument for the approach to phases argued for here.⁴²

3.2.4 *Be Shift*

There is one more issue that needs to be addressed before we can plunge into the account of VP ellipsis. A number of authors have argued that some but not all non-finite verbs in English undergo movement. Since what will be important for our purposes is the structures involving aspectual forms *-en* and *-ing* I will focus on these forms here. Akmajian and Wasow (1975), Iwakura (1977), Lobeck (1987), Bošković (2004a), and Thoms (2010) have argued that *be* in *been* undergoes movement while *be* in *being* does not. One argument to this effect concerns floating quantifiers. Consider (73).

(73) *The students are being all arrested by the police.

The unacceptability of (73) indicates that quantifier float in the main verb domain is not possible here.⁴³

(74) *The students_i are being [VP all+t_i arrested t_i] by the police.

Significantly, quantifier float with the *been* form in (75) is better than with the *being* form in (73).

(75) ?The students have been all arrested by the police.

Given that quantifier float in the main verb domain is not possible in this context, as indicated by (73)/(74), the quantifier must be floated in a higher Spec in (75). This, however, requires movement of *be* here. If *be* here undergoes movement, there is room to float a Q outside of the main verb VP.

(76) The students_i have been_j [VP_f all+t_i t_j [VP arrested t_i] by the police.

The same point can be made with simple adverbials, where the contrast between the *been* form and the *being* form is quite sharp (see also Lobeck 1987).

- (77) a. They have been often terrorized by prejudice.
 b. ?*They are being often terrorized by prejudice.
 c. ? Updates have been often released for this.
 d. * Updates are being often released for this.

3.2.5 Accounting for the Distribution of VP Ellipsis

Armed with the above assumptions I now turn to the account of the paradigm in (67)-(70). Given the above discussion, the second conjunct has the structure in (78). Given that the highest projection in the extended domain of VP, which comprises AspectPs, works as a phase the only phase in the middle field is the highest AspectP, given in bold.⁴⁴

- (78) [_{TP} Peter_i must [_{VP_{f1}} have [**AspectP1** *en* [_{VP_{f2}} *be* [_{AspectP2} *ing* [_{VP_{f3}} *be* [_{VP} hassled *t_i* by the police]]]]]]]]

Recall now that, as discussed above, the *-en* inflected verb *be* undergoes movement, while the *-ing* inflected verb *be* does not. The affixation of *be* to *-en* can then be implemented by having *be* move to *-en*. As for the latter, given that *be* does not undergo movement here and Bobaljik's (1995) claim that affixation can be achieved through either syntactic head movement or PF merger/affix hopping, we are left with PF merger as the way of implementing the affixation of *-ing* to *be* here, with *-ing* hopping onto *be* located in VP_{f3} in PF. This then leaves us with the following syntactic structure for the examples in question. (I am ignoring potential intermediate NP traces.)⁴⁵

- (79) [_{TP} Peter_i must [_{VP_{f1}} have [**AspectP1** *be_j+en* [_{VP_{f2}} *t_j* [_{AspectP2} *ing* [_{VP_{f3}} *be* [_{VP} hassled *t_i* by the police]]]]]]]]

Consider now the possibilities for ellipsis in the middle field of (79), given that only phases and phasal complements can be elided. Since VP_{f1} is neither the complement of a phase head nor a phase itself VP_{f1} cannot be elided. This accounts for the unacceptability of (67). AspectP1, on the other hand, can be elided since AspectP1 is a phase. This ellipsis option yields the sequence in (68), accounting for the grammaticality of this construction. Since VP_{f2} is a complement of a phase head VP_{f2} can also be elided, which accounts for the grammaticality of (69). Notice now that nothing below VP_{f2} can be elided. AspectP2, VP_{f3}, and VP are neither phases nor complements of phasal heads, hence they cannot undergo ellipsis. We then account for the ungrammaticality of the remaining example in (70).⁴⁶ The proposed model thus accounts for the full paradigm in (67)-(70).

The same holds for the simpler paradigm in (80). The relevant structure is given in (81).⁴⁷

- (80) Jane must have been hassled by the police, and Sue
 a. *must too.
 b. must have too.
 c. must have been too.

- (81) [_{TP} Sue_i must [_{VP_{f1}} have [**AspectP1** *be_j+en* [_{VP_{f2}} *t_j* [_{VP} hassled *t_i* by the police]]]]]]

The only projections in the middle field of (81) that can be elided are AspectP₁ and VP₁₂. This way we derive the acceptable examples in (80). Crucially, VP₁ cannot be elided (since it is neither a phase nor a phase complement), which accounts for the ungrammaticality of (80)a.

Consider now A'-extraction out of the VP ellipsis sites discussed above. As noted above, A'-movement out of ellipsis sites is in principle possible, sluicing being the standard case. It is well-known that A'-movement is not always possible out of constructions involving traditional VP ellipsis, and the same in fact holds for sluicing. Thus, (82) contrasts with (83).

- (82) a. *They said ~~hey heard about a Balkan language~~, but I don't know which ~~hey did~~.
 b. ?Ben knows ~~who she invited~~, but Charlie doesn't know ~~who~~.
 (83) a. They said they heard about a Balkan language, but I don't know which.
 b. Ben knows who she invited, but Charlie doesn't know. (Merchant 2008b)

Merchant (2008b) provides an account of (82) based on MaxElide (84), which essentially states that when an ellipsis site contains an A'-trace, ellipsis must target the largest constituent possible. (83) then blocks (82), since the ellipsis targets a larger constituent in (83).

- (84) Let XP be an elided constituent containing an A'-trace and YP a possible target for deletion. YP must not properly contain XP.

Turning now to the ellipsis cases discussed above, interestingly, although the relevant contrasts are subtle, all my informants prefer (86)a to (85)a and (86)b to (85)b.

- (85) a. ?*You wonder by whom Betsy must have been being hassled, and I wonder by whom Jane must have.
 b. ?*You wonder on which table your book must have been put, and I wonder on which table my CD must have.
 (86) a. ?You wonder by whom Betsy must have been being hassled and I wonder by whom Jane must have been.
 b. ?You wonder on which table your book must have been put, and I wonder on which table my CV must have been.

This is rather surprising given MaxElide. Given MaxElide, (85) and (86) should not even have the same grammaticality status: examples in (85) should be better than examples in (86) since they involve ellipsis of a larger constituent in the presence of A'-movement out of an ellipsis site. Recall, however, that A'-movement is easier out of ellipsis sites that correspond to phasal complements than ellipsis sites that correspond to full phases (cf. (32)). Significantly, the contrast between (85) and (86) corresponds to a phasal ellipsis/phasal complement ellipsis cut: what is elided in (85) is a full phase (AspectP₁ from (79)), and what is elided in (86) is a phasal complement (VP₁₂ from (79)). The contrast in (85)-(86), which is rather surprising given MaxElide (in fact, the subtle improvement in (86) becomes even more significant given that under MaxElide (85) is actually expected to be significantly better than (86)), can then be taken as a confirmation of (32). Notice furthermore that A-movement is allowed out of both phasal and phasal complement ellipsis here. (A-movement occurs in all the examples

discussed above, including (68)-(69).) This is in fact exactly what is expected under the above deduction of (32). Let us apply that analysis to (85)/(86). The structure for (85)a/(86)a is (87). Following standard assumptions regarding phases and successive cyclic movement, the wh-phrase has to move to SpecAspectP1. (I ignore intermediate traces of the subject).

- (87) C [TP Peter_i must [VP_{f1} have [AspectP1 wh-phrase be_j+en [VP_{f2} t_j [AspectP2 ing [VP_{f3} be [VP hassled t_i

As soon as C is merged, the lower phase AspectP1 undergoes ellipsis marking. There are two options here: AspectP1, a phase, is marked for ellipsis or its complement, VP_{f2}, is marked for ellipsis. Crucially, only on the latter option the wh-phrase ends up being outside of the ellipsis-marked site, hence it is available for movement to SpecCP only on that option. (Recall that ellipsis marking freezes the phrase in question for further syntactic computation.) We thus account for the contrast in (85)-(86). Furthermore, we also account for the fact that A-movement to SpecTP out of the ellipsis site is available in both cases. The attractor for A-movement is T, which enters the structure before C is merged. As a result, when T attracts the subject, AspectP1 has not been marked for ellipsis. Consequently, the subject in SpecAspectP1 is available for movement to SpecTP.⁴⁸

Interestingly, Troy Messick (p.c.) observes that the examples in (85) improve under wh-passivization.

- (88) a. ?You wonder which boy must have been being hassled, and I wonder which girl must have.
b. ?You wonder which book must have been put on that table, and I wonder which magazine must have.

This is not surprising: (88) does not involve wh-movement out of an ellipsis site. Rather, it involves A-movement out of the ellipsis site (to SpecTP), followed by wh-movement. As a result, the problem noted above regarding (85) does not arise in (88). The above analysis thus accounts both for the possibility of A-movement out of both phasal and phasal complement ellipsis, as well as the contrast between phasal and phasal complement ellipsis regarding the possibility of A'-movement.

Returning to simple cases that do not involve A'-extraction, the above analysis also explains several otherwise puzzling facts concerning gerunds. Consider (89), adapted from Aelbrecht (2010).

- (89) *I recall Morgan having been thinking about it, but I don't recall Peter having been.

Within the current system, the *-ing* inflected auxiliary *have* should be treated as part of the aspectual domain, i.e. the extended VP domain. This gives us (90) as the relevant part of structure for (89).⁴⁹

- (90) ...[AspectP1 ing [VP_{f1} have [AspectP2 be_j+en [VP_{f2} t_j [VP thinking about it]]]]]

The phasal head here is the phrase headed by *-ing*. Since VP_{t2} is neither a phase nor a phase complement (and the same holds for VP), it cannot undergo ellipsis in the current system. We thus have an account of the ungrammaticality of (89), as well as a somewhat surprising contrast between (69) and (89) with respect to the possibility of ellipsis of the material following *been*.

The current analysis in fact also accounts for the ungrammaticality of (91).

(91) *I recall Morgan having been thinking about it, but I don't recall Peter having.

(91) would require ellipsis of AspectP₂ in the structure in (90). However, this phrase is neither a complement of a phase head nor a phase itself. Its ellipsis is then disallowed, which gives us an account of the unacceptability of (91) (which is rather unexpected, given the acceptability of (96)a below). The current system thus provides us with a rather straightforward account of the somewhat surprising data in (89)/(91) (and the contrast between such examples and similar finite examples).

Turning now to (92), there are quite a few proposals in the literature concerning the structural position of *Peter* in such examples. Many of them can be easily adopted into the current system. Thus, Pires (2006) places *Peter* in SpecTP (and *-ing* in the vP domain), which means that *Peter* belongs to a different phasal domain here. AspectP₁, a phase, can then be elided in (93).⁵⁰

(92) I recall Morgan having been thinking about it, but I don't recall Peter.

(93) [TP Peter [_{AspectP1} ing [_{VP1} have [_{AspectP2} be_j+en [_{VP2} t_j [_{VP} thinking about it]]]]]]]

Notice, however, that such examples can help us establish the ordering of affix hopping and ellipsis, given the above generalization that A'-movement is typically possible only out of ellipsis sites that correspond to phasal complements. As noted above, (93) can involve ellipsis of a full phase, namely AspectP₁. Suppose, however, that affix hopping can precede ellipsis. *-Ing* can then hop onto *have* before ellipsis applies. Ellipsis can then elide the complement of AspectP₁ and still yield the string in (92). On the other hand, ellipsis of VP_{f1} cannot yield (92) if affix hopping cannot precede ellipsis. (92) can then involve either phasal or phasal complement ellipsis if affix hopping can precede ellipsis, but it can involve only phasal ellipsis if affix hopping cannot precede ellipsis. Since A'-extraction is possible only out of phasal complement ellipsis, the extraction test can then help us determine the ordering of ellipsis and affix hopping. It turns out that extraction is degraded in this context, which then provides evidence that ellipsis precedes affix hopping (at least for this affix).⁵¹

(94) ?*Who does Jane recall Mary (having been) supporting, and who does John recall Bill?

(95) cf. Who does Jane recall Mary (having been) supporting?

Returning to the distribution of VP ellipsis, there is an interesting contrast between constructions like (4) and (91) and examples where the first head in the modal/auxiliary sequence is a finite auxiliary. Thus, if finite *have* is the initial element in the middle field, ellipsis after the first element is possible. The rest of the paradigm remains the same as in (4).

- (96) Betsy has been being hassled by the police, and Peter
 a. has too.
 b. has been too.
 c. *has been being too. (Sag 1976)

This is in fact exactly what is expected under the current analysis. (96)a-c have the structure in (97).

- (97) [TP Peter_k has_i [VP_{f1} t_i [AspectP1 be_j+en [VP_{f2} t_j [AspectP2 ing [VP_{f3} be [VP hassled t_k by the police]]]]]]]]

Being a phase, AspectP1 can be elided, which yields (96)a, accounting for the contrast between (96)a and (4)a/(91). Other options for ellipsis in (96) can be handled in the same way as the rest of the paradigm in (4).⁵²

I now turn to a simpler example where only an *-ing* inflected auxiliary verb is present.

- (98) Jane is being hassled by the police and Sue
 a. is too.
 b. *is being too.
 (99) [TP Sue_i is_j [VP_{f1} t_j [AspectP2 ing [VP_{f2} be [VP hassled t_i by the police]]]]]]

While the *-ing* AspectP2 is not a phase in (79), this AspectP is a phase in (99), being the highest projection in the domain of the lexical verb (AspectP2 is the only phase here). Given that only phases and complements of phase heads can be elided, only AspectP2 and VP_{f2} can be elided in (99). The former yields (98)a, and the latter results in a stranded affix *ing*. (If affix hopping could precede ellipsis this option would also yield (98)a, see footnote 51.) (98)b is underivable since it would require deletion of VP, which is neither a phase nor a phasal complement.

Consider now the following constructions.

- (100) John must be hassling the police, and Peter must be too.
 (101) John must be hassled by the police, and Peter must be too.

Recall that auxiliaries that are not inflected for aspect belong to the clausal phasal domain, not the VP domain. The active VP in (100) projects its own phasal domain, which functions as the complement of the auxiliary *be*. This phasal domain undergoes deletion in (100) in accordance with the current approach to phases, which allows ellipsis of phases (and phasal complements).⁵³

Note, however, that ellipsis is also possible in (101). It must then be the case that the complement of *be* in (101) is also a phasal domain. While this goes contrary to the claim about verbal phases made in Chomsky (2000, 2001), it is actually straightforwardly accommodated, even expected, under the current approach to phases. Under the current approach, the highest projection in the extended domain of a verb functions as a phase. Under this approach we would actually expect passive verbs to project phases. Not having vP with

passive verbs would not affect anything here. Whatever the highest projection is in the extended domain of the verb is still a phase here. If we only had VP here, then this VP would be the phase. There should, however, be at least the projection associated with passive morphology here, which should then function as the phase and undergo ellipsis.⁵⁴

(102) Peter must be [~~passive~~ [~~vP~~ ~~main verb~~]]

Under the current approach to phases we thus expect passive verbs to also project phases, an option that is in fact realized in (101).⁵⁵ Additional independent evidence to this effect is given in Legate (2003). I emphasize here that the current approach to phasehood does not require passive verbs to have exactly the same structure as their active counterparts to project phases, i.e. it does not require them to project vP, which means that vP can still be associated with external theta role assignment, hence lacking in passive constructions (see also footnote 60 below).

Recall that in the system adopted here all major categories project phases. I have provided evidence above to this effect for NPs, PPs, and VPs, but we would also expect the same to hold for APs (it would in fact be rather difficult to exempt only AP from phasehood in a principled manner). Under the current analysis of ellipsis (103) provides evidence that adjectives indeed project phases.

(103) John must be tired, and Peter must be too.

What is elided in (103) is a projection of AP. Since this projection is not a complement of a phase head (recall that *be* is not a phase head in such examples) it must then be the case that the projection is itself a phase. (103) then provides evidence that APs also project phases, as expected under the approach to phases argued for here (see also footnote 46, where it is shown that the highest projection in the extended domain of AP is in fact a phase).⁵⁶

Consider finally basic ellipsis examples like (104).

(104) John lives in London, and Peter does too.

An issue that arises here is whether an AspectP is present in (104), given that the example does not involve overt aspectual morphology. As discussed above, phonologically null projections should not be posited unless they are needed. (104) can in fact be accounted for in the current system even if it does not involve a null AspectP. In that case, vP is the highest projection in the extended domain of the verb, hence a phase. (104) can then involve ellipsis of the vP phasal projection.

(105) John lives in London, and Peter does [~~vP~~ ~~live in London~~]

Eliding the VP complement of the *v* phasal head is actually also a possibility here, which is potentially problematic. To avoid blocking this option by stipulation, which will enable us to maintain the “purity” of English VP ellipsis (no stipulations of this sort were needed so far), in order to account for the impossibility of the verb being stranded under ellipsis, as in **John*

lives in London, and Peter lives ~~in London~~ too, we can assume that the verb does not move to v hence it cannot survive ellipsis of the VP complement of the phasal head v. ((105) can then also involve VP ellipsis.) This can be the case quite generally (the evidence for overt V-to-v movement is actually rather thin), or only in ellipsis cases. Lasnik (1999a) and Gengel (2007, 2009) actually provide very convincing justification for the latter, observing that we are dealing here with a broader effect; thus, Lasnik observes that I-to-C movement that normally takes place in English questions does not take place when ellipsis occurs, as in the sluicing example: *Mary will see someone. Who ~~Mary will see~~?* vs. **Who will ~~Mary see~~?* I therefore adopt the latter analysis here, where V-to-v movement does not take place under ellipsis, on a par with the failure of I-to-C movement under ellipsis.⁵⁷

There is also an alternative analysis of basic ellipsis examples like (104) that relies on the presence of a null AspectP. If AspectP is present in (104) (above vP), the example can be derived by eliding either AspectP (the phase) or vP (the phasal head complement).

(106) John lives in London, and Peter does [_{AspectP} [_{vP} live in London]]

Under this analysis the issue of VP ellipsis does not arise, since VP is neither a phase nor a phase head complement hence cannot be elided.⁵⁸

I conclude therefore that both the VP ellipsis and the vP ellipsis account of basic examples like (104) are compatible with the current system. There is actually some disagreement in the literature regarding the issue of which phrase undergoes deletion in simple VP ellipsis cases (see, e.g., Johnson 2001, Merchant 2008a, Gengel 2009, Baltin 2007 for relevant discussion). Of interest to us here is that in the current system resolving this issue has bearing on a thorny (and difficult to resolve) question of whether null AspectP is present in constructions without overt aspectual morphology. Recall that under the null aspect analysis simple VP ellipsis must involve vP deletion, VP deletion is not a possibility. On the other hand, under the no-null-aspect analysis, simple VP ellipsis can involve either vP or VP deletion. The data regarding voice mismatches with VP ellipsis discussed by Merchant (2008a) can help us tease apart the two analyses in this respect.⁵⁹

Merchant (2008a) notes that VP ellipsis tolerates voice mismatches (see also the references cited by Merchant). He assumes that voice is specified in the v head (i.e. vP).⁶⁰ He further argues that since the two conjuncts in (107) have different voice specifications, the v head in the second conjunct must be outside of the ellipsis site (otherwise there would be a voice mismatch between the antecedent and the elided structure), which means the example should involve VP, not vP ellipsis.

(107) The problem was to have been looked into, but obviously nobody did [_{vP-active} [_{VP} ~~look into~~]] (Merchant 2008a)

One could try to argue that we are dealing here with an issue related to Recoverability of Deletion and that (107) simply indicates that there is no problem with Recoverability if an elided active verb has a passive verb as its antecedent. But that would leave a very interesting contrast between VP ellipsis and pseudogapping unaccounted for. Merchant (2008a) observes that, in contrast to VP ellipsis, pseudogapping does not tolerate voice mismatches. Thus, (108)

contrasts with (107).

(108) *Roses were brought by some, and others did lilies.

(109) cf. Some brought roses and others lilies.

(Merchant 2008a)

Pseudogapping is generally treated in terms of ellipsis, with the internal argument that survives pseudogapping moving outside of the phrase to be elided prior to the ellipsis (see, e.g., Kuno 1981, Jayaseelan 1990, Lasnik 1995, 1999b, Johnson 2001, Baltin 2002). Merchant (2008a) argues that the contrast between (107) and (108) provides evidence that VP ellipsis and pseudogapping target different phrases (he gives another argument to this effect regarding quantifier float). In particular, pseudogapping must involve vP deletion (see (110)); (108) is then unacceptable because the antecedent and the elided constituent have different voice specifications, which Merchant argues is disallowed (i.e., the presence of the voice head inside the ellipsis site triggers a failure of identity in the pseudogapping case).

(110) *Roses were brought by some, and others did lilies [_{vP-active} [_{VP} ~~bring~~]]

Like Kim (1997), Depiante (2000), Jayaseelan (2001), Winkler (2005), Aelbrecht (2010), Gengel (2007, 2009), Merchant assumes that pseudogapping involves focus movement of the remnant to a focus position above vP (note that the remnant is focused), which is followed by vP ellipsis.⁶¹ The analysis can be straightforwardly incorporated into the current system. A number of authors have argued that in addition to the high, clausal focus position, many languages have a low focus position within the VP domain (in addition to the references cited above in connection with the focus movement account of pseudogapping, see Bošković 1997, Stjepanović 1999, Belletti 2004, Belletti and Shlonsky 1995, Drubig 2003, Kuo 2009, Bastos 2011). Assume that this is indeed correct and that this low focus position belongs to the VP phasal domain. Under the no-null-aspect analysis, (108) then has the structure in (111), while (107) has the structure in (112) (phases are given in bold).

(111) ...others did [**FocP** lilies [_{vP-active} [**VP** bring]]]

(112) ...obviously nobody did [_{vP-active} [**VP** look into]]

While (112) allows VP deletion, given that VP is a complement of a phasal head, (111) does not. Foc is the relevant phasal head in (111). Being the complement of a phasal head, vP can undergo deletion. VP, on the other hand, cannot undergo deletion in (111) since, in contrast to the VP in (112), it is neither a phase nor a phasal head complement.

Merchant's account of the VP ellipsis/pseudogapping difference can thus be easily incorporated into the current system. There is, however, an added benefit in that the current system explains why pseudogapping and VP ellipsis differ regarding the level of structure that is elided (which was not done in Merchant 2008a). However, this is so crucially only if the constructions discussed above do not contain a null aspect head. As noted above, if a null aspect head is present in the examples considered here even (112) can only involve vP ellipsis. (VP is not a phasal complement in (113).)

(113) ...obviously nobody did [_{AspectP} [_{vP-active} [_{VP} look into]]]

Furthermore, Merchant's analysis provides a strong confirmation of the current contextual approach to phasehood. As discussed above, the status of VP regarding phasehood must be different in (111) and (112): VP is a phase head complement in (112) (hence can be elided) but not in (111) (hence cannot be elided), which means that vP works as a phase in (112) but not in (111). The variable status of vP with respect to phasehood in the constructions under consideration falls out straightforwardly under the current system. In both (111) and (112) the highest phrase in the VP domain functions as a phase: while vP is the highest head in this domain in (112) it is not in (111), where pseudogapping introduces an additional projection into the VP domain.

Merchant's analysis of the different behavior of pseudogapping and VP ellipsis with respect to voice mismatches thus provides a confirmation of the current contextual approach to phasehood. Incorporated into the current system, it also provides evidence against the existence of morphologically unmotivated null Aspect projections, in line with the current attempt to minimize phonologically null structure.⁶²

To sum up, in section 3.2 I have provided an account of a rather complex paradigm regarding VP ellipsis in English which has consequences for the structure of the middle/aspectual field in English, the general theory of phases, and the general theory of ellipsis. Regarding the structure of the aspectual field, the analysis required that only the structure that is morphologically manifested in the constructions under consideration be posited, with the auxiliary undergoing movement to the *-en* affix, but not to the *-ing* affix. Regarding the general theory of ellipsis, I have argued that ellipsis is phase-constrained: only phases and phasal complements can be elided (with A'-extraction out of an ellipsis site being possible only with the latter). This yields a rather constrained theory of ellipsis which, e.g., disallows ellipsis of complements of non-phasal heads. Regarding the general theory of phases, the analysis presented in this section provides additional evidence for the contextual approach to phasehood argued for in the previous sections, where the highest projection in the extended domain of a lexical head counts as a phase. I have argued that Aspect belongs to the verbal, not clausal, phasal domain (see also Wurmbrand 2011); Aspect in fact typically delineates the verbal phasal domain, with projections above AspectP belonging to the clausal phasal domain. The highest projection that works as a phase in the verbal domain is AspectP (when present; otherwise the highest projection in the absence of AspectP is the phase), with crucially the highest AspectP working as a phase in verbal domains with more than one AspectP (as a result, the *-ing* AspectP sometimes works as a phase, and sometimes it does not, depending on whether the *-en* AspectP is present above it). I have argued that the ellipsis paradigm also provides evidence that adjectives project phases, as expected under the current approach where all major categories project phases. Passive verbs also project phases (the same holds for raising verbs), which is again expected under the current analysis: while the lack of vP (if vP is indeed missing with passives, which is not clear) may affect what counts as the highest projection in the extended domain of the verb in a passive construction it cannot affect its phasehood; passive verbs are still expected to project phases. Finally, pseudogapping has been argued to involve an additional projection which affects the phasehood of vP in a manner that

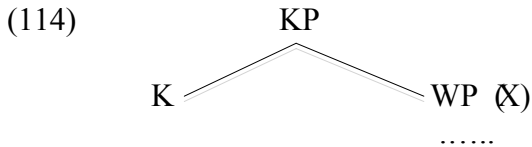
provides an explanation for Merchant's (2008a) claim regarding the different behavior of pseudogapping ellipsis and simple VP ellipsis with respect to the target of ellipsis.

4 Conclusion

I have argued for a contextual approach to phases on which the highest projection in the extended domain of a lexical category counts as a phase. Since lexical categories do not always project the same structure, what counts as a phase within a particular domain varies. Thus, in the traditional noun phrase, DP is the phase in English and NP is typically the phase in SC, a language that lacks DP, except when a numeral/quantifier, which projects QP above NP, is present: in such cases QP functions as a phase and NP ceases to be a phase; in Japanese, another language that lacks DP, KP, which dominates NP, is the phase except in the cases where a QP is projected above KP, in which case QP functions as a phase. While superficially we seem to have a great deal of variation here (both crosslinguistically and within individual languages) regarding what counts as a phase, in all these cases it is the highest projection within the TNP that counts as a phase, hence all these facts can be unified if the highest projection within the TNP works as a phase. This in itself provides strong evidence for the contextual and against the rigid approach to phasehood: only the former allows the phasal status of X to be affected by the syntactic context in which X occurs (here the phasal status of NP is affected by the syntactic context in which it occurs). I have also applied this approach to phasehood to PPs, the crucial case here being Turkish, where the richness of PP structure affects the phasehood of PPs, as well as APs and VPs. Regarding the verbal domain, where based on VP ellipsis I have argued that AspectP or vP functions as a phase depending on what the highest projection within the extended domain of the verb is; only the highest AspectP works as a phase if there is more than one AspectP, with Aspect itself delineating the verbal phasal domain (when present). I have argued that passive verbs and adjectives also project phases, as expected under the approach to phases where every major category projects a phase (potential absence of one projection with passives cannot affect their phasehood under this approach). The current approach to phasehood also goes a long way toward resolving a serious conceptual question regarding how to choose phasal projections: there is nothing to choose here, all major categories project phases. I have also shown that the overall approach to phasehood argued for here enables us to account for (in fact provide a unified account of) a number of otherwise puzzling facts regarding extraction and ellipsis. Finally, I have argued for a particular approach to ellipsis where ellipsis is phase-constrained, to the effect that only phases and complements of phasal heads can undergo ellipsis.

I will conclude by putting the current claim that the highest projection in the extended domain of a lexical head works as a phase into a broader perspective. Consider first the concept of extended projection. What does it mean to be part of an extended projection of A? This means that some property/properties of A are projected (via simple structure building in the sense of Chomsky 1995:244) through all the phrases in the extended domain of A; call these Y. Assume that whatever is responsible for the phasal status, call it X for ease of exposition, is part of Y; it projects through the extended domain. Then, the current claim that the highest extended projection works as a phase can be understood to mean that X determines a phase when X no longer projects (the phasal domain is then also closed when X is no longer projected). Phasehood is in a way then projected through the extended domain together with

the basic properties that determine the nature of this domain (Y from above); when the domain is closed off, with Y no longer projecting, the phasehood property X also no longer projects, turning the phrase that has the X property at that point into a phase; we can look at this as an activation of the phasal property.⁶³ Viewed this way, WP in (114) then becomes a phase after WP merges with K, with K projecting.⁶⁴



In other words, the phasal status of WP is determined after it merges with K (but see footnote 64). This appears to differ from Chomsky's system where WP is identifiable as a phase even before the merger with K. Significantly, Chomsky (2001) crucially argues that even in his system, the phasal status of WP is "activated" only when a higher phase head is merged. In other words, even in his system, for all practical purposes WP does not work as a phase until higher structure is merged. While this seems to be out of place (and rather mysterious) in Chomsky's non-contextual approach to phasehood, it fits rather naturally into the current, contextual approach to phases, i.e. this shows that phasehood at least to some extent has to be contextual anyway--even rigid phasehood systems have to rely on the contextuality of phasehood, the current system simply fully endorses it.

The overall picture can be further modified as follows. Suppose there is a principle in (115), where phasal specification is taken to be X from the above discussion.

(115) The Phase Continuity Principle: Every phrase has phasal specification.

According to (115), every phrase is part of an extended phasal domain. This means that K in (114) will start a new phasal domain, which will be "activated" when K ceases to project (in terms of extended projections), as discussed above. If (115) holds, we are pretty much led to the current view where the highest phrase in the extended projection works as a phase. Suppose that, differently from the above discussion, the phasal property is immediately activated, turning the first phrase with X, call it ZP, into a phase. I take this to mean that the X property would no longer be projected. The only way for (115) to be satisfied then is for ZP to be merged with another head with a phasal property, call it L, with L projecting. Like ZP, LP will then function as a phase, and will have to be merged with another head whose maximal projection will again have to work as a phase, given (115).⁶⁵ In other words, we will be then forced into a every-phrase-is-a-phase system. (115) thus naturally yields either an every-phrase-is-a-phase system or the highest-projection-is-a-phase system. I have argued above that the former is too strong (thus, it prevents all complement movement, given anti-locality) and that the latter is quite generally superior to the former on empirical grounds.

Appendix: On Word Order in the Traditional NP

In this appendix, I expand on the NP analysis of article-less languages as well as the NP adjunction analysis of TNP-internal elements in NP languages, showing how certain

crosslinguistic differences in the word order of TNP-internal elements can be captured under that analysis.

In Bošković (in press) I argue that article-less languages quite generally lack DP based on a number of syntactic and semantic phenomena that correlate with articles which indicate that there is a fundamental difference in the TNP of English and article-less languages which cannot be reduced to phonology (overt/null articles). Moreover, as shown in Bošković (in press) and references therein, all the generalizations in (116) can be deduced under the NP/DP analysis, which provides a uniform account of the differences between the two language types where a single factor is responsible for all of them.⁶⁶

- (116)
- a. Only article-less languages may allow left-branch extraction.
 - b. Only languages without articles may allow adjunct extraction from TNPs.
 - c. Only languages without articles may allow scrambling.
 - d. Multiple-wh fronting languages without articles do not show superiority effects.
 - e. Only languages with articles may allow clitic doubling.
 - f. Languages without articles do not allow transitive nominals with two genitives.
 - g. Head-internal relatives show island sensitivity in article-less but not in article languages.
 - h. Polysynthetic languages do not have articles.
 - i. Only languages with articles allow the majority reading of MOST.
 - j. Languages without articles disallow strict clause-mate NPI licensing under negative raising.
 - k. Negative elements must be focus-marked in article-less languages.
 - l. The negative concord reading may be absent with complex negative constituents only in languages with articles.
 - m. Radical pro-drop may be possible only in article-less languages.
 - n. Number morphology may not be obligatory only in TNPs of languages without articles.
 - o. Focus-moved phrases are subject to a verb adjacency requirement only in article languages.
 - p. Possessors may induce an exhaustivity presupposition only in languages with articles.
 - q. Inverse scope for S-O is unavailable in languages without articles.
 - r. Sequence of Tense is found only in languages with articles.
 - s. Second position clitics are found only in article-less languages.
 - t. Obligatory numeral classifier systems are found only in languages without articles.
 - u. Only languages without articles may allow subject reflexives.

As noted in section 2.1, this analysis has led to NP-adjunct treatment of several TNP-internal elements, which this appendix shows is confirmed by word order. What is important here is that word order within TNP is generally freer in NP than in DP languages. The reason for this is that the richer structure of DP languages imposes syntactic restrictions on word order in DP languages that are not found in NP languages due to the lack of the structure that is responsible for these restrictions. Thus, in English demonstratives and possessives must precede adjectives since they are located in DP, which is higher than the projection where

adjectives are located. Due to the lack of DP all these elements are treated as NP adjuncts in article-less languages. As a result, syntax does not impose any restrictions on their word order. Chinese, Japanese, and Korean strongly confirm this approach. As (117) shows for Chinese, in these languages any order of adjectives, demonstratives and possessives is in principle allowed, in stark contrast with English, which follows if they are all NP adjoined.⁶⁷

- (117) a. Zhangsan-de hongse de chenshan vs. hongse Zhangsan-de chenshan
 Zhangsan- GEN red shirt red Zhangsan-POSS shirt
 b. na-bu hongse paoche vs. hongse na-bu paoche
 that-CL red sport-car red that-CL sport-car
 c. na-bu Zhangsan-de paoche vs. Zhangsan-de na-bu paoche (Chinese)

There is, however, a SC/Chinese difference regarding word order. While SC has free word order for possessives and adjectives, demonstratives must precede both of these.

- (118) Jovanova skupa slika vs. skupa Jovanova slika
 John's expensive picture expensive John's picture
 (119) a. ova skupa kola vs. ?*skupa ova kola
 this expensive car expensive this car
 b. ova Jovanova slika vs. ?*Jovanova ova slika

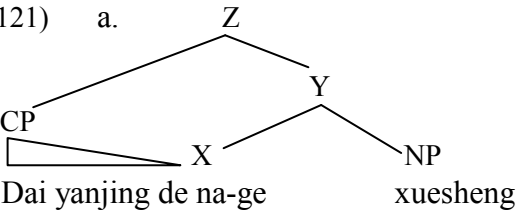
In Bošković (2009) I observe that semantically, it makes sense that possessives and adjectives can occur in either order. The most plausible semantics for possessives is modificational (cf. Partee and Borschev 1998: $[[\text{Mary's}]] = \lambda x. [R_i(\text{Mary})(x)]$ (R_i is a free variable)). Given the standard assumptions that adjectives are also of type $\langle e, t \rangle$ and that there is a rule of intersective Predicate Modification, compositional semantics imposes no restrictions on the order in which possessives and adjectives are composed.

Kaplan (1989) treats demonstratives as markers of direct reference; demonstrative noun phrases pick out an individual of type e . More precisely, a demonstrative element like *that* is a function of type $\langle \langle e, t \rangle, e \rangle$. Once a demonstrative has mapped a nominal element to an individual, further modification by predicates of type $\langle e, t \rangle$ is impossible. Hence, while straightforward semantic composition allows possessives and adjectives to be composed in either order, demonstratives must be composed after both adjectives and possessives.⁶⁸ This perfectly matches the actual facts regarding the ordering of the elements in question in SC.

What about Chinese? Why are even demonstratives freely ordered in Chinese? Bošković and Hsieh (2012) note that the fact that relative clauses can also precede a demonstrative in Chinese (the same holds for Japanese and Korean) provides a clue for the resolution of this puzzle.

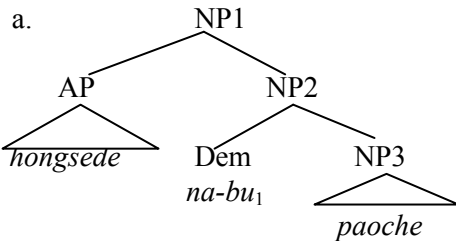
- (120) a. **dai yanjing de** na-ge xuesheng
 wear glasses REL that-CL student
 'that student who wears glasses'
 b. na-ge dai yanjing de xuesheng

Partee (1976) shows that the head noun of restrictive relatives and the relative must combine before a determiner is introduced, serving together as its restrictor. There are, however, languages where relatives occur outside the scope of determiners. Bach and Cooper (1978) and Lin (2003a) argue that in such languages a free variable is built in into the semantics of determiners; the relative clause, which is added to the structure after the determiner and the noun are combined, specifies the value of this free variable. Lin (2003a) analyzes (120)a as in (121). The demonstrative NP is treated as a generalized quantifier. The free function variable h in the denotation of the demonstrative carries the same function as that of a contextual pronominal variable. In (121), the free variable $h_{\langle e, t \rangle}$ receives its value from the pre-demonstrative relative clause, whose type is also $\langle e, t \rangle$.

- (121) a. 
- b. $\llbracket \text{NP} \rrbracket = \lambda x. x \text{ is a student}$
 $\llbracket \text{X} \rrbracket = \lambda f_{\langle e, t \rangle}. \lambda g_{\langle e, t \rangle}. \text{THAT } x \text{ s.t. } f(x) \text{ and } \mathbf{h}(x) \text{ and } g(x)$
 $\llbracket \text{Y} \rrbracket = \lambda g_{\langle e, t \rangle}. \text{THAT } x \text{ s.t. } x \text{ is a student and } \mathbf{h}(x) \text{ and } g(x)$
 $\llbracket \text{CP} \rrbracket = \lambda x. x \text{ wears glasses}$
 $\llbracket \text{Z} \rrbracket = \lambda g_{\langle e, t \rangle}. \text{THAT } x \text{ s.t. } x \text{ is a student and } x \text{ wears glasses and } g(x)$

Bošković and Hsieh (2012) extend this analysis to (117): Given that both possessives and intersective adjectives are of type $\langle e, t \rangle$, they can also serve to provide a value for the contextual pronominal variable that further restricts the domain of quantification. This accounts for the fact that possessors, intersective adjectives, and relative clauses can all precede demonstratives in Chinese.

Spelling-out the details, the demonstrative bears an index and denotes a function of type $\langle \langle e, t \rangle, e \rangle$. Further restriction from the pre-demonstrative modifier is specified via the assignment function g applying on the index of the demonstrative. Through the variable assignment $g(1)$ that is built in into the demonstrative denotation, the modifier in (117)/(122) can restrict the demonstrative.

- (122) a. 
- b. $\llbracket \text{NP3} \rrbracket^g = \lambda x. x \text{ is a sports car}$

$\llbracket na-bu_1 \rrbracket^g = \lambda f_{\langle e, t \rangle}. \text{ THAT individual } x \text{ such that } g(1)(x) = f(x) = 1$
 $\llbracket honghsede \rrbracket^g = \lambda x. x \text{ is red}$
 $\llbracket NP2 \rrbracket^g = \text{ THAT individual } x \text{ such that } g(1)(x) = 1 \text{ and } x \text{ is a sports car}$
 $\llbracket NP3 \rrbracket^g = \text{ THAT individual } x \text{ such that } x \text{ is red and } x \text{ is a sports car}$
 (where $g^{[1 \rightarrow \lambda x. x \text{ is red}]}$; Assignment Modification)

The above analysis crucially relies on the contextual pronominal variable in the semantics of TNPs with demonstratives. It should not be freely available for SC demonstratives, or possessors and adjectives could precede them. Bošković and Hsieh thus conclude that a syntactically visible contextual pronominal variable is not available in SC demonstratives or there simply is no such variable in the denotation of SC demonstratives. Either way, a modifier outside of a demonstrative cannot be interpreted as part of the restrictor of the demonstrative in SC. The modifier then has to adjoin under the demonstrative. An appealing possibility arises here that the different behavior of Chinese and SC demonstratives may be related to the presence of a classifier on the demonstrative in Chinese (Chinese demonstratives must co-occur with a classifier), where the classifier that comes with a demonstrative may be a realization of the syntactically visible contextual restriction.⁶⁹

To sum up, radically different behavior of article-less languages like SC and Chinese and article languages like English with respect to the freedom of word order and binding possibilities (see section 2.1) within TNPs provides rather strong evidence for the NP/DP analysis and shows quite conclusively that a uniform analysis for all these languages is simply not empirically warranted. The NP analysis also accounts for the remaining difference between Chinese and SC with respect to the ordering of TNP-internal elements concerning demonstratives, tying it to an independent factor.

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¹I am putting aside here passives and unaccusatives, where there is also an issue of whether vP is present.

²The issue, however, will not be completely resolved here since I will not address the phasehood of the clausal domain, where the standard assumption is that CP, but not TP, works as a phase. In other words, I will confine the discussion to domains below the level of a full clause; incorporating the clausal domain into the approach to phasehood argued for here will have to be left for another occasion (some preliminary remarks will be however made in section 3.2).

³The discussion will not be confined to English, which is used here only to illustrate the phenomena to be discussed. A disclaimer is in order, however. I will only discuss the aspects of the phenomena from (1)-(4) that are directly relevant to the arguments given in the article and the theoretical issues under consideration. In other words, as is standard in the works that are similar in scope to the current one, I will not be providing comprehensive accounts of these phenomena.

⁴A note is in order regarding terminology. I use the term ellipsis to refer to deletion processes where no overt material can follow the gap (apart from elements like *too*), as opposed to gapping, where overt material follows what appears to be elided (see Johnson 2009 on gapping). This article only deals with ellipsis (in the above sense), not gapping.

⁵Locating possessives in SpecNP is actually also compatible with the NP analysis (see Appendix for additional discussion of the NP analysis), though this would leave the binding data about to be discussed unaccounted for.

⁶In fact, this claim has been made for a number of languages with articles; for DP-as-a-phase analysis of English as well as other languages, see Bošković 2005, Chomsky 2000, 2001, Compton and Pittman 2007, den Dikken 2007, Despić 2011, Heck, Müller, and

Trommer 2008, Gutierrez-Rexach and Mallen 2001, Hiraiwa 2005, Kramer 2009, Reintges and Liptak 2006, Svenonius 2004, Ticio 2003, Uchishiba 2006, among others (see also footnote 8).

⁷There is rich literature on anti-locality (the term is due to Grohmann 2003). I will simply assume here Bošković's (1994, 2005) approach, which requires Move to cross at least one phrase (this rules out complement-to-Spec movement within the same phrase). For all practical purposes, as long as Abels's generalization in (9) is not an issue, anti-locality will then not be a problem, given that only phasal head complements are forced to move to the Spec of the same phrase.

⁸The impossibility of moving a complement of D in (i) can then be interpreted as an argument for the phasal status of DP.

(i) *Books_i he bought [_{DP} some t_i]

Such examples are allowed in German, with the process in question referred to as split topicalization. This could be taken to indicate that German TNPs have a bit more structure than English TNPs; (i) in German then would not have to involve movement of the complement of D, but a lower phrase. Note, however, that the subextraction analysis of German split topicalization faces numerous problems (e.g. the fronted element corresponding to *books* in (i) is an independent TNP which can even have its own article). There are in fact a number of alternative analyses of German split topicalization that do not involve subextraction from DP (see Roehrs 2006 and van Hoof 2006 and references therein). More generally, due to the possibility of several irrelevant derivations, I will not examine examples like (i) crosslinguistically here (to mention two such derivations, which are available in some languages, (i) can involve NP ellipsis in the in-situ "remnant" DP or it can be analyzed in terms of quantifier floating, with *some* a floating quantifier).

⁹These elements receive genitive case from the noun and must follow the noun, differently from the possessor in (6), which precedes the noun and agrees with it in case (and phi-features), just like adjectives do.

¹⁰For additional evidence that NP is a phase in SC, see Bošković (2010).

¹¹The literature is split on the categorial status of the N-complement in (15): some treat it as DP (with *of* essentially being a case marker) and some as PP. Note that, as I show in Bošković (2010), SC does not have nominal PP complements; in SC PPs modify nouns only as adjuncts. In other words, in SC, a language which allows NP nominal complements, the nominal complement/argument treatment is reserved for NPs. For relevant discussion, see also Starke 2001; simplifying somewhat, Starke ties traditional argumenthood to NPhood, or, more precisely, being case-marked; English actually may not be different from SC in the relevant respect if in a language like English, which is case-poor, some prepositions count as case-markers. This is not the case in a case-rich language like SC, where prepositions are indeed prepositions.

¹²A reviewer raises a question concerning German genitives. In Bošković (2012b) I have mistakenly argued that NP functions as a phase in German (in spite of the presence of DP)

based on the impossibility of extracting genitive NP complements. To account for (i), I applied to the German case in question the PIC/anti-locality account of SC (12).

- (i) a. Ich habe Bilder der Pyramiden gesehen.
 I have pictures the-GEN.PL pyramids seen
 ‘I have seen pictures of the pyramids.’
 b. *Ich habe der Pyramiden Bilder gesehen./*Der Pyramiden habe ich Bilder gesehen.

However, as (ii) shows, the *of*-genitive can extract, which indicates that German NPs are not phases. Moreover, German also bans overt extraction of pre-nominal genitives not located in the N-complement position, as (iiib) shows (the genitive is standardly assumed to be located in SpecDP in (iiia) (and *s* is not assumed to be in D here, which means that (iiib) does not involve non-constituent extraction). These data indicate that we are dealing with a more general issue here, not simply a ban on nominal genitive complement extraction, which is what Bobaljik and Wurmbrand (2012) also conclude.

- (ii) Von Berlin hast du Bilder gesehen.
 of Berlin have you pictures seen
 (iii) a. Ich habe Peters Haus gesehen.
 I have Peters-GEN house seen
 b. *Peters habe ich House gesehen.

Furthermore, German allows QR of true genitive NP complements (see Fanselow 1988 and Bobaljik and Wurmbrand 2012).

(iv) **Context:** Two friends are talking about last night. One of them had visited Peter last night, who is crazy about jazz. On that occasion, Peter played a record of Miles Davis, a record of John Coltrane, and a record of Fred Frith.

- Peter hat eine Platte jedes Musikers aufgelegt.
 Peter has a/one record every.GEN musician played
 ‘Peter played a record by every musician.’ $\exists \gg \forall$; $\forall \gg \exists$ (Bobaljik and Wurmbrand 2012)

Bobaljik and Wurmbrand argue that the wide scope of the genitive is established by the QR of the genitive outside of its DP. It must then be the case that German genitive NP complements can in fact extract. Bobaljik and Wurmbrand also show that the QR operation in question is constrained by the PIC/anti-locality considerations discussed above (they treat QR as pronunciation of a lower copy in a single-cycle syntax model), which means that genitive complement extraction in German does not yield a PIC/anti-locality violation, in contrast to SC. (What is important is that such extraction is in principle possible in German; see Bobaljik and Wurmbrand for a suggestion regarding cases like (ib)/(iiib) where it is disallowed; they suggest we are dealing here with a PF issue). Under Bobaljik and Wurmbrand’s analysis, German genitive NP complements can in fact be taken to provide evidence for the general approach to phasehood argued for here, where the highest projection within TNP works as a

phase (in German, a DP language, this would be DP, not NP).

A clearer argument is provided by Greek, a DP language where nouns assign genitive to their complement which is base-generated following the noun, just as in SC (see also Alexiadou 2005 for arguments against the presence of a null P with Greek adnominal genitive). Significantly, in contrast to SC, genitive complements can be extracted in Greek.

- (v) a. *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 and Stavrou 1987)
- b. *Piu_i vrikes [tis fotografies t_i]?*
 who-GEN found-2s the pictures
 ‘Of whom did you find the pictures?’ (Arhonto Terzi, p.c.)

The minimal contrast between Greek and SC ((va-b) are unacceptable in SC, (vb) is in fact particularly bad) provides evidence for the current system, where DP is a phase in Greek and NP is a phase in SC.

¹³Japanese, Chinese, Korean, and Turkish, which also lack articles, behave like SC regarding possessor binding, see Bošković (in press), Cheng (in preparation), Takahashi (2011), Bošković and Şener (2012), and Bošković and Hsieh (2012) (see also section 3.1 regarding Japanese).

¹⁴Long constituents in front of the clitic *ga* generally result in some awkwardness. Note that (16) gives a simplified structure. As discussed in Franks (1994) and Bošković (2010), Q elements assign a special inherent case to the element that follows it. In Bošković (2010) I show that such inherent cases are generally accompanied by a null linker/preposition-like element that facilitates such case assignment. In other words, there is an extra functional projection between the QP and NP in (16), which I ignore for ease of exposition. This projection (referred to as FP below), however, renders irrelevant for our purposes testing movement of the Q complement since such movement can involve movement of the NP complement of the null F head, which would void potential anti-locality violations (see Bošković 2010; as discussed there, this is an interfering factor with inherent case-assigning contexts quite generally, which are hence ignored here; note also that there is independent evidence that SC adnominal genitive is a structural, not an inherent case (the same actually holds for the case assigned by prepositions), see Bošković 2010.)

¹⁵We cannot test the phasehood of QP with extraction here due to an interfering factor (see footnote 14), but relevant evidence to this effect will be provided in section 3.1 with respect to ellipsis.

¹⁶Note also Müller’s (2011) discussion of melting effects, where addition of a higher SpecXP makes possible extraction from a lower Spec of the same phrase. Although melting effects are superficially quite different from (17) they abstractly look like (17) in that embedding an element by adding more structure makes otherwise illegitimate extraction possible.

¹⁷The conclusions reached here about the structure of SC PPs follow Abels’s bare PP

analysis and conflict with the conclusions reached by Radkevich (2010), who assigns SC PPs richer internal structure. I leave it open here how to reconcile the two. For criticism of several exploded PP analyses proposed in the literature, see Abels (2003) (see also Abels 2009 for criticism of the mainstream cartographic approach in general).

¹⁸See also Abels (2003) for a more general point that the impossibility of P-stranding in languages that quite generally disallow it cannot be handled by assuming that PPs are quite generally islands in such languages.

¹⁹A reviewer raises an issue regarding the edge of a phase in this respect. The phase system treats the edge of a phase X as special only in that X essentially belongs to a higher phase domain. The edge as a domain by itself is not special and is in fact standardly not treated as a domain in itself (i.e. to the exclusion of other material) by the phase theory. The only thing that is special about it concerns which spell-out/phasal domain the edge belongs to. (One could try to argue on empirical grounds that the edge should receive special treatment with ellipsis, see e.g. Kayne 2006. The discussion in this article can be taken as an argument against this approach (though we may be dealing with different phenomena here; see footnote 4 regarding what is taken to be ellipsis in the current approach, which seems to differ from Kayne 2006).)

²⁰Whether this is the correct approach to case assignment (the issue is actually far from being settled) is beside the point; I am merely giving here an illustration regarding how the domain of a particular phenomenon can be constrained.

²¹It is then not surprising that both of these positions have been maintained in the literature (the current work essentially combines these two lines of research, the combination being necessary on empirical grounds, as discussed below). Thus, Holmberg (2001) equates ellipsis domains with phases and Gengel (2009) with phasal complements. As noted below, it is quite easy to implement both of these. The implementation given below will in fact give the two slightly different treatments, a desirable move since it will be shown below that there are phenomena where they two do not pattern together.

²²Many languages, like English, seem to disallow argument ellipsis of the kind found in Japanese (30). It is not clear what is responsible for this (for discussion, see Oku 1998, Saito 2007, Şener and Takahashi 2010, M. Takahashi 2010, Cheng in preparation). Note, however, that if right node raising involves ellipsis, as argued by many authors (e.g. Wexler and Culicover 1980, Kayne 1994, Wilder 1997, Hartmann 2000, Bošković 2004b, An 2007), it must be the case that English allows argument ellipsis in the contexts where right node raising affects an argument (cf. *John likes Jill*, and *Peter dislikes Jill*). Having to block argument ellipsis in some, but not all contexts within a single language further complicates the situation here. At any rate, it is beyond the scope of this article to deal with this issue. The point of this section is simply to determine what kind of ellipsis processes are *in principle* possible; how to block some of the options that are in principle available in particular languages or constructions is an independent issue. (Consider also Lobeck's 1990/Saito and Murasugi's 1990 requirement that functional heads whose complements are elided must undergo Spec-head agreement. This requirement is independent of our concerns in the sense that it is an additional requirement imposed on heads whose complements can in principle elide under

the current proposal: some phases/phasal complements may be prevented from undergoing ellipsis because they are complements of functional heads that do not undergo Spec-head agreement (there are many other factors that can rule out ellipsis of some phases/phasal complements, e.g. such ellipsis could leave a stranded affix). It should be noted, however, that there are exceptions to this ill-understood requirement (see (53) and footnote 29).

²³As should become clear during the discussion below, this analysis requires treating *do* in question as being outside of the extended domain of the elided verb, contrary to Baltin (2007) and Aelbrecht (2010). I leave details of the analysis of this construction for future research. It is possible that phasal complement ellipsis is simply not possible with *do*-ellipsis (as noted below, particular options for ellipsis in the VP domain are often blocked crosslinguistically for no apparent reason), or that the complement of this *do*, which would belong to another phasal domain, is headed by a null affix (different from *v*) that needs to undergo affix hopping; ellipsis of the complement of this null head would then leave the affix stranded (see below).

²⁴It should be noted that the claim that both phasal and phasal complement ellipsis are allowed does not require the two to differ with respect to extraction, hence if it turns out that (32) is incorrect the claim will not be affected; we will still be left with the fact that both sluicing (phasal complement ellipsis) and argument ellipsis (phasal ellipsis) are allowed.

²⁵It is actually possible that this is not much different from the well-known variation with respect to overt movement: for example English has *wh*-movement, but Japanese does not.

²⁶Saito, Lin, and Murasugi (2008) (SLM) provide a DP account of (48) that is crucially based on an argument-adjunct asymmetry regarding what kind of elements survive the ellipsis. More precisely, the crucial assumption is that examples like (48) involve movement of an argument to SpecDP, followed by NP ellipsis, hence only arguments can survive such ellipsis under their analysis. However, Takahashi (2011) shows that the underlying generalization cannot be maintained as adjuncts can survive such ellipsis, which provides evidence against the crucial ingredient of SLM's analysis. Some data are given in (i)-(ii) (the remnant in (ii) is a relative clause); notice also that the possessor in (48) needs to be analyzed as an adjunct given that Japanese possessors pattern with SC possessors with respect to the binding tests from section 2.1 (see below). Additionally, as discussed in Takahashi (2011), examples in (49)-(50) are also problematic for SLM's analysis.

- (i) Sin-no sinnen-wa kawar-anai-ga, nise-no ~~sinnen~~-wa sugu kawa-ru
 true-GEN conviction-TOP change-not-though fake-GEN conviction-TOP easily change-PRES
 'The true conviction never changes, but the fake (one) easily changes.' (Kadowaki 2005)
- (ii) [John-ga su-ru-tumori]-no kougeki-wa seikousu-ru-darou-ga
 John-NOM do-PRES-intend-COP attack-TOP succeed-PRES-probably-though
 [Mary-ga su-ru-tumori]-no ~~kougeki~~-wa seikousi-na-i-darou.
 Mary-NOM do-PRES-intend-COP attack-TOP succeed-NEG-PRES-probably
 'lit. An attack John intends to do will probably succeed, but an attack that Mary intends to do probably will not succeed.'
 (Takahashi 2011)

²⁷There are some restrictions on the occurrence of *no* with such ellipsis that are not

relevant to the main point of this section, see Takahashi (2011) (Takahashi also gives an account of *no* which readily fits into the system adopted here).

²⁸I give here Condition C data; for Condition B data see Bošković (in press) and Takahashi (2011). (Note that for the corresponding Condition B data there is also the issue of what counts as the binding domain in causative constructions, which means that the Condition C test is more reliable.)

For some (but not all) speakers of Japanese relational nouns behave differently from nouns like the one in (51). For an account of such constructions see Takahashi (2011), who, following Partee and Borshev (1998), shows that for these speakers the possessor with relational nouns is a true argument (i.e. a complement, not an adjunct). I put this case aside below; see Takahashi (2011) for discussion of ellipsis with such nouns. (Takahashi shows that ellipsis is not possible in this case, which is not surprising given the N complement status of the possessor; see the discussion below.)

²⁹For Takahashi, ellipsis of phasal complements also requires PF realization of the phasal edge, a restatement of the Lobeck/Saito and Murasugi (LSM) Spec-head requirement (see footnote 22; for LSM, functional heads whose complement is elided must undergo Spec-head agreement; for Takahashi, such heads need to have a phonologically realized edge (Spec or adjunct)). Examples like (53), however, indicate that the phonological realization/Spec-head agreement requirement does not hold in all cases for the Japanese ellipsis construction in question. (Such examples do have limited distribution. Note also that LSM's requirement has been claimed not to hold exceptionally anyway, see Saab 2009 and Aelbrecht 2010.)

³⁰I do not assume KP is necessarily present in all languages, not even those with overtly realized case (see the discussion below). Japanese case markers have a rather special behavior and differ in many respects from for example SC case inflection (recall that they can even be free-standing, see (53)). In fact, it has often been argued that some or all Japanese case markers should not be treated as morphological realization of abstract case, but rather a different phenomenon often referred to as contextual markers or simply a different type of nominal inflection (see e.g. Fukui and Sakai 2003, An 2009, Saito 2011). In other words, case may not be the appropriate term for the elements in question. Recall also that the relevant elements do not comprise only case particles but also topic particle *-wa* as well as focus particles like *-mo* 'also' and *-sae* 'even', which also occur both in examples like (48) and examples like (53). In fact, quite generally the same particles occur in both of these constructions.

³¹In the alternative account of Japanese NP ellipsis given in Takahashi (2011) where case determines phasehood, it was assumed that only phasal complements can be elided, as in Boeckx (2009), Gengel (2009), Cheng (in preparation). (It should be noted that while Takahashi 2011 gives an analysis of the Japanese data in question within a very different contextual phasehood approach, where case plays the crucial role, in later work (Takahashi in press) he also adopts the phasal account argued for here.) Assuming that only complements of phase heads can be elided suffices to account for the Japanese data from this section. The relevant pieces of structure discussed here involve only one phase, which moreover dominates the elided phrase. There is then no possibility of eliding a full phase. However, recall that

Japanese allows ellipsis of full arguments, which are phases (cf. (30)b, which involves ellipsis of the full TNP phase, i.e. QP). We thus independently need to allow for the possibility of phasal ellipsis in Japanese to account for the availability of argument ellipsis. We will see below that this possibility also needs to be allowed to account for VP ellipsis in English.

³²Following Takahashi (2011), I place *rokuzyupuno/nisatu* in SpecQP.

³³See footnote 27 regarding *-no*. Recall that some quantifiers are located in QP in SC. Takahashi (2011) argues that this also holds for Japanese, placing *subete* in SpecQP. The lack of a binding violation in (i) (as in (52) and in contrast to (51)) confirms the presence of an additional projection here.

- (i) a. Subete-no kare_i-no saisin-no eega-ga Kurosawa_i-o hontooni
 all-GEN he-GEN latest-GEN movie-NOM Kurosawa-ACC really
 rakutans-ase-ta.
 disappoint-CAUSE-PAST

‘All of his latest movies really disappointed Kurosawa.’ (Masahiko Takahashi, p.c.)

³⁴ Korean, which has a particle system similar to Japanese, does not allow possessor-stranding examples like (48), as shown in (i) (leaving the topic marker *-nun* attached to the stranded possessor in (i) does not affect the grammaticality of (i)). Significantly, Korean also disallows examples like (53), as shown in (ii), which can be taken as independent evidence that Korean and Japanese particles differ in their syntactic independence, i.e. that only Japanese particles have a life of their own independent of anything in the phrase where they are “attached”. (i) can then be treated like Turkish (63).

- (i) *Taroo-uy thayto-nun coh-ciman, Hanako-uy coh-ci anh-ta.
 Taroo-GEN attitude-TOP good-but Hanako-GEN good-ci NEG-DECL
- (ii) Naomi-to imi tochakha-yss-ni? *Naomi-ka acik tochakha-ci anh-ass-ta
 Naomi-also already arrive-ASP-Q Naomi-NOM yet arrive-ci NEG-ASP-DECL

Note also that (iii) can be taken to indicate that NP ellipsis is not in principle unavailable in Korean (see Bošković in preparation, where (iii) is analyzed as involving ellipsis of the NP complement of Q; for an alternative approach under the NP analysis see Kang in preparation).

- (iii) Pelin-un sey kwen-uy chayk-ul ilk-ess-ko, John-un twu kwen ilk-ess-ta.
 Pelin-TOP three CL-GEN book-ACC read-ASP-CONJ, John-TOP two CL read-ASP-DECL
 ‘Pelin read three books, and John read two.’

Although the above suggestion ties the different behavior of Korean and Japanese regarding (48) to their different behavior regarding (53), the presence of an additional (non-DP) projection in an NP language should not necessarily be tied to the existence of Japanese-style particles; there may be other possibilities in this respect (see Bošković’s in preparation analysis of Chinese). There is another issue here. SC also allows possessor stranding. However, in Bošković (2012) I show that SC possessor stranding does not involve ellipsis but

deep anaphora (see in fact this work for discussion of a possessor/adjective stranding construction that does not involve ellipsis but deep anaphora licensed under certain semantic and morphological conditions; note also that SC possessor stranding does not require a linguistic antecedent while Turkish examples like (65) do; see Bošković 2012a, Bošković and Şener 2012). The SC case is important in the context of the discussion in the text since it indicates the possibility of possessor stranding in an NP language does not necessarily require positing an additional projection. (Another possibility that would not require an additional projection would be to analyze possessor stranding as ellipsis of a lower NP segment. However, we would then need a new account of (60) and (63) since the above account was based on the assumption that such ellipsis is always disallowed. Ellipsis is in fact expected to target only full phrases given that only full phrases function as phases/phasal complements.)

³⁵I will not discuss infinitives here since there is disagreement in the literature regarding when ellipsis is possible within infinitives even in basic cases without auxiliaries; compare, for example, Wurmbrand (2011), where it is claimed that basic ellipsis is possible pretty much in all types of infinitives (which can be easily incorporated into the current system), with Martin (2001), where it is claimed that basic ellipsis is disallowed in several types of infinitives (which, if correct, would require additional but rather straightforward assumptions within the system proposed below). An additional complicating factor is that it is not clear where *to* is located (it is standardly placed in T, but see Wurmbrand 2001; see also footnote 47 regarding certain derivations that will be ignored here). I will also not discuss VP fronting, since the possibilities for VP fronting do not always pattern with those of VP ellipsis in complex auxiliary/modal examples (see Johnson 2001).

³⁶In the discussion of modals I will mostly confine myself to epistemic *must* since epistemic *must* does not inflect for Tense and does not take scope below negation (see Roberts 1998); this is standardly taken to indicate that it does not start below T, which in turn simplifies the relevant derivations. Epistemic modals that inflect for Tense and especially deontic modals (which can scope under negation) might be associated with richer structure; in fact, it is not completely out of question that they could even project their own phasal domains at least in some cases under the approach to phases discussed below (they differ from pure auxiliary verbs like *have* and *be*, which are essentially not semantically contentful once the semantic contribution of aspectual affixes is factored out hence are not taken to project phasal domains here although they are generated under VP-like projections). The reader should thus bear in mind that the discussion of *must* below should not be necessarily taken to extend to all modal verbs in exactly the same way (this will be noted in some cases where it is relevant).

³⁷I am not necessarily claiming here that there are no null projections in the middle field of English in any construction; my claim is confined to the examples discussed here (see also the discussion in footnote 38).

³⁸Although I will be adopting the structure in (71) it should be noted that the analysis to be proposed is compatible with a range of options; i.e. it is compatible with some modifications of the structure in (71). Thus, nothing would change in the analysis below if both *be*-s start below the aspectual projections, as in (i).

- (i) [TP must [VP_{f1} have [AspectP₁ en [AspectP₂ ing [VP_{f2} be [VP_{f3} be [VP

All the projections in (i) are still morphologically motivated. Note, moreover, that the analysis to be proposed can also be maintained if *must* starts below TP, for example in some kind of ModP, or even if *have* undergoes movement in (71), possibly to some kind of Infinitival Phrase (or a Finiteness Phrase, which would be –Finite here), which would fit with its belonging to the clausal phasal domain, see the discussion in section 3.2.3 (base-generating *have* below AspectPs on a par with other auxiliaries as in (i) would in fact require movement of *have* to ensure that its final position is above AspectPs). Given that the strategy adopted here is not to posit null projections unless they are needed, I will not assume the movements in question since they would lead to positing additional projections that do not have morphological motivation (and are anyway not needed to account for VP ellipsis). Still, the reader should bear in mind that if such projections/movements turn out to be needed for other reasons, they can be easily incorporated into the current system.

³⁹Although the issue is not completely settled, it seems that if there is split CP (an issue that is still debated), the highest phrase within the split CP works as a phase, serving as the obligatory target of successive cyclic movement (but see Holmberg 2001, Fernandez-Rubiera 2009, López 2009, Aelbrecht 2010), which again fits into the general approach to phases adopted here. Since this article does not deal with the clausal phasal domain I will not investigate this issue here.

⁴⁰Determining the extended domain of VP is much harder than determining the extended domain of NP. I take the latter, including the above discussion of the latter, to be rather uncontroversial. Based on the strength of the discussion in the previous sections, the following can then also be taken as a contribution to our understanding of the extended domain of VP (what counts as the extended domain of VP). In other words, what I will be doing here is extending a discussion of a clear case (NP domain) to a less clear case (VP domain), using the former to gain a better understanding of the latter.

⁴¹Recall that auxiliary VP_{fS}, which are essentially semantically non-contentful, i.e. light (and functional), do not project VP phasal domains of their own (AuxP may actually be a more appropriate label than VP_f; these elements are not verbs in the same sense lexical verbs are, we are thus not dealing here with an exemption where some lexical verbs would not be projecting phases). I do assume that aspect-inflected auxiliaries have aspectual features in their feature matrix, hence they are part of the extended VP phasal domain, which includes aspectual information. (The alternative would be to treat them as not belonging to any phasal domain, which would mean extended projections could be discontinuous. However, there is no need to adopt this alternative, which is in fact incompatible with a suggestion made in the conclusion).

⁴²Languages differ considerably in the way they express aspect; in fact, the variation in this domain seems considerably larger than in the tense domain. Given this variation, it is not completely out of question that languages could differ with respect to the phasal housing of the aspect domain, i.e. it is not completely out of question that in some languages Aspect could belong to the clausal, not the VP domain. This will obviously have consequences for the

phasehood of aspectual projections. An analysis that would appeal to crosslinguistic variation of this sort should however attempt to correlate any claimed crosslinguistic differences in the phasal domain of Aspect with other independent aspectual differences between the languages in question, not simply stipulate a phasal difference.

Another interesting line of inquiry here opens up with the claim, made in Bošković (in press), that some languages (in particular, article-less languages) lack TP (such languages in fact tend to be rather rich aspectually). If the lack of TP fundamentally changes the clausal domain it is not out of question that in (some) languages of this type Aspect is pushed into the clausal domain to make up for the lack of TP (see in this respect Lin 2003b, 2005 and Smith and Erbaugh 2005 for accounts where aspect fully determines temporal interpretation in Chinese). The proposals made here for English VP ellipsis thus have rather wide consequences and open up new avenues for capturing crosslinguistic variation.

⁴³ The structure in (74) is actually ruled out by anti-locality since it involves complement-to-Spec movement (under Sportiche's 1988 stranding account of floating quantifiers). Recall, however, that an additional projection associated with passive morphology should be present above VP in (73)/(74). Quantifier float is apparently not possible within this projection. There is a principled way of ruling out such quantifier float which I will not go into here due to space limitations. (I address the issue in work in progress, arguing that we are dealing here with a more general issue regarding interaction between voice and quantifier float/adverbial modification; anyway, for our current purposes it does not really matter what is responsible for the impossibility of floating a quantifier in the main verb domain here. (Note that the data in (73) and (75)/(77) below can also be accounted for if the quantifiers/adverbs here are simply VPf-adjoined, given that *be* moves out of VPf to *-en*, while *-ing* undergoes affix hopping to its host within VPf, see the discussion below.))

⁴⁴ See also the discussion of (101) and footnote 55 below regarding phases in such examples. As noted in footnote 38, nothing in the analysis proposed here would change if *have* in (78) also undergoes movement to a higher projection as long as this projection is not an Aspect Projection (in this respect, notice that this *have* is not aspect-inflected (see also the discussion below for evidence against the existence of null AspectPs in English) or if *must* moves to T from Mod.

⁴⁵ Nothing in the analysis of (67)-(70) given below would change if *be* were to move to *-ing* (instead of having the two undergo PF merger). The only examples where it actually matters that *be* and *-ing* undergo PF merger are (98)b and (91) (PF merger is in fact commonly assumed for examples like (91); see, e.g., Abney 1987 and references therein).

⁴⁶ In the current approach to phasehood, the highest projection in the extended domain of every major category works as a phase. Above, I gave evidence to this effect for NPs, PPs, and VPs. Below, I will argue the same holds for APs. From this perspective, notice that the grammaticality status of (70) does not change if the verb is replaced by an adjective:

- (i) *Betsy must have been being noisy, and Peter must have been being too.

I take this to mean that just like the aspectual projections are part of the extended domain of

VP when they dominate VP, they are part of the extended domain of AP when they dominate AP (note that there are many languages where adjectives are inflected for aspect). The above account of (70) then straightforwardly extends to (i). Notice also the acceptability of *Of whom is John proud*, where the complement of an adjective is extracted. The possibility of such extraction indicates that there is additional functional structure above the AP (if we were dealing here with a bare AP, with AP being a phase, the extraction would be blocked).

⁴⁷Superficially, there appears to be some speaker variation regarding examples that are similar to (80)a. However, this is due to the availability of an irrelevant ellipsis option. Thus, Wurmbrand (in preparation) observes that *John might have called and Bill might too* is acceptable but only on the here irrelevant *John might have called and Bill might ~~call~~* option (see below for such cases), not on the *John might have called and Bill might ~~have called~~* option (Wurmbrand demonstrates this by using conflicting time specifications, as in, for example, **John might have called yesterday and Bill might too*). Sag (1976), Lobeck (1987), and Johnson (2001) also observe that such examples are unacceptable on the latter (i.e. matching) option, though there is a bit of confusion in the literature regarding such examples since some authors are apparently not taking into consideration the possibility of the non-matching ellipsis option, simply marking such examples as acceptable without discussing the possible derivations. What further complicates the situation is that speakers seem to differ regarding the availability of the first option noted above, where the ellipsis site is not completely identical to the antecedent (there also appear to be some differences across different modals, with, for example, *must* being more resistant to it hence more useful for our purposes). Throughout the article I will ignore mismatching derivations since the current article does not deal with the issue of Recoverability of Deletion which is crucially involved in such cases. Consequently, I mark the judgments only for the readings where the ellipsis site matches the antecedent.

⁴⁸This account of the different behavior of T and C with respect to the possibility of targeting the same position is very much along the lines of Chomsky (2001) but is incompatible with Chomsky's (2008) C-T association system, which would require further assumptions to accommodate it. (Notice, however, that (87) could involve A-movement to SpecVP_{fl} prior to A-movement to SpecTP, see Sportiche 1988.)

⁴⁹The analysis to be proposed is compatible with several modifications of this structure. What is important is that the projection where *-ing* is located, whatever its label is, is the highest projection in the extended VP domain.

⁵⁰As for **I recall Morgan having been thinking about it, but I don't recall ~~Peter having been thinking about it~~*, I assume that what we are dealing with here is whatever is responsible for the general impossibility of pure argument ellipsis in English (see footnote 22), i.e. examples like **I kissed Morgan, and Peter kissed ~~Morgan~~ too*.

⁵¹One of my informants accepts (94), which indicates that there may be some speaker variation regarding the ordering of affix hopping and ellipsis. In fact, my informants tend to uniformly either reject or accept various examples involving A'-movement out of an ellipsis site where the highest head in the extended verbal domain is an affix that needs to undergo affix hopping (thus, the speakers who find (94) degraded also find *You wonder by whom Jane*

is being hassled and I wonder by whom Sue is degraded (see (98) for discussion of such examples), while the speaker who accepts (94) also accepts this example). This suggests speakers may indeed differ regarding the ordering of affix hopping and ellipsis. At any rate, due to the unclear status of some relevant judgments (as well as the interfering factor that MaxElide raises in some cases and the fact that many constructions can be analyzed as involving either phasal or phasal complement ellipsis in the current system especially with some additional but rather straightforward modifications of the discussion below) I will not discuss extraction out of ellipsis sites below, focusing on the cases that do not involve such extraction.

⁵²In SC, ellipsis is not possible after the second auxiliary (a participle), which can be accounted for if this auxiliary does not undergo movement in SC: both AspectP and VP2 deletion then elide *bio* (see Bošković 1999 for an alternative analysis; notice that in SC aspect is morphologically manifested through derivational morphology on verbal elements).

- (i) Jovan je bđ poljubio Anu, a i Ivan je/*je bio.
Jovan is been kissed Ana, and also Ivan is is been
'Jovan had kissed Ana, and Ivan had too.'
- (ii) [TP Ivan je_i [VP1 t_i [AspectP [VP2 ~~bio~~ [~~poljubio Anu~~]]]]]

⁵³The relevant phrase would be the projection housing *-ing* if this projection is located above vP (otherwise, vP would be the phase).

⁵⁴We actually have a confirmation for the presence of this phrase (which can be labeled VoiceP) from simple examples like *The cake_i was [passive [VP cut t_i]]* (i.e. *The cake was cut*). Without it, VP would be the phase here; *the cake* would then have to move to SpecVP, in violation of Abels's (2003) ban on movement of phasal complements. The passive projection resolves this problem (movement of *the cake* to the Spec of this projection does not violate anti-locality).

Notice also that examples like *John seems to live in London*, and *Mary does ~~seem to live in London~~ too* provide evidence that, like passive verbs, raising verbs project phases, as expected in the current system (see also Legate 2003). Notice, however, that given the discussion of pseudogapping below, voice should be specified outside of VP in all constructions, active as well as passive, which means that the voice-specifying projection will be the phase in this example, not VP (in fact, this means that there is no bare VP phase).

⁵⁵The same actually holds for (67)-(70), whose structure is given in (79) (as well as (80)/(81) and (98)/(99)), where the highest AspectP is a phase by virtue of being the highest projection in the extended domain of the passive verb.

⁵⁶Notice also the ungrammaticality of (i).

- (i) *John must be hassled by the police/hassling the police, and Peter must too.
- (i) can be rather straightforwardly accounted for in the current system. What is elided here is

the phrase where *be* is located, which is outside of the VP phasal domain (recall middle field auxiliaries that are not inflected for aspect are outside of the VP/aspectual phasal domain). In other words, the phrase in question is neither a phase nor a phasal complement (since *must* is not a phase head). As a result, it is not allowed to undergo ellipsis in the current system.

While many examples of this type are unacceptable with other modals too, some are acceptable (thus, Wurmbrand in preparation notes *should* patterns with *must*, but *can* does not although even with this modal the *-ing* option is degraded. See also here footnote 47; whether the modal/auxiliary is the same in both sentences may also have an effect, see Aelbrecht 2010). It is beyond the scope of this article to account for this ill-understood variation.

⁵⁷Notice that I assume that head movement out of an ellipsis site would not be blocked if it would result in a stranded affix.

⁵⁸Notice also that the presence of negation, as in *John lives in London and Peter doesn't*, does not affect anything here, given that NegP is higher than AspectP/vP (in fact, outside of the VP phasal domain).

⁵⁹I leave addressing Johnson's (2001) argument regarding the target of VP ellipsis based on *again* for future research.

⁶⁰I am simply following Merchant regarding the label of the relevant phrase. However, nothing substantial in the discussion below would change if vP is simply VoiceP or if VoiceP is a separate projection on top of vP (even if vP is missing in passives; see the discussion above. For an analysis of ellipsis that assumes VoiceP that is separate from vP, see Baltin 2007.) The reader therefore should not attach too much importance to the actual 'label' here.

⁶¹It is actually not crucial to the discussion below that the movement in question involves focus movement.

⁶²The conclusions are somewhat tentative due to the ill-understood nature of pseudogapping, which is subject to several constraints that are not operative with VP ellipsis (see Levin 1986). One of them is that pseudogapping is not possible in multiple modal/auxiliary constructions (see Levin 1986, Agbayani and Zoerner 2004, Gengel 2007, among others), which prevents us from using the current system to investigate the exact position of the pseudogapping remnant. Note also that, as shown in Aelbrecht (2010), both simple VP ellipsis and pseudogapping allow A'-extraction out of the elided site, which is not surprising given that they both involve ellipsis of a phasal head complement.

⁶³If we were to assume that every phrase through which X is projected functions as a phase we would be essentially back to the every-phrase-is-a-phase approach, with the problems that this approach faces (see also the discussion below (115)).

⁶⁴The cycle is standardly assumed to be defined on phases. The phasal approach to the cycle can be easily adjusted to allow movement to SpecWP after the structure in (114) is built (especially under Chomsky's 2001 approach to the PIC, where PIC/phase effects for phase WP do not kick in until a higher phasal head is merged; for other options, see Bošković 2010). Alternatively, what may matter here is that the very merger of W will exhaust the numeration (which under the current approach cannot have more than one N, V, A, or P); under this view WP can be activated as a phase (and movement to SpecWP take place) even before K is merged.

⁶⁵However, the unresolved status of CP regarding phasehood becomes an issue here. As discussed above, there are two options regarding the phasal status of CP: (i) CP is a phase because it is the highest projection in general; on this option (115) needs to be taken to hold only for phrases with categorial specification (i.e. phrases in the extended projection of lexical heads); (ii) the phasehood status of CP is determined by a lower head Z, with CP being the highest head in the extended domain of Z; on this option (115) can be taken to hold for all phrases. I have left it open what Z could be. The current discussion indicates that Z should be the very first head that is merged with the highest phrase in the extended projection of VP. I do not mean here that Z is necessarily one of the phrases discussed in section 3. It is possible that Z is an additional projection whose nature is yet to be determined. To be more concrete, under option (ii) (115) would require that another phasal domain, in particular what I have called clausal phasal domain above, starts right above AspectP₁ in (72), the projections above AspectP₁ could not simply not belong to any phasal domain. While I do not see any empirical difference at the moment between the two options that are available here (one where the projections above AspectP₁ discussed above belong to the clausal phasal domain, but do not function as phases since none of these projections is the highest phrase in the domain in question, and the other option where these projections simply do not belong to any phasal domain), resolving the issue may have some structural consequences. The former (but not the latter) option may require another phrase to be present in between VP_{fl} and AspectP₁. This would be the Z from above, which would be the source of clausal phasehood. (There are all kinds of options here: this could be some kind of lower tense (cf. Koopman's 2006 split TP), or finiteness (cf. the discussion in footnote 38), or even a mood projection or a discourse-oriented projection). Needless to say, we are on extremely speculative grounds here, dealing with issues that we will be ready to handle only at the point when the exact nature of CP as a phase (i.e. what determines its phasehood) is fully understood.

⁶⁶See Bošković (in press) and references therein for illustrations and precise definitions of the phenomena in (116). For example, (116)c refers to Japanese-style long-distance scrambling out of finite clauses.

⁶⁷A multiple Spec analysis would actually also work here.

⁶⁸This also holds for adjectives like “former”, which can be considered to be of type $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$. Note that the above account can be quite generally extended to non-restrictive adjectives under Morzycki's (2008) analysis, where non-restrictive adjectives are also required to be interpreted inside the determiners.

⁶⁹Japanese and Korean, also classifier languages, could then have a null classifier co-occurring with a demonstrative (note that such classifiers are different from those that co-occur with numerals, see Bošković and Hsieh 2012).