

# Phases beyond clauses

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**Abstract:** It is argued that there is crosslinguistic variation regarding what counts as a phase in the traditional Noun Phrase (TNP) which tracks independent crosslinguistic variation regarding the categorial status of the TNP assumed under the DP/NP parameter, on which languages without articles lack DP. In particular, it is argued that DP is a phase in DP languages, and NP is a phase in NP languages. However, in a few cases where an additional phrase is projected above NP in NP languages, this additional phrase becomes a phase instead of the NP. The real source of the parametric variation in question then concerns the amount of structure projected in a TNP, not phasehood, since the highest projection in a TNP always counts as a phase. The tests for phasehood developed for the TNP are also applied to APs and PPs, leading to the conclusion that all major phrases, NP, AP, PP, and VP, project phases, with the exact phasal projection depending on the amount of functional structure above the major phrases. Many of the diagnostics for the locality of movement that are used in the paper are crucially affected by the structural/inherent case distinction, inherent case being less constrained than structural case with respect to a number of movement phenomena. Based on this it is argued that the inherent/structural case distinction should have a structural reflex, i.e. that inherent case and structural case should be treated in a different manner structurally.

*Keywords:* anti-locality, AP, case, left-branch extraction, NP, numerals, phase, PP

## 1. Introduction

The theory of phases has focused on clausal structure, which can be considered to be an extension of VP, hence the standard assumption that CP and  $\nu$ P count as phases. Other major phrases have attracted much less attention in the literature on phases, with NP getting more attention than AP and PP. This paper focuses on NP, in particular, the phasal approach to the locality of movement as applied to the extraction out of NPs. It will be shown that the diagnostics employed in this paper to determine the phasal status of NPs also have consequences for APs and PPs, which have rarely been discussed in the literature in terms of phases. The central diagnostic concerns left-branch extraction, which we will see can be used as a powerful tool for determining the phasal status of NPs as well as APs and PPs, the main testing ground being Serbo-Croatian.<sup>1</sup> The discussion in the paper has consequences for a number of additional phenomena, especially the internal structure of NPs (and PPs) and the distinction between structural and inherent case. Regarding the latter, it will be shown that inherent case is less constrained than structural case with respect to a number of movement phenomena, which I will argue indicates that the two should be treated in a different manner structurally.

The overall picture regarding phasehood we will end up with is that all major phrases (NP, AP, PP, VP) project phases, with the exact phasal projection depending on the amount of functional structure above the major phrases under the assumption that the highest projection in the extended projection of a major phrase counts as a phase. This is in line with the dynamic approach to phases, where the phasal status of X can be affected by the syntactic context in which X is found. The centerpiece of the discussion in this respect is the traditional Noun Phrase (TNP).<sup>2</sup> It is argued that

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<sup>1</sup> The first relevant discussion of left branch extraction can be found in Uriagereka (1988). I will in fact rely here on an important observation regarding left branch extraction made in Uriagereka (1988), see section 2.1.

<sup>2</sup> 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.

there is crosslinguistic variation regarding what counts as a phase in the TNP which tracks independent crosslinguistic variation regarding the categorial status of the TNP assumed under the DP/NP parameter, which posits a difference in the structure of the TNP in languages with and languages without articles, the latter lacking the DP layer. In particular, it is argued that DP is a phase in DP languages, and NP is a phase in NP languages. However, in a few cases where an additional phrase is projected above NP in NP languages, this additional phrase becomes a phase instead of the NP. The real source of the parametric variation in question then concerns the amount of structure projected in a TNP, not phasehood, since the highest projection in a TNP always counts as a phase.

Since the difference in the categorial status of TNPs posited under the DP/NP parameter directly affects extraction out of TNPs, which in turn sheds light on the phasal status of TNPs, in the next section I will briefly summarize several issues pertaining to the DP/NP parameter. In section 3, I will use left-branch extraction and several related constructions as the diagnostic tool for determining the phasal status of TNPs. In section 4 these diagnostics will be applied to PPs and APs. I conclude the discussion with section 5, where I also point out some theoretical consequences of the proposals made in this paper.

## 2. The NP/DP parameter

It is standardly assumed that languages without articles have a null D. Thus, the difference between English (1) and Serbo-Croatian (SC) (2) is standardly assumed to be PF-based, the only difference between English and SC being that D is phonologically null in SC.

(1) The stone broke the window.

(2) Kamen je ~~raz~~bio prozor.  
stone is broken window

In Bošković (2008a) I argue against this position. I argue that there is a fundamental structural difference in the TNP of English and article-less languages like SC based on a number of wide-ranging syntactic and semantic phenomena that correlate with the presence or absence of articles; they are given in (3) below.<sup>3</sup> A number of additional phenomena are noted in Bošković (2010a). I give a few of them in (4); for additional generalizations see Bošković (2009a, 2010a), Cheng (in preparation), Herdan (2008), Marelj (2008), and Boeckx (2003), among others.

- (3) **Generalizations** (see Bošković 2008a and references therein)
- a. Only languages without articles may allow left-branch extraction as in (6).
  - b. Only languages without articles may allow adjunct extraction from TNPs as in (13).
  - 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.

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<sup>3</sup> See Bošković (2008a, 2010a) for detailed discussion (which due to space considerations I cannot go into here), including illustrations of the generalizations in (3)-(4) and the precise definitions of the phenomena referred to in these generalizations (e.g. what is meant by scrambling in (3)c is long-distance scrambling of the kind found in Japanese). Notice also that what matters for these generalizations is the presence of a definite article in a language since Slovenian, a language which has indefinite but not definite article, patterns with article-less languages with respect to these generalizations, see Bošković (2009b).

- f. Languages without articles do not allow transitive nominals with two genitives.
- g. Head-internal relatives display island sensitivity in languages without articles, but not in languages with articles.
- h. Polysynthetic languages do not have articles.
- i. Only languages with articles allow the majority reading of MOST.
- j. Article-less languages disallow negative raising (i.e strict clause-mate NPI licensing under negative raising); those with articles allow it.

(4) **Additional generalizations** (see Bošković 2010a and references therein)

- a. Negative constituents must be marked for focus in article-less languages.
- b. The negative concord reading may be absent with multiple complex negative constituents only in negative concord languages with articles.
- c. Radical pro-drop is possible only in article-less languages.
- d. Number morphology may not be obligatory only in TNPs of article-less languages.
- e. Elements undergoing focus movement are subject to a verb adjacency requirement only in languages with articles.
- f. Possessors may induce an exhaustivity presupposition only in languages with articles.
- g. The sequence of Tense phenomenon is found only in languages with articles.

These generalizations, which are syntactic and semantic in nature, indicate that there is a fundamental difference in the TNP of languages with articles and languages without articles that cannot be reduced to phonology (overt vs. null articles). Furthermore, Bošković (2008a, 2010a, in preparation) and Bošković and Gajewski (in press) show that the generalizations can all be deduced (see section 3 for the deductions of (3)a,b) if languages that lack articles lack DP altogether. (For other ‘no DP’ analyses of at least some such languages, see Fukui 1986, 1988, Corver 1992, Zlatić 1997, Chierchia 1998, Cheng and Sybesma 1999, Willim 2000, and Baker 2003, among others.) Moreover, the NP/DP analysis provides a uniform account of these differences, where a single difference between the two language types is responsible for all of them (this will be illustrated with respect to two generalizations from (3) in section 3).

In the following discussion I will therefore take the NP/DP parameter for granted. Two generalizations regarding this parameter that are of direct interest to us here since they will be used as a tool for probing the phasal status of TNPs are (3)a and (3)b. I turn to these generalizations in the next two sections. I will first provide some empirical motivation for the generalizations. I will discuss their relevance for the phasal status of TNPs in section 3 after a brief discussion of the structural position of the relevant elements in section 2.3.

### ***2.1. Left branch extraction***

It is well-known that languages differ in whether or not they allow left-branch extractions (LBE) like (5)-(6).

(5) \*Expensive<sub>i</sub> he saw [<sub>i</sub> cars]

(6) Skupa<sub>i</sub> je vidio [<sub>i</sub> kola] (SC)  
expensive is seen car

Noting a correlation with articles, Uriagereka (1988), Corver (1992), and Bošković (2005b) establish the generalization in (7).<sup>4</sup>

(7) Only languages without articles may allow LBE examples like (6).

As an illustration, Bulgarian and Macedonian, the only two Slavic languages with articles, differ from other Slavic languages (e.g. SC, Russian, Polish, Czech, Ukrainian, and Slovenian) in that they disallow LBE, as illustrated for Macedonian in (8). Within Romance, Latin, which did not have articles, differs from Modern Romance languages, which have articles, in that it had LBE. Mohawk, Southern Tiwa and Gunwinjguan languages also allow LBE and lack articles (see Baker 1996).<sup>5</sup>

- (8) a. \*Novata<sub>i</sub> ja prodade Petko [t<sub>i</sub> kola]. (Macedonian)  
       new it sold Petko car  
       b. Novata kola ja prodade Petko.

A particularly strong confirmation of (7) is provided by Finnish. Colloquial Finnish has developed an article. Significantly, Franks (2007) observes that LBE is allowed only in literary Finnish, which does not have articles.

- (9) Punaisen ostin auton. [literary Finnish]  
       red<sub>ACC</sub> buy<sub>PST.1SG</sub> car<sub>ACC</sub>  
       'Red car, I bought.'  
       (10) ?\*Punaisen ostin (sen) auton. [spoken Finnish]  
           red<sub>ACC</sub> buy<sub>PST.1SG</sub> the<sub>ACC</sub> car<sub>ACC</sub>

## 2.2. Adjunct extraction from TNPs

<sup>4</sup>Notice that, like most of the generalizations in (3)-(4), (7) is a one-way generalization; it does not say that LBE will be allowed in all article-less languages. There are other requirements on AP LBE, in addition to the lack of articles. One of them is agreement between the adjective and the noun (see Bošković 2005a, 2009d). The lack of such agreement is the reason why LBE is disallowed in a language like Chinese.

<sup>5</sup>I focus here on adjectival LBE, ignoring possessor extraction. The reason for this is that several accounts of the ban on AP LBE in article languages leave a loophole for possessor extraction to occur in some languages of this type (see Bošković 2005b:4). Thus, Hungarian, which has articles, allows possessor extraction, although it disallows adjectival LBE, which is what is important for our purposes (see, however, den Dikken 1999, who suggests that Hungarian possessive extraction may actually involve a left dislocation-type configuration with a resumptive pronoun).

- (i) a. \*Magas(-ak-at) látott lány-ok-at.  
       tall<sub>PL.ACC</sub> saw<sub>3SG</sub> girl<sub>PL.ACC</sub>  
       b. cf. Magas lány-ok-at látott.  
           'Tall girls, he saw.'

It should be noted here that there are many types of TNP splits crosslinguistically (see, for example, the *was für* construction in German). It would be way beyond the scope of this paper (or any single work) to provide a comprehensive account of all types of TNP splits that are found crosslinguistically. Rather, I confine my attention in this paper to left-branch extraction examples like (5)-(6) and adjunct extraction examples like (11)-(16). As usual in this kind of situation, future work will show whether the overall picture argued for in this paper based on such examples can be maintained or appropriately modified when languages and constructions not investigated in this paper are taken into consideration.

Consider now adjunct extraction from TNPs, which, as is well-known, is disallowed in English (see Huang 1982, Chomsky 1986a, Stowell 1989, Lasnik and Saito 1992, and Culicover and Rochemont 1992).

- (11) a. Peter met [<sub>NP</sub> girls from this city]  
 b. \*From which city<sub>i</sub> did Peter meet [<sub>NP</sub> girls t<sub>i</sub>]?

Observing that SC and Russian allow extraction of adjuncts out of TNPs while Bulgarian does not allow it, Stjepanović (1998) argues for (12). As a further illustration of the generalization, notice that Slovenian, Polish, Czech, and Ukrainian pattern with SC and Russian, while Spanish patterns with English (see Bošković 2010a).<sup>6</sup>

- (12) Only languages without articles may allow adjunct extraction out of TNPs.

- (13) Iz kojeg grada<sub>i</sub> je Petar sreo [djevojke t<sub>i</sub>] (SC)  
 from which city is Peter met girls  
 'From which city did Peter meet girls?'

- (14) Iz kakogo goroda ty vstrechal [devushek t]? (Russian)  
 from which city you met girls

- (15) \*Ot koj grad<sub>i</sub> Petko [sreštna momičeta t<sub>i</sub>]? (Bulgarian, Stjepanović 1998)  
 from which city Petko met girls

- (16) a. \*¿En dónde robaron [una estatua t]?  
 in where (they)stole a statue  
 b. \*¿Por quién escuchamos [una descripción t]?  
 by whom (we)listened a description (Spanish, Ticio 2003)

### 2.3. D-like items in article-less languages

It should also be noted that traditional D-items do not exhibit the behavior that is associated with D-items in article-less languages. Since the issue will be relevant for the discussion of left-branch extraction in section 3 (the items in question in fact undergo left-branch extraction, see (21) below) I will discuss it briefly with respect to SC.

Although SC does not have articles, it does have lexical items that correspond to English *that*, *some*, and possessives like *John's*. However, such items behave like adjectives in SC both morphologically and syntactically (see Zlatić 1997, 1998 and Bošković 2008a). In contrast to English D-items, they clearly have the morphology of adjectives, as illustrated in (17).

<sup>6</sup>(11)b is actually acceptable in Spanish, where, as shown by Ticio (2003), the relevant phrase is an argument, in contrast to the PPs in (16) (one of the relevant tests is in fact conducted in section 3.3.2.2; In light of the discussion in Ticio (2003), it is important to run the tests in question for any potential counterexamples to the generalization in (12).)

- (17) a. *tim*                      *nekim*                      *mladim*                      *djevojkama*  
           those<sub>FEM.PL.INST</sub>    some<sub>FEM.PL.INST</sub>    young<sub>FEM.PL.INST</sub>    girls<sub>FEM.PL.INST</sub>  
       b. *tih*                      *nekih*                      *mladih*                      *djevojaka*  
           those<sub>FEM.GEN.PL</sub>    some<sub>FEM.GEN.PL</sub>    young<sub>FEM.GEN.PL</sub>    girls<sub>FEM.GEN.PL</sub>

They also occur in typical adjectival positions like the predicate position of a copula (see (18)) and allow stacking up (see (19)).

- (18) a. \*This book is my  
       b. Ova knjiga je moja  
           this book is my

- (19) a. \*this my picture  
       b. ta moja slika  
           this my picture

Another interesting quirk is that SC possessives cannot be modified by adjectives (20), which follows if adjectives cannot modify adjectives given that SC possessors are actually adjectives.

- (20) \*bogati susjedov konj  
       rich neighbor's horse

Under the adjectival analysis of the items in question it is also not surprising that all these items undergo left-branch extraction, just like adjectives. Thus, (21) is acceptable, just like the adjectival LBE example in (6).

- (21) Ova/Neka/Jovanova<sub>i</sub> je vidio [<sub>i</sub> kola]  
       this/some/John's is seen car  
       'This/some/John's car he saw.'

The items in question also have some freedom of word order in SC. While English D-items must precede adjectives, SC allows adjectives to precede some D-items (see Bošković 2007a for some interpretational effects regarding the order of adjectives and possessors).

- (22) Jovanova skupa slika                      vs    skupa Jovanova slika  
       John's expensive picture                      \*expensive John's picture  
       (23) bivša Jovanova kuća                      vs    Jovanova bivša kuća  
           \*former John's house                      John's former house

Notice, however, that the order of SC adjectives and D-items is not completely free. Thus, both adjectives and possessives must follow demonstratives.

- (24) a. ova skupa kola/?\*skupa ova kola  
       this expensive car  
       b. ova Jovanova slika/?\*Jovanova ova slika  
           this Jovan's picture

These ordering restrictions follow straightforwardly from the semantics of the elements in question. Semantically, it makes sense that possessives and adjectives should be able to occur in either order. The most plausible semantics for possessives is modificational (see, e.g., Partee and Borschev 1998 and Larson and Cho 1999).

- (25) a. Partee and Borschev (1998) ( $R_i$  is a free variable)  $[[John's]] = \lambda x.[R_i(John)(x)]$   
 b. Larson and Cho (1999)  $[[to John]] = \lambda x.[POSS(j,x)]$

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 may be composed. On the other hand, the situation is different with demonstratives. Kaplan (1977) argues that demonstratives are markers of direct reference. In other words, demonstrative noun phrases pick out an individual of type  $e$ . The individual is picked out at least partially as a function of its predicate complement phrase. Thus, 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, semantic composition requires both adjectives and possessives to be composed before demonstrative determiners. In other words, semantic composition allows possessives to be composed either before or after modifying adjectives, while demonstratives must be composed after both adjectives and possessives. This perfectly matches the actual facts regarding the ordering of the elements in question in SC.<sup>7</sup>

Notice also that English counterparts of the unacceptable examples in (24) are significantly worse than the SC examples. This follows if the English examples have the semantic violation discussed above as well as a syntactic violation (violations of the requirement that DP must be projected on top of the TNP and whatever is responsible for the incompatibility of articles and possessives in English).

- (26) a. \*\*expensive this car  
 b. \*\*John's his picture

The proponents of the universal DP analysis (Bašić 2004, Rappaport 2000, Pereltsvaig 2007), which provides the same DP structure both for languages like English and languages like SC, account for (24) by placing the demonstrative in DP, which is located above the projections where possessives and adjectives are located, as illustrated by Bašić's (2004) structure in (27). ( $\alpha P$  is a projection where adjectives are generated, with multiple adjectives requiring multiple  $\alpha P$ s.)

- (27) [<sub>DP</sub> Demonstrative [<sub>PossP</sub> Possessive [ <sub>$\alpha P$</sub>  Adjective [<sub>NP</sub> (Bašić 2004)

(27) accounts for (24), but it fails to capture the relative freedom of the adjectives/possessives order in SC and the SC/English contrast in this respect. Furthermore, Despić (2009, in press) provides

<sup>7</sup> The above discussion gives only an outline of a semantic account of the ordering restrictions on determiners/possessives/adjectives in SC. Fleshing out the details of the account here would take us too far from the main goal of this paper. This task is, however, taken on in a separate work in progress. I merely note here that the above analysis can be straightforwardly extended to non-restrictive adjectives under Morzycki's (2008) treatment of non-restrictive adjectives, where such adjectives are also treated as having type  $\langle e,t \rangle$  and required to be interpreted inside the determiners.

conclusive evidence against (27) based on the following SC/English contrasts.<sup>8</sup>

- (28) a. Kusturica<sub>i</sub>'s latest movie really disappointed him<sub>i</sub>.  
 b. His<sub>i</sub> latest movie really disappointed Kusturica<sub>i</sub>.
- (29) a. \* Kusturicin<sub>i</sub> najnoviji film ga<sub>i</sub> je zaista razočarao.  
 Kusturica's latest movie him is really disappointed  
 'Kusturica<sub>i</sub>'s latest movie really disappointed him<sub>i</sub>.'  
 b. \* Njegov<sub>i</sub> najnoviji film je zaista razočarao Kusturicu<sub>i</sub>.  
 his latest movie is really disappointed Kusturica  
 'His<sub>i</sub> latest movie really disappointed Kusturica<sub>i</sub>.'

Despić observes that (28) can be accounted for if, as in Kayne (1994), English possessives are located in the Spec of PossP, which is immediately dominated by DP (cf. the structure in (27)), the DP preventing the possessive from c-commanding anything outside of the subject (even under Kayne's approach to specifiers, which treats specifiers like adjuncts). Following the logic of this analysis, Despić observes that the contrast between English and SC then follows if the DP is missing in SC. Despić in fact treats SC possessives as NP adjuncts, an analysis that ensures that the possessive in (29) c-commands outside of the subject NP, which yields a Binding Condition B violation in (29)a and a Binding Condition C violation in (29)b.<sup>9</sup> Since SC possessives are adjectives, as discussed above, it is natural to extend this analysis to all adjectives.<sup>10</sup>

Despić (2009, in press) also shows that demonstratives and adjectives do not change anything regarding binding relations in SC, as illustrated in (30), which provides strong evidence that demonstratives, possessives, and adjectives should all be treated as multiple adjuncts of the same phrase. Since demonstratives and adjectives do not introduce an extra projection, they do not prevent the possessive from c-commanding the co-indexed elements in (30).

- (30) a. \*[<sub>NP</sub> Ovaj [<sub>NP</sub> Kusturicin<sub>i</sub> [<sub>NP</sub> najnoviji [<sub>NP</sub> film]]]] ga<sub>i</sub> je zaista razočarao.  
 this Kusturica's latest movie him is really disappointed  
 'This latest movie of Kusturica<sub>i</sub> really disappointed him<sub>i</sub>.'  
 b. \*[<sub>NP</sub> Ovaj [<sub>NP</sub> njegov<sub>i</sub> [<sub>NP</sub> najnoviji [<sub>NP</sub> film ]]]] je zaista razočarao Kusturicu<sub>i</sub>.  
 this his latest movie is really disappointed Kusturica  
 'This latest movie of his<sub>i</sub> really disappointed Kusturica<sub>i</sub>.'  
 c. \*[<sub>NP</sub> Brojni [<sub>NP</sub> Kusturicin<sub>i</sub> [<sub>NP</sub> filmovi ]]] su ga<sub>i</sub> razočarali.  
 numerous Kusturica's movies are him disappointed  
 'Numerous movies of Kusturica<sub>i</sub> really disappointed him<sub>i</sub>.'

<sup>8</sup> (28)-(30) give a partial paradigm. For a detailed discussion of the full relevant paradigm, which would take us beyond the laying-out-the-background-assumptions nature of section 2, see Despić (2009, in press).

<sup>9</sup> Significantly, Chinese and Japanese behave just like SC in the relevant respect (see Bošković 2010a and Cheng in preparation), which provides strong evidence for the no-DP analysis of these languages. Notice also that it is important that the pronoun in (29)-(30) is not contrastively focused, since contrastive focus affects binding relations (the pronoun in (29)a is actually a clitic, hence cannot be contrastively focused; this, however, weakens the binding violation somewhat, since binding violations are often a bit weaker with clitics).

<sup>10</sup> Regarding the order of adjectives with respect to each other under this analysis, see Bošković (2009c), where it is argued that the order follows from semantic considerations.



Given this much background regarding the structure of the TNP in SC, we are now ready to turn to the deduction of the left-branch extraction generalization in (7), which will also be extended to the adjunct extraction generalization (12) and provide an argument that movement out of DP must proceed via SpecDP.

### 3. Back to left branch extraction: The phase analysis

In Bošković (2005b) I gave two deductions of (7).<sup>11</sup> Here, I will focus on one of them, namely the one based on Chomsky's (2000, 2001) Phase Impenetrability Condition, according to which only the Spec of a phase is accessible for phrasal movement outside of the phase, which means that XP movement from phase YP must proceed via SpecYP. On a par with Chomsky's (2000) claim that CP but not IP is a phase, I suggested in Bošković (2005b) that DP is a phase, but NP isn't.<sup>12</sup> Given the PIC, XP can then move out of DP only if it first moves to SpecDP. This is simply a phase update of the standard assumption which goes back to Cinque (1980) (see also Boeckx 2003, Gavrusseva 2000, Giorgi and Longobardi 1991, Ormazabal 1991, Stowell 1989, Szabolcsi 1994, and Torrego 1987, among many others) that movement out of DP must proceed via SpecDP. There are two more ingredients of the analysis of LBE from Bošković (2005b): the traditional claim that AP is NP-adjoined (see the discussion in the previous section) and the anti-locality hypothesis (the ban on movement that is too short), which is deducible from independent mechanisms and argued for by many authors (e.g., Bošković 1994, 1997, Saito and Murasugi 1999, Ishii 1999, Abels 2003, Grohmann 2003, Grohmann and Haegeman 2003, Grohmann and Panagiotidis 2004, Ticio 2003, Boeckx 2005, Jeong 2006.)<sup>13</sup> Like most other approaches, the version of anti-locality adopted in Bošković (2005b) requires Move to cross at least one full phrasal boundary (not just a segment, see Bošković 2005b for the precise

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<sup>11</sup>I refer the reader to Bošković (2005b) for arguments that examples like (6) involve AP subextraction as well as arguments against alternative treatments of such constructions.

<sup>12</sup>For discussion of phases in TNPs, see also Chomsky (2000, 2001), Gutiérrez-Rexach and Mallen (2001), Ticio (2003), Svenonius (2004), Matushansky (2005), Hiraiwa (2005), Compton and Pittman (2007), Reintges and Liptak (2006), den Dikken (2007), Heck, Müller, and Trommer (2008), and Krammer (2009). Matushansky's work is particularly interesting in this context, since she examines how DP fares with respect to a number of different tests for phasehood. The discussion in this paper will be, however, confined to one diagnostic for phasehood (which is probably the least controversial one), namely, the locality of movement. Below, I will address some interfering factors that Matushansky raises in this context. Here, I only briefly note one additional issue that Matushansky raises for the DP-as-a-phase hypothesis. Matushansky observes that in many languages elements dominated by DP, like adjectives and nouns, are case marked. She points out that this is a problem for the DP-as-a-phase hypothesis: the complement of DP should be inaccessible to a DP external case licensor given the PIC. She, however, also suggests two solutions to this problem: (i) Case spreading inside DP is a result of an operation, like concord, which applies after spell out; (ii) Case licensing is done through case checking, not case valuation. A DP will then have a case feature, which can spread through DP (there are various options here), even before DP enters into a case checking relation with an outside case licensor. I add here two additional possibilities: in the Pesetsky and Torrego (2007) system, D with an unvalued case feature can still enter into a feature checking relation, i.e. Agree, with a DP internal element with an unvalued case feature, which then become instances of the same feature (see also Frampton and Gutmann 2000). A consequence of this in the Pesetsky and Torrego system is that once the case feature of D is valued by a DP external case licensor, all DP internal elements that have entered into an Agree relation with D should receive the same case value as D (since these are all instances of the same feature, it seems that the PIC should not matter here). Finally, the issue in question actually does not even arise under Bošković (2007b) claim that the PIC constrains movement but not Agree.

<sup>13</sup>Among other things, anti-locality accounts for the ban on short subject topicalization and zero subject null operator relatives (Bošković 1994, 1997), the *that*-trace effect (Ishii 1999), the ban on movement of the phase head complement (Abels 2003), and the patterns of extraction of arguments out of DPs (Grohmann 2003, Grohmann and Haegeman 2003, Ticio 2003).

definition). AP then cannot move to SpecDP in (31) due to anti-locality (the phasal projection is given in bold).<sup>14</sup> Given the PIC, AP cannot move directly out of DP either, as in (32). Anti-locality/PIC thus prevent AP extraction from DP, banning AP LBE in English. Notice that they do not ban all movement out of DPs: (33) is still allowed.

(31) \***[DP AP<sub>i</sub> [D' D [NP t<sub>i</sub> [NP....**

(32) \*AP<sub>i</sub> **[DP [D' D [NP t<sub>i</sub> [NP....**

(33) Who<sub>i</sub> do you like **[DP t<sub>i</sub> [NP friends of t<sub>i</sub> ]]**

Furthermore, the impossibility of adjunct extraction out of TNP in English (cf. (11)b) can be accounted for in exactly the same way as the impossibility of AP LBE, given that NP adjuncts are also adjoined to NP. Moreover, the PIC/anti-locality problem does not arise in SC, which lacks DP. The phase analysis thus accounts both for the impossibility of AP LBE out of English TNPs and the impossibility of adjunct extraction out of English TNPs, as well as the availability of both of these extractions in SC, given the DP/NP parameter.

Another aspect of the above analysis, which was not noted in Bošković (2005b), should be pointed out here. The analysis provides an argument that movement out of DP must proceed via SpecDP since requiring this step of movement was crucial in the above account of the ban on left-branch extraction and adjunct extraction out of DP in English. Providing an argument that movement out of DP must proceed via SpecDP is important given that cases that are standardly offered as arguments for successive cyclic movement via SpecDP, like the impossibility of extraction across possessors (see (34)), involve interfering factors, as pointed out by Matushansky (2005), who in light of this questions the very existence of successive cyclic movement via SpecDP.

(34) \*Who did you buy John's portrait of?

(35) \*Who did you wonder why Mary kissed?

Examples like (34) are standardly offered in the literature in support of the claim that movement out of DP must proceed via SpecDP: (34) indicates that a filled SpecDP blocks movement out of DP just like a filled SpecCP blocks movement out of CP (see (35)). However, Matushansky observes that given that possessed DPs have the existence presupposition, (34) is ruled out independently by the Specificity Condition, which blocks movement out of specific (existence-presupposing) DPs even when their SpecDP is not filled, as in (36).

(36) a. \*Who did you buy a specific/particular/certain portrait of?

b. \*Who did you buy the portrait of?

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<sup>14</sup> Notice that under this analysis, if there were an additional functional projection in the object TNP in examples like (5) the adjective would need to be adjoined to that projection. (One could then in principle allow for the possibility of a mixed DP language that would disallow AP left-branch extraction and allow adjunct extraction if the adjunct is still assumed to be NP adjoined (see the discussion of adjunct extraction below). However, English, the only DP language that will be examined in some detail in this paper, whose focus is on NP languages, does not require making such a distinction.) At any rate, following Bošković (2005b), I will assume here a simple [<sub>DP</sub> [<sub>NP</sub> ]] structure for English DPs like the one in (5) (for relevant discussion, see also section 5).

Another interfering factor regarding (34) concerns the possibility of multiple Specs. Matushansky points out that the  $\nu$ P phase clearly must allow multiple Specs (even independently of the Spec $\nu$ P where the subject is base-generated and the Spec $\nu$ P which serves as the landing site of object shift), given that it is possible to do multiple *wh*-movement out of  $\nu$ P. Bošković (2007b) shows that multiple movement out of a CP headed by *that* is also possible, which indicates that *that* also allows multiple Specs, based on examples like (37), where both *on which table* and *what* must move out of the most embedded CP headed by *that*.

(37) On which table does John wonder what to tell Mary that she should put?

Based on this, Bošković (2008b) argues that the multiple Spec option is in principle available for all phasal heads. Bošković (2008b) shows that even +*wh* C in principle allows multiple Specs; however, A'-movement from an interrogative SpecCP, which must take place in (35) given the PIC (*who* must move through the embedded clause SpecCP), is ruled out for independent reasons concerning the freezing effect of operator-variable creating movements (see Bošković 2008b, Epstein 1992, Müller and Sternefeld 1993, and Rizzi 2006, among others), which cannot feed each other (roughly, under Bošković's (2008b) analysis movement to an operator position like interrogative SpecCP (or SpecToP and SpecFocP for that matter) checks off the operator feature of the moving phrase, making the phrase inactive for any other instance of operator movement). These concerns do not apply to movement from Spec $\nu$ P, Spec of the CP headed by *that*, or SpecDP, since these are not positions where a phrase is semantically interpreted as an operator (see Bošković 2008b for relevant discussion). What is important for our purposes here is that given the above discussion, the multiple Spec option should be available for the D head in (34); *who* should then be able to use this option to move via SpecDP in spite of the presence of a possessor in SpecDP. In other words, the presence of a possessor should not block movement via SpecDP, hence (34) cannot be ruled out due to a violation of the requirement of successive cyclic movement via SpecDP. In light of such concerns, Matushansky (2005) argues that (34) must be ruled out independently of the alleged requirement that movement out of DP must proceed via SpecDP (and is in fact ruled out via the Specificity Condition), hence the ungrammaticality of the construction does not provide evidence for this requirement.<sup>15</sup> Matushansky in fact questions the existence of successive cyclic movement via SpecDP more generally, due to the lack of independent evidence for such movement.<sup>16</sup>

Notice, however, that the interfering factors that arose with respect to (34), namely the Specificity Condition and the availability of the multiple Spec option, do not arise regarding left-branch and adjunct extraction out of DPs; they are simply irrelevant in these cases. The current account of the ban on left-branch extraction and adjunct extraction out of DPs may then be taken as an argument that movement out of DP indeed must proceed via SpecDP, an important point given the paucity of independent evidence to this effect.

### 3.1. Phases in NP languages

<sup>15</sup>It is worth noting here that the interfering factors that arose in the case of (34), namely the Specificity Condition and the availability of multiple Specs, also arise in the case of the widely discussed hierarchy regarding extraction out of Spanish DPs (where possessors block extraction of agents and themes, and agents block extraction of themes; see Torrego 1987, Ormazabal 1991, Sánchez 1996, and Ticio 2003, among many others), another case which is often given as evidence for the requirement that movement out of DP must proceed via SpecDP as well as a lower TNP-internal Spec position.

<sup>16</sup>But see Szabolcsi (1994).

In the previous section I have summarized Bošković's (2005b) account of the generalizations in (7) and (12) and pointed out that the account provides evidence that movement out of DP must proceed via SpecDP. As noted above, on a par with Chomsky's (2000) claim that CP but not IP is a phase, I assumed in Bošković (2005b) that DP is a phase, but NP isn't. However, I would like to propose here a modification of this aspect of my earlier analysis of left-branch extraction (LBE), which turns out to have wide-ranging consequences.

Interestingly, SC disallows deep LBE, i.e. LBE out of a complement of a noun (the same holds for Polish, Czech, and Russian; see Corver 1992 for Polish and Czech). Thus, while the possessor can undergo LBE in (38)c, it cannot undergo LBE in (38)b, where the NP in which it originates functions as a complement of another noun.<sup>17</sup>

- (38) a. On je vidio [<sub>NP</sub> [<sub>N'</sub> prijatelja [<sub>NP</sub> njegove [<sub>NP</sub> majke]]]].  
           he is seen           friend<sub>ACC</sub>   his<sub>GEN</sub>       mother<sub>GEN</sub>  
           'He saw a friend of his mother.'
- b. \*Čije<sub>i</sub>           je on vidio [<sub>NP</sub> [<sub>N'</sub> prijatelja [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> majke]]]]?  
           whose<sub>GEN</sub>   is he seen           friend<sub>ACC</sub>       mother<sub>GEN</sub>  
           'Whose mother did he see a friend of?'
- c. cf. Čiju<sub>i</sub>           je on vidio majku?  
           whose<sub>ACC</sub>   is he   seen mother<sub>ACC</sub>  
           'Whose mother did he see?'

What this shows is that an NP above an NP from which LBE takes place (LBE-ing NP) has exactly the same effect on LBE as a DP above an LBE-ing NP does in English; they both block LBE. In other words, the higher NP in SC (38)b blocks LBE just like DP blocks LBE in English. Notice now that this parallelism can be easily captured if NP is a phase in NP languages.<sup>18</sup> (38)b can then be accounted for in exactly the same way as (5), with the higher NP blocking LBE for the same reason that DP does in the English example. The PIC forces movement out of the higher NP to proceed via the Spec of this NP. This step of movement, however, violates anti-locality.

- (39) \*Čije<sub>i</sub>           je on vidio [<sub>NP</sub> t<sub>i</sub> [<sub>N'</sub> prijatelja [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> majke]]]]?  
           whose<sub>GEN</sub>   is he seen           friend<sub>ACC</sub>       mother<sub>GEN</sub>  
           'Whose mother did he see a friend of?'

Significantly, we find the same state of affairs with adjunct extraction: deep adjunct extraction is blocked, just like deep LBE, which is not surprising if the two are to be accounted for in the same way, as argued above. The parallelism can in fact be taken as an argument for a uniform analysis of LBE and adjunct extraction.

- (40) ?\*Iz       kojeg   grada<sub>i</sub>   je   Petar   kupio   slike   [djevojke t<sub>i</sub>]  
           from   which   city   is   Peter   bought   pictures   girls  
           'From which city did Peter buy pictures of girls?'

<sup>17</sup> The higher noun is accusative in (38). However, the case of the higher noun does not matter here; nothing in the paradigms discussed in sections 3.1 and 3.2 changes if the higher noun bears case other than accusative.

<sup>18</sup> This section focuses on NP languages. I will discuss the status of NP with respect to phasehood in DP languages in section 3.3.2.2. Pending this discussion, for ease of exposition I assume that NP is not a phase in English.

We have seen above that the current proposal that NP is a phase in article-less languages enables us to account for the impossibility of deep LBE and deep adjunct extraction out of TNPs in SC, a language that otherwise allows such movements. Strong independent evidence that the proposal that NP is a phase in NP languages is on the right track concerns Abels's (2003) generalization that the complement of a phase head is immobile. As an illustration of the generalization, Abels observes that an IP that is dominated by a CP, a phase, cannot undergo movement (see (41); Abels shows that the VP complement of the  $v$  phase head is also immobile).<sup>19</sup> As noted by Abels, this in fact follows from an interaction of the PIC and anti-locality, with the PIC requiring IP movement through SpecCP ((42)b is then ruled out by the PIC), and anti-locality blocking such movement because it is too short ((42)a is then ruled out by anti-locality).

(41) \*[John likes Mary]<sub>i</sub> Peter believes that t<sub>i</sub>

(42) a. \*[CP IP<sub>i</sub> [C' C t<sub>i</sub>  
 b. \*IP<sub>i</sub> [CP [C' C t<sub>i</sub>

Now, if NP is indeed a phase in NP languages, as proposed above, we would expect that an NP complement of a noun cannot undergo movement. This surprising prediction is borne out. Zlatić (1997) observes that genitive complements of nouns indeed cannot be extracted in SC. Some of her examples are given below. (Notice that SC in principle allows extraction out of subject TNPs and TNPs with possessives; see, for example, (45)a.)

(43) a. \*Ovog studenta sam pronašla [knjigu t] (Zlatić 1997)  
 this student<sub>GEN</sub> am found book

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<sup>19</sup>Notice that from this perspective (see here Matushansky 2005), the impossibility of moving a complement of D, as in (i) (note that the Specificity Condition is not relevant to (i)), can be interpreted as an argument for the phasal status of DP (as well as the necessity of movement via SpecDP; see the discussion of (42)).

(i) \*Books<sub>i</sub> he bought [DP some t<sub>i</sub>]

It is worth noting here that German allows examples like (i) (the process in question is standardly referred to in the literature as split topicalization.) In principle, this could be accounted for if German TNPs have a bit more structure than English TNPs (which actually can be quite easily argued for), in which case examples like (i) in German would not have to involve movement of the complement of D, but a lower phrase. I will not, however, endorse this analysis here given that the subextraction analysis of German split topicalization faces numerous, well-known problems (roughly, the main problem is that the fronted element corresponding to *books* in (i) seems to be an independent TNP which can even have its own article). There are in fact a number of analyses of such constructions in German that do not involve subextraction from DP (for a survey of German split topicalization which includes the non-subextraction analyses, see van Hoof 2006; see also Roehrs 2006 for yet another non-subextraction analysis that is not included in van Hoof 2006). At any rate, it is beyond the scope of this paper to determine the proper analysis of German split topicalization, which does not seem to involve subextraction (in fact, since the scope of split topicalization is not completely clear in German, this makes German (and any other language that would have German-style split topicalization) an unreliable testing ground for the phenomena under consideration in this paper). More generally, a detailed examination of constructions like (i) crosslinguistically is beyond the scope of this paper since it would require discussion of a number of phenomena that are not of direct relevance to the current paper given that such constructions seem to have various non-movement sources in some languages (one such source involves NP ellipsis in the in-situ "remnant" DP, which seems to be available in some languages), and in some languages such constructions are analyzable in terms of the familiar quantifier float construction (with *some* being a floating quantifier).

- ‘Of this student I found the book.’
- b. \*Koga si pronašla [knjigu t]  
 who<sub>GEN</sub> are found book  
 ‘Of whom did you find the book?’
- c. \*Koga je [(Marijin) opis t] bio autentičan?  
 who<sub>GEN</sub> is Marija's description been authentic  
 ‘Description of whom (by Mary) was authentic?’ (Zlatić 1994)

The impossibility of deep LBE, deep adjunct extraction, and the immobility of genitive complements of nouns thus all fall into place if NP is a phase in article-less languages. They are all ruled out in exactly the same way. The reason why, in contrast to DP languages, NP languages allow LBE and adjunct extraction out of TNP is then not a difference in the phase status of the TNP, where TNP would not be a phase in NP languages at all (as argued in Bošković 2005b); rather, the difference is that the relevant elements are generated at the edge of the TNP phase in NP languages. On the other hand, they have to move to that position in DP languages, which yields an anti-locality violation. When they are forced to move to the phase edge, as in the case of deep LBE and deep adjunct extraction, the anti-locality violation resurfaces in NP languages as well. The NP/DP phasal difference between article and article-less languages thus accounts not only for the different behavior of DP and NP languages with respect to LBE and adjunct extraction, but also for the fact that these differences are nullified in the case of deep extraction.

### 3.2. *Structural vs inherent case*

The examples discussed in section 3.1. involve genitive complements of nouns. Adnominal genitive is the counterpart of verbal accusative; it is the standard case that nouns assign to their complements which then does not need to be specified in the lexicon. I will therefore refer to it as structural case (see section 3.3.1 for independent evidence for the structural case status of SC adnominal genitive). It is well-known that some verbs in SC assign non-accusative, lexically specified cases to their complements, which are referred to as inherent cases. Nouns behave like verbs in this respect, i.e. some nouns also depart from the standard pattern and assign an inherent, lexically specified case to their complement. Interestingly, in contrast to nominal complements bearing genitive case, nominal complements bearing inherent case allow deep LBE.<sup>20</sup>

- (44) a. ?Kakvom<sub>i</sub> ga je uplašila pretnja [t<sub>i</sub> smrću]?  
 what-kind-of him is scared threat death<sub>INSTR</sub>  
 ‘Of what kind of death did a threat scare him?’
- b. Kakvom ga je pretnja smrću uplašila?

Significantly, as noted by Zlatić (1994), nominal complements bearing inherent case can also be extracted.

<sup>20</sup>The improvement here is rather remarkable, given that (44) actually involves extraction out of a subject. Notice also that, as noted by Starke (2001), extraction out of inherently case-marked elements is often somewhat degraded in Slavic (Starke in fact suggests that this could be a more general effect). This may be responsible for the residual awkwardness of (44)a (the same may hold for (46)). What is remarkable, however, is that in spite of these interfering factors, (44)a-b are clearly better than (38)b. (In other words, (44)a-b are otherwise expected to be worse than (38)b.)

- (45) a. Čime<sub>i</sub> ga je [(Jovanova) pretnja t<sub>i</sub>] uplašila?  
 what<sub>INSTR</sub> him is Jovan's threat scared  
 'The threat of what (by Jovan) scared him?'  
 b. Kome<sub>i</sub> je [otpor t<sub>i</sub>] bio snažan?  
 who<sub>DAT</sub> is resistance been strong  
 'Resistance to whom was strong?'  
 c. Kome<sub>i</sub> je [davanje pomoći t<sub>i</sub>] bilo korisno?  
 who<sub>DAT</sub> is giving help been useful  
 'The giving of help to whom was useful?' (Zlatić 1994)

Deep adjunct extraction also improves with inherently case-marked NPs.

- (46) ?Iz kojeg grada<sub>i</sub> ga je uplašila pretnja [djevojkama t<sub>i</sub>]  
 from which city him is scared threat girls<sub>DAT/INSTR</sub>

The correlation between the three phenomena, deep LBE, deep adjunct extraction, and extraction of nominal complements, thus still holds.

We have already seen how the phase analysis accounts for the pattern where deep LBE, deep adjunct extraction, and extraction of a nominal complement are disallowed, as in the case of adnominal genitive. What about inherent case complements, where these extractions are all allowed?

One possibility would be to assume that inherent case assigning nouns simply do not project phases, i.e. they do not count as phasal heads (for a suggestion regarding how this assumption could be implemented as well as a suggestion regarding how the assumption could be tied to independently motivated phenomena, see the talk version of this paper, i.e. Bošković 2010b). Rather than taking this step, I will pursue here an analysis on which it is not necessary to make a distinction between NPs headed by inherent and NPs headed by genitive case assigning nouns with respect to phasehood, i.e. I will pursue an analysis where they can both be considered to be phases. I suggest that the difference between the former and the latter is that NPs headed by inherent case assigning nouns have more structure, which enables extraction out of such NPs to obey anti-locality. This additional structure can be located either on top of the inherent case assigning noun, or in its complement, i.e., either (47) or (48), with FP being the additional structure, would do here, provided that on the structure in (48) FP rather than NP counts as the phase (on the structure in (47) FP does not function as a phase). Both the possessive and the whole complement NP *his death* can move to the Spec of the higher phase, SpecNP in (47) and SpecFP in (48), without violating anti-locality. In other words, both structures allow deep LBE, deep adjunct extraction, and movement of inherently case-marked nominal complements.

- (47) [<sub>NP</sub> threat [<sub>FP</sub> F [<sub>NP</sub> his [<sub>NP</sub> death

- (48) [<sub>FP</sub> F [<sub>NP</sub> threat [<sub>NP</sub> his [<sub>NP</sub> death

There are, however, reasons to prefer the structure in (47) to (48). First, applying Despić's test shows that inherently case-marking TNPs in SC pattern with genitive case-marking TNPs in SC rather than English TNPs with respect to c-command relations: (49) and (50) pattern with (29) rather than (28) in that they involve binding violations. Under the structure in (48), it is necessary to assume that the possessives are adjoined to FP (if they were NP-adjoined they would not c-command out of the TNP),

which means that possessives would be in different positions in inherently and genitive case-marking NPs, FP-adjoined in the former and NP-adjoined in the latter. Under the structure in (47), the possessor can have a constant position within the NP.

(49) \*Njeno<sub>i</sub> upravljanje fabrikom je nāviral<sub>o</sub> Mariju<sub>i</sub>  
her management factory<sub>INSTR</sub> is bohered Marija<sub>ACC</sub>  
‘Her<sub>i</sub> management of the factory bothered Marija<sub>i</sub>.’

(50) \*Marijino<sub>i</sub> upravljanje fabrikom je nerviral<sub>o</sub> nju<sub>i</sub>  
Marija’s management factory<sub>INSTR</sub> is bohered her<sub>ACC</sub>  
‘Marija’s<sub>i</sub> management of the factory bothered her<sub>i</sub>.’

Furthermore, (47) can be easily tied to the often-invoked intuition that inherent case assignment should be tied to prepositionhood, with a preposition being involved in inherent case assignment. Pursuing this intuition, F can be considered to be a preposition-like element, perhaps something similar to English *of*. Alternatively, we can consider it to be a kind of a linker. Either way, the extra structure involved in inherent case-assignment is more tightly related to inherent case, which motivates its presence, in (47) than in (48) since in (47) the extra structure is present right above the inherently case-marked NP, whereas in (48) the additional structure is present above the higher noun, which itself can be structurally case-marked. While the above considerations are not conclusive, they do seem to favor the structure in (47) over (48). I will therefore assume (47) with F being a preposition/linker type element (the structure in (48) will become relevant in the discussion of genitive of quantification in Russian in section 3.3.3, a distinct construction which however will be argued to have a structure that is abstractly similar to (48) in the relevant respect).<sup>21</sup> During the discussion below, the reader should, however, bear in mind that I do not assume the linker/preposition-like F projection to be part of the extended projection of NP since its head is not a nominal element (see Grimshaw 1990).<sup>22</sup>

### 3.3. Genitive of quantification

#### 3.3.1. Genitive of quantification in Serbo-Croatian

I now turn to TNPs involving higher numerals, a context which is referred to in the literature as Genitive of Quantification, where the numeral, which is itself a caseless frozen form, assigns genitive case to the following noun.<sup>23</sup>

<sup>21</sup> One quibble with (47) is that under this analysis movement of the complement NP must strand the FP (if the whole FP were to move to the higher SpecNP the movement would violate anti-locality). A potential issue here is that SC otherwise does not allow preposition stranding under movement. This is in fact the reason why above I did not consider FP to be a full-blown PP. At any rate, since there may be some counterexamples to the ban on P-stranding in SC (see Schütze 1994; the elements in question, however, may not be full-blown Ps), and FP anyway does not have to be considered a full-blown PP (i.e. a PP in every respect), the issue in question does not invalidate the analysis based on (47). (In fact, it should become obvious during the discussion in section 4.1 below that the linker-like element F does not behave like a real preposition with respect to phasehood given that phasehood is what determines strandability of Ps under the analysis adopted in section 4.1. It is then not surprising that F is strandable; in fact, it might even require stranding, see section 3.3.2.2.)

<sup>22</sup> More precisely, I assume that due to its semantic vacuity (and non-nominal status) FP is simply ignored when calculating extended nominal projections. For expository reasons I will therefore omit FP from the structures during the discussion of extended nominal projections below.

<sup>23</sup> The reader should not take the following discussion of SC numerals to be applicable to English, since SC numerals in question exhibit very different behavior from their English counterparts. Notice also that the numeral *jedan* ‘one’ (and other



- (51) On kupuje pet kola  
 he buys five cars<sub>GEN</sub>

This construction has important consequences for the issues discussed in this paper. What makes it particularly interesting is Despić's (2009, in press) observation that this type of numerals bring in additional structure. Despić's notes that his binding tests show that, in contrast to adjectives and demonstratives, genitive assigning numerals confine the c-command domain of possessives, allowing them to co-refer with other elements without causing a binding violation. (*Mnogo* in (52) also assigns genitive of quantification; for ease of exposition I will refer to the genitive-of-quantification assigning *mnogo* as a numeral below.<sup>24</sup>) This follows if the numeral projects a phrase on top of the NP, which I will refer to as QP.

- (52) [<sub>QP</sub> Pet/Mnogo [<sub>NP</sub> Dejanovih<sub>i</sub> [<sub>N'</sub> prijatelja ]]] je došlo na njegovo<sub>i</sub> venčanje  
 five/many Dejan's<sub>GEN</sub> friends<sub>GEN</sub> is came to his wedding  
 'Many/Five of Dejan's<sub>i</sub> friends came to his<sub>i</sub> wedding.'

Significantly, deep LBE from under the numeral as well as adjunct extraction and movement of the complement of the numeral are all allowed. (The three phenomena thus again show uniform behavior.)

- (53) ?Skupih kola je kupio mnogo/pet.  
 expensive cars<sub>GEN</sub> is bought many/five
- (54) Skupih je kupio mnogo/pet kola.
- (55) ?Iz kojeg grada<sub>i</sub> je sreo pet [djevojaka t<sub>i</sub>]?  
 from which city is met five girls  
 'From which city did he meet five girls?'

How can these facts be analyzed? There are two possibilities here: either *five* simply does not head a phase (the no-phase analysis) or there is a phase with numerals but the context in question involves additional structure so that movement out of the numeral phase does not violate anti-locality (the phase analysis). Choosing between these two options has important consequences. Notice first that there is some controversy regarding the categorial status of genitive-of-quantification numerals. While the majority of the literature considers them to be functional elements (generally referred to as Qs), Zlatić (1997) considers them to be nominal in nature (i.e. Ns; they in fact used to be clear nouns historically. For numerals-as-nominal-elements analyses, see also Corver and Zwarts 2006, Hurford 1987, 2003, Ionin and Matushansky 2006, and Ionin, Matushansky, and Ruys 2006). Regarding the choice between

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numerals ending in one, like twenty one) behaves differently from other numerals (for which I use the term higher numerals). *Jedan* is in every respect an adjective; it does not assign genitive to the following noun but agrees with it in case, in contrast to higher numerals, which never decline but assign genitive to the following noun.

<sup>24</sup> It is worth noting here that in addition to the non-inflected frozen form that assigns genitive of quantification, *many* in SC also has an adjectival form which does not assign genitive of quantification but simply agrees with the noun, like all other adjectives. Significantly, as shown by Despić (2009), the adjectival *many* does not void binding condition violations, on a par with other adjectives. The reader should, however, bear in mind that all the examples in the text involve the genitive of quantification *many*, not the adjectival *many*.

the phase and the no-phase analysis of numeral constructions, only the former is compatible with Zlatić's treatment of Qs as Ns, on which QP in (52) is actually an NP hence should count as a phase, given that NP is a phase in SC, as discussed above. Second, the data discussed so far, including the DP/NP difference in the phasehood of the TNP between DP and NP languages, are compatible with an intriguing possibility that the highest phrase in the extended projection of a TNP counts as a phase. Under this analysis, there is no real variation in phasehood between DP and NP languages; rather, the real source of variation lies in the amount of structure a TNP has in NP and DP languages. The reason why NP is a phase in NP languages is the bareness of TNP structure in NP languages, strong evidence for which is provided by Despić's binding tests. The genitive-of-quantification construction is rather important in this respect, given that in this case we do have evidence for the presence of additional structure in a SC TNP, in fact the evidence comes exactly from those tests that, as discussed in section 2, provide evidence for the bare structure of non-numeral TNPs. If the highest phrase in the extended projection of a TNP counts as a phase, then QP should function as a phase in SC. Under this analysis we then need to find a principled reason for the voiding of phasehood effects with genitive of quantification; we cannot simply assume that QPs are not phases. The same holds for Zlatić's treatment of numerals. Notice, however, that under Zlatić's analysis the genitive-of-quantification construction actually has no relevance for the highest-projection-as-a-phase hypothesis since under this analysis we are dealing here with two separate NPs, not with one NP with additional functional structure. At any rate, under the phase analysis (this holds for both implementations of this analysis noted above: the highest-phrase-as-a-phase analysis and Zlatić's NP analysis), we need to find a principled reason for the voiding of the usual phasehood effects since we cannot simply stipulate that QPs (i.e. numeral phrases) are not phases.

In this respect, notice that if genitive of quantification can be treated as an inherent case the issue will be resolved: we will simply be dealing here with the broader pattern noted above with respect to inherent case assigning nouns, which, as discussed above, can be treated in terms of a phase+additional structure analysis. Significantly, Franks (1994) convincingly argues on completely independent grounds that genitive of quantification (i.e. genitive assigned by numerals) is indeed an inherent case in SC. Babby (1987), Franks (1994) and Bošković (2006) argue that, in contrast to structural case, which does not have to be assigned, inherent case has to be assigned (see Franks 1994 and Bošković 2006 for reasons for this). As a result, when an inherent and a structural case assigner compete for case assignment to a single noun, the conflict can be resolved by assigning the inherent case and failing to assign the structural case; however, when two inherent case assigners compete for case assignment to a single noun, the conflict cannot be resolved. (51) represents the former scenario, with *buy* failing to assign its structural case. However, when a higher numeral occurs with a verb that assigns inherent case, the result is an ungrammatical sentence. Since both the numeral and the verb are inherent case assigners, they both must assign their case; this, however, is not possible in the context in question because the two compete for case assignment to a single noun.

- (56) On pomaže ljudima.  
       he helps     people<sub>DAT</sub>
- (57) \*On pomaže pet ljudima.  
       he helps     five people<sub>DAT</sub>
- (58) \*On pomaže pet     ljudi.  
       he helps     five    people<sub>GEN</sub>

Based on this kind of considerations, Franks (1994) argues that SC genitive of quantification is an inherent case. (53)-(55) can then be accounted for in the same way as (44)-(46), with the extra projection linked to inherent case assignment present with numerals, on a par with (47). Nothing then goes wrong with respect to the three phenomena discussed above if the numeral projects a phase (recall that QP may actually be an NP, given Zlatić's analysis).

(59) [QP five [FP F [NP expensive [NP cars

In other words, we are simply dealing here with a broader pattern associated with the inherent/structural case difference, genitive of quantification assigning numerals patterning with inherent case assigning nouns because they both assign inherent case.

It is worth noting here that Franks's (1994) test for structural/inherent case distinction shows that SC adnominal genitive is indeed a structural case, as assumed in the above discussion. Thus, just like verbal accusative can be overridden by genitive of quantification, which shows that verbs that normally assign accusative do not have to assign their case (in contrast to verbs that assign inherent case), adnominal genitive can be overridden by genitive of quantification. There is a context where adnominal genitive and genitive of quantification differ. Thus, with numerals 2-4, the noun gets genitive singular, instead of genitive plural (which is what happens with 5 and higher numerals). When these numerals occur with a noun assigning genitive case, the noun in the complement must get genitive singular, as in (60)b (in other words, the noun here gets genitive of quantification, not adnominal genitive). This shows that adnominal genitive does not have to be assigned, which in turn indicates that adnominal genitive is a structural case, given that, as discussed above, inherent cases must be assigned. Furthermore, as in the case of verbs, nouns assigning inherent case cannot occur in the context in question (see (60)c-d). These facts confirm that the genitive/non-genitive case distinction regarding nominal complements indeed involves structural/inherent case distinction.

- (60) a. opš            knjiga  
           description book<sub>GEN.PL</sub>  
       b. opš            tri      knjige  
           description hree    book<sub>GEN.SG</sub>  
       c. \*pomaganje    pet      ljudi  
           helping        five    people<sub>GEN</sub>  
       d. \*pomaganje    pet      ljudima  
           helping        five    people<sub>DAT</sub>

To sum up, the genitive-of-quantification construction patterns with the inherent adnominal case construction rather than the adnominal genitive construction with respect to the locality diagnostics employed in this paper. Since genitive of quantification is an inherent case, in contrast to adnominal genitive, this state of affairs confirms the relevance of the inherent/structural case distinction for the locality diagnostics employed here. In other words, we are simply dealing here with a broader pattern associated with the inherent/structural case difference, which I have argued has a structural reflex (i.e. it is structurally represented), genitive of quantification assigning numerals patterning with inherent case assigning nouns because they both assign inherent case, in contrast to genitive assigning nouns. Since the genitive-of-quantification construction can be treated like the inherent adnominal case construction, we can keep the implementation of the inherent/structural case distinction from section

3.2., where inherent case contexts are phase contexts, but phasehood effects are voided due to the presence of additional structure, in line with the general approach where the highest projection within a TNP counts as a phase (recall that Zlatić's Q-as-N analysis, on which, in contrast to the QP analysis, genitive-of-quantification constructions involve two separate TNPs, also requires adoption of the phase analysis).

### *3.3.2. Phasehood of TNPs: The highest projection is a phase*

#### *3.3.2.1. SC Q(N)Ps*

We are now ready to examine more closely the two issues that were raised in section 3.3.1 regarding the phase analysis of numeral constructions.<sup>25</sup> The first issue (under the QP treatment of numeral phrases, where numerals do not introduce a separate NP) concerns the possibility that the highest phrase in a TNP domain counts as a phase and the second issue concerns the possibility that higher numerals are actually nouns, as in Zlatić's analysis. Focusing on the first issue (and temporarily putting aside Zlatić's Q-as-N analysis), under the highest-phrase-as-a-phase analysis, in simple non-numeral TNPs NP functions as a phase in NP languages because NP is the highest phrase projected. In numeral constructions, then, QP should function as a phase, since QP is the highest projection. However, we have seen above that the phasehood diagnostics established in section 3.1 do not work with numeral TNPs because numerals assign an inherent case in SC. It appears then that although all the data examined so far are compatible with the highest-phrase-as-a-phase hypothesis, we cannot conclusively test the hypothesis by examining the phasal status of the highest phrase in a SC TNP by taking advantage of the presence of an additional projection with numeral phrases (see, however, the discussion of Russian genitive of quantification in section 3.3.3. below, which involves a projection on top of QP). We can, however, test it with respect to lower phrases. If only the highest phrase functions as a phase, NP should not work as a phase in SC when it is dominated by a QP. The QP+the-highest-phrase-is-a-phase analysis then makes a very interesting prediction: in contrast to simple non-numeral NPs, where NP functions as a phase, in numeral TNPs NP will not function as a phase. On the other hand, under Zlatić's numerals-as-nouns analysis, where the numeral actually introduces an additional TNP, with the phrase headed by the numeral being an NP, the NP following the numeral should still count as a phase, given that this NP is still the highest projection of its own TNP, the construction involving two separate TNPs on Zlatić's analysis. We now have a way of teasing apart the two analyses in question. More broadly, under the QP analysis, we have a way of teasing apart a dynamic approach to phases, where what counts as a phase is determined contextually (see Bobaljik and Wurmbrand 2005, Bošković 2005b, den Dikken 2007, Gallego and Uriagereka 2007a, 2007b, and Takahashi in press a,b for various approaches that can be considered to belong to this line of research), and a rigid, once a phase, always a phase approach, where phasehood of a phrase does not depend on the syntactic context in which it occurs (see Chomsky 2000, 2001). Under the dynamic phasehood approach, a particular phrase can function as a phase in one, but not in another context; while such a situation cannot arise under the rigid phasehood approach, where a phase is always a phase (in all contexts), or never a phase (in any context). So, the options that we are trying to tease apart here have rather important theoretical consequences.

To be more specific, here is what we are attempting to test here. If the highest projection in a TNP counts as a phase (the dynamic approach), NP1 will work as a phase in (62), which is an abstract

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<sup>25</sup> In what follows, I confine my attention to SC (i.e. NP languages). I will discuss English from this perspective later in this section.

representation of a non-numeral construction. However, QP, and not NP1, should work as a phase in (61), which is an abstract representation of a numeral construction, under this approach. On the other hand, if NP is always a phase, either because of Zlatić's Q-as-N analysis, where QP would be another NP, or because NPs are always phases (the rigid phasehood approach), NP1 should function as a phase in both (61) and (62). The crucial testing point here is the phase status of NP1 in (61). We have already seen that NP1 in (62), a non-numeral structure, functions as a phase. What we need to do now is apply those tests for phasehood to (61), where there is a numeral on top of NP1.

(61) [QP [NP1 [NP2

(62) [NP1 [NP2

Significantly, nominal complement extraction improves in this context. Thus, (63)a is better than (43), repeated here as (63)c, which suggests that NP is not a phase in the QP context, as expected under the highest-phrase-is-a-phase approach.

- (63) a. Ovog studenta sam pronašla [mnogo knjiga t<sub>i</sub> ]  
           this student<sub>GEN</sub> am found many books  
       b. Ovog studenta sam pronašla [deset knjiga t<sub>i</sub> ]  
           this student<sub>GEN</sub> am found ten books  
       c. \*Ovog studenta sam pronašla knjige t<sub>i</sub>  
           this student<sub>GEN</sub> am found books

However, deep left-branch extraction and deep adjunct extraction do not show improvement. (64)b and (65) are as unacceptable as (38)b and (40).

- (64) a. On je upoznao [NP [N' prijatelja [NP njegove [NP majke]]]].  
           he is met friend his mother  
           'He met a friend of his mother.'  
       b. \*Čije<sub>i</sub> je on upoznao mnogo [NP [N' prijatelja [NP t<sub>i</sub> [NP majke]]]]?  
           whose is he met many friends mother  
           'Whose mother did he meet many friends of?'  
       (65) ?\*Iz kojeg grada<sub>i</sub> je Petar kupio mnogo slika [djevojke t<sub>i</sub>]  
           from which city is Peter bought many pictures girls  
           'From which city did Peter buy many pictures of girls?'

Our tests are thus giving us conflicting results in this case. What are we to make of this state of affairs? We could simply conclude that the results of the tests are inconclusive, leaving the issue open. Or we can endorse the results of some of the above tests, and assume that interfering factors are involved with the other tests. This is the strategy that I will pursue here. Since in this kind of situation it seems harder for interfering factors to make acceptable those structures that are otherwise expected to be unacceptable than the other way round, I will endorse here the results of the complement extraction test, which means that NP is not a phase in the QP context. As discussed above, the difference in the phasal status of NP in the QP and the non-QP context can be captured if the highest phrase in a 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 *books* can be extracted in (63)a,b, where the NP headed by *books* is not a phase (the QP headed by *many/ten* works as a phase here), in contrast to (63)c, where the NP headed by *books* is a phase.

As discussed above, under this analysis we would expect deep left-branch extraction and deep adjunct extraction to be acceptable in the QP context. Interfering factors must then be involved in constructions such as (64)b and (65), which are unacceptable, contrary to what is expected. What could these interfering factors be? I will offer here a speculation to this effect, leaving a more detailed account of these constructions for another occasion.<sup>26</sup>

Following the line of research that originated with Chomsky and Lasnik (1993) and Takahashi (1994), and revived recently in Bošković (2002), Boeckx (2003), Chomsky (2008), among others, let us assume that element X has to move through potential landing sites while undergoing successive cyclic movement. However, I will adopt here a stronger version of this analysis where the potential landing site is not simply defined in terms of the A/A' distinction, as in Chomsky and Lasnik (1993) and Takahashi (1994). Thus, Müller and Sternefeld (1993) propose a system where adjoined elements move through adjoined positions, and Specs move through Specs. Pursuing the spirit of this line of research, but making it even stricter, I assume that elements that start as NP adjuncts must move via NP adjoined positions. This is not to say that they will not have other landing sites during successive cyclic movement; the claim is that they will not be able to skip NP-adjoined positions. In other words, since the NP adjoined position is a typical position for such elements, they cannot move out of an NP without adjoining to the NP.

This has significant consequences for movement of possessors and adjectives out of TNPs in SC. Recall that such elements are generated as NP adjuncts. This means that they cannot move out of an NP without adjoining to it, i.e. they have to target every NP adjoined position on their way. So, in a structure like (66), where the possessor is generated in NP2 and then undergoes movement, the possessor will have to adjoin to the higher NP (NP1), on its way to a higher position (only the relevant structure is shown in (66)).<sup>27</sup>

(66) Possessor<sub>i</sub> [<sub>QP</sub> t<sub>i</sub> [<sub>NP1</sub> t<sub>i</sub> [<sub>NP1</sub> [<sub>NP2</sub> t<sub>i</sub> [<sub>NP2</sub>

<sup>26</sup>What is proposed in the discussion to follow in the main text will not affect inherently case-marked NPs. It should, however, be noted that the status of the relevant extractions with inherently case-marked NPs is not completely clear. In particular, while deep LBE and deep adjunct subextraction are somewhat worse with inherently case-marked NPs that are accompanied with numerals than with the corresponding constructions without numerals, such subextraction with inherently case-marked NPs accompanied by numerals is still better than the corresponding subextractions with structurally case-marked NPs that are accompanied with numerals (compare (ia-b) with (64)b and (65)). It is not clear how this three-way distinction can be captured. Pending an account, I tentatively reduce it to a two-way distinction by giving more weight to the difference between extraction from inherently case-marked NPs with numerals and structurally case-marked NPs with numerals, a contrast which anyway seems sharper. (Nothing in the discussion to follow needs to be changed to accommodate inherently Case-marked NPs then.)

- (i) a. (?)?Iz kojeg grada ga je uplašilo mnogo pretnji [djevojkama t]?  
           from which city him is scared many threats girls<sub>INSTR</sub>  
           ‘From which city did many threats scare girls?’  
       b. ??Kakvom ga je mnogo pretnji [t smrću] uplašilo?  
           what-kind-of him is many threats death<sub>INSTR</sub> scared  
           ‘Of what kind of death did many threats scare him?’

<sup>27</sup>The highest trace should be present in (i) under the assumption that the possessor must move through the edge of the QP phase, given the PIC.

But then we have an account of the ungrammaticality of (64)b and (65). The possessor and the adjunct are generated as adjuncts to the lowest NP. They will now have to adjoin to the higher NP during successive cyclic movement. This step of movement, however, violates anti-locality. This is then the reason why (38)b and (40) do not improve with an addition of a QP, as in (64)b and (65). QP is simply irrelevant. It cannot help here because the violation occurs even before the relevant element reaches QP. Notice also that this account of the ungrammaticality of (64)b and (65) does not affect the case of complement extraction (i.e. (63)a-b). A complement will obviously not be forced to adjoin to NP, given the above discussion.

The above analysis accounts for the contrast between (63)a,b and (64)b/(65), i.e. it accounts both for the improvement (in the QP context) in the case of complement extraction and the lack of improvement with deep left-branch subextraction and deep adjunct subextraction. The acceptability of complement extraction was interpreted as evidence that NP is not a phase in the QP context, with interfering factors that do not arise with complement extraction being responsible for the unacceptability of deep left-branch/adjunct subextraction.

We then have here rather interesting evidence for the phasal status of QP in SC. While we were unable to find direct evidence for its phasehood of the kind discussed above with respect to English DP due to interfering factors, namely the inherent case status of the SC genitive of quantification, we have found indirect evidence for its phasehood by examining the effect that the phrase headed by the numeral has on the phasal status of the NP dominated by the numeral phrase. That the numeral phrase has such an effect provides evidence for the highest-phrase-as-a-phase approach, where addition of a phrase on top of X within the same extended projection can change the phasal status of X. It also provides evidence for the QP treatment of numerals and against Zlatić's Q-as-N analysis, where the numeral phrase should not affect the phasal status of NP since the numeral phrase itself is an NP, which means that we are dealing with two separate TNPs in the genitive of quantification context under the Q-as-N analysis.

In the next section I turn to English. We will see that English provides additional (and stronger) evidence for the highest-phrase-as-a-phase approach. The discussion of TNP phasehood in English in the following section can in fact be interpreted as evidence that the analysis of SC QPs presented above, where QP but not NP is a phase (in the QP context), is on the right track, given that English TNPs will abstractly receive the same treatment as SC QPs, which will be furthermore shown to have strong empirical motivation.

### 3.3.2.2. *English genitive*

Under the analysis we are pursuing the highest projection within a TNP counts as a phase. In an NP language like SC, which lacks DP, NP typically functions as a phase, except in the case of the higher numeral construction, where there is a QP on top of NP. In such constructions QP functions as a phase instead of NP. This proposal makes an interesting prediction for English. We have seen that DP is a phase in a DP language like English. But what about NP? Is NP also a phase in English? The dynamic, highest-phrase-is-a-phase approach and the rigid, once a phase always a phase approach make different predictions for English in this respect. Under the latter approach, assuming that there is no real crosslinguistic variation with respect to phasehood, the only source of variation being the amount of structure within a TNP, given that NP is a phase in an article-less language like SC NP should also be a phase in English. On the other hand, English and SC should differ in this respect under the dynamic, highest-phrase-is-a-phase approach. We have already seen that NP ceases to be a phase in the rare case

when NP is dominated by higher structure within a TNP in SC. In English, NP is typically dominated by DP. In fact, the most natural interpretation of Bošković's (2008, 2010a) NP/DP parameter is that DP is always projected in English. NP should then never count as a phase in English. The dynamic and the rigid approach thus make different predictions regarding the phasehood of NP in English.

Let us then examine whether NP works as a phase in English, in addition to DP. As discussed above, the left-branch extraction test and the adjunct extraction test cannot be conducted in English, such extractions always being banned in English due to the phasal status of DP. We are then left with the complement extraction test. If the complement of a noun can be moved in English, NP cannot be a phase. If, on the other hand, the complement of a noun cannot undergo movement, the conclusion will be that NP is a phase in English. (If NP is a phase in English, just as in SC, movement of a nominal complement will have to proceed via SpecNP, which will violate anti-locality. Recall that such extraction is indeed unacceptable in SC.)

Let us then consider English *of*-genitive phrases from this perspective.<sup>28</sup> While there is clearly a preference for stranding *of* (see below for a reason for this), there are fully acceptable cases where the whole *of*-complement moves, as in the examples in (67), taken from the literature.

- (67) 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)

The acceptability of examples like (67) can then be taken to indicate that NP is not a phase in English. There are, however, some interfering factors. It seems that English adnominal genitive should be considered to be the counterpart of SC adnominal genitive; it is a regular case assigned by nouns that does not need to be specified in the lexicon. This is in contrast to what we find with SC nouns like *pretnja* 'threat', which exceptionally assigns instrumental case. However, Chomsky (1986b) considers English *of*-genitive to be an inherent case. If Chomsky is correct in this conjecture, examples in (67) may be irrelevant, given that even in SC, NP-phasehood effects are voided with inherent case. More precisely, on the inherent case treatment of adnominal genitive in English the grammaticality of (67) would not necessarily provide evidence that NP is not a phase in English; i.e. it would not tell us anything conclusive about this issue.

There is, however, one scenario on which (67) may still be relevant. Assume that English adnominal genitive is indeed an inherent case, as Chomsky (1986b) proposed. I have argued above that inherent case comes with additional structure, which I simply referred to as FP. The question is then how *of* should be treated on this analysis. A natural move would be to consider *of* the realization of F. I have argued above that in SC FP does not get pied-piped in the cases of nominal complement movement. If there is a more general preference not to separate F from the inherent case assigning noun, which does not seem implausible, we can then account for the preference to strand *of*, which is in some cases quite strong to the point that non-stranding cases sound degraded. (Ross 1986:123 even noted that non-stranding is disallowed in his dialect, though he later did give acceptable examples of this type (see p. 148).) At any rate, from this point of view, examples in (67) are relevant to the issue of NP phasehood. If the whole FP is moved in (67), the movement would yield an (anti-)locality violation if the NP here were a phase. More precisely, the PIC would force the *of* phrase to move via SpecNP, which would yield an anti-locality violation.

<sup>28</sup> Since it is not easy to determine the status of the English *of*-genitive with respect to the criteria that are relevant to our concerns, I will discuss below a range of available possibilities (see also Kayne 2002 for a very different treatment of *of* and prepositions in general).



To conclude, if English adnominal genitive is a structural case, or if it is an inherent case with *of* being the realization of the F head, the grammaticality of (67) provides evidence that NP is not a phase in English.

One scenario where the grammaticality of (67) is irrelevant to the issue under consideration concerns the analysis on which English adnominal genitive is treated as an inherent case, with *of* located in a position lower than  $F^0$ , rather than in  $F^0$ . There actually is another option: the complement of the noun in (67) may simply be a PP, headed by *of*. On this analysis, the grammaticality of (67) again becomes relevant: since the examples involve movement of a nominal complement, the NP cannot work as a phase in (67) or the examples would be ruled out as (anti-)locality violations. There is, however, no need to rely on (67), where the categorial status of the extracted complement is not completely clear, to investigate this option. There are other clearer cases of PP nominal complements. Such complements can be moved, as shown in (68), which then provides evidence that NP is not a phase in English: if NP were a phase, PP complement movement in (68) would be blocked via the PIC/anti-locality conspiracy.

(68) ?To which problem did you discover (the) solutions?

One issue that arises here is the status of non-*of* PPs. While *of*-phrases seem like good candidates for actual complements it is less clear with other PPs whether they should be treated as adjuncts or complements. Recall, however, that English disallows adjunct extraction from TNPs (due to the phasehood of DP), so the very grammaticality of (68) provides evidence that the PP here is a complement (i.e. an argument rather than an adjunct). It is also worth noting here that Spanish counterparts of English adnominal genitive are extractable, given that some of the interfering issues that arose above regarding English *of* may not be relevant in the case of Spanish *de* phrases.

(69) De qué ciudad presenciaste la destrucción?  
of what city witness<sub>2P.SG.PAST</sub> the destruction  
‘Of which city did you witness the destruction?’

I then conclude that NP is not a phase in DP languages like English and Spanish, as predicted by the dynamic phasehood approach on which the phase status of a phrase can depend on its syntactic context, the implementation of this approach for the case at hand being that the highest phrase in a TNP counts as a phase. Given that English NP is dominated by DP, NP then does not work as a phase in English, in contrast to NP languages like SC.

Returning now to SC, above I have only discussed extraction of NP complements of nouns. What about PPs? It turns out that some phrases that could be treated as PP complements are extractable, as shown in (70).

(70) ?Za koj problem si otkrio rešenja?  
to which problem are discovered solutions  
‘To which problem did you discover (the) solutions?’

In light of the above discussion, should the grammaticality of (70) be interpreted as indicating that NP is not a phase in SC? This conclusion would leave the data regarding adnominal genitive discussed above unaccounted for, hence I will not pursue it here. One could try to modify the above conclusion by assuming that only NPs headed by case assigning nominals count as phases (see Bošković 2010b for

an attempt along these lines, based on Takahashi's in press a,b approach to phasehood, where case plays a crucial role in determining phasehood), where the case difference between adnominal genitive and examples like (70) could even have a structural reflex that could be responsible for the phase difference. There is, however, no need to take this step. It is actually not clear that PPs ever function as nominal complements in SC. In other words, it appears that in SC, a language where a noun can take a true NP complement, clear PPs simply do not function as nominal complements. Rather, they should be treated as adjuncts. Given that adjuncts can be extracted out of TNPs in SC, the grammaticality of (70) by itself is not an impediment to the adjunct treatment of the PP, as it was in English. There is, however, a simple test that can determine the complement/adjunct status of the PP in question, which was in fact used by Ticio (2003) in her discussion of PP extraction out of Spanish TNPs. If the TNP in (70) is further embedded within an island, we should get a subjacency-strength violation if the relevant phrase is a complement, and an ECP-strength violation if the phrase is an adjunct. It turns out that the violation here is quite strong, on a par with ECP-strength violations, which provides evidence that the PP in question is an adjunct, not an argument (see (71)a; another relevant example is given in (71)b).<sup>29</sup> This in fact seems to be quite generally the case in SC, a language which allows NP nominal complements (in various cases) and where the nominal complement/argument treatment seems to be reserved for NPs. (For relevant discussion, see also Starke 2001: chapter 5, who (simplifying somewhat) ties traditional argumenthood to NPhood, or, more precisely, being case-marked; notice that English may not differ from SC in the relevant respect if in a case-poor language like English some prepositions count as case-markers, which is not the case in a case-rich language like SC, where prepositions are prepositions.<sup>30</sup>)

- (71) a. \*Za koj problem si ti zaspao pošto je Ivan okrio rešenja?  
to which problem are you fallen-asleep after is Ivan discovered solutions  
'To which problem did you fall asleep after Ivan had discovered (the) solutions?'  
b. \*O kojem novinaru si ti zaspao pošto je Ivan pročitao članak?  
about which journalist are you fallen-asleep after is Ivan read article  
'About which journalist did you fall asleep after Ivan had read an article?'

To summarize the discussion in section 3.3.2, the claim that NP is a phase in NP languages was situated within a broader theoretical context in this section. We have seen that, in contrast to NP languages like SC, NP is not a phase in DP languages like English. The facts then indicate that DP, but not NP is a phase in English, while NP is a phase in SC. This can be captured if the highest phrase within a TNP functions as a phase in both DP and NP languages, the highest phrase being DP in English and NP in SC. Additional evidence for this approach was provided by the genitive of

<sup>29</sup> Ticio conducts the test in question to show that some PPs that appear to be treatable as adjuncts and that are extractable from TNPs in Spanish, a DP language which should not allow such extraction, are in fact arguments. (In her cases, extraction of such PPs from islands yielded a subjacency-strength violation.) It is worth noting here that, as discussed in Lasnik and Saito (1992), extraction of PP arguments out of islands is a bit more degraded than extraction of NP arguments, though still much better than extraction of adjuncts. In this respect, notice that the unacceptability of (71) is quite strong; it cannot be captured simply by appealing to the additional PP effect, which may even be language specific (i.e. specific to English).

It is also worth noting a potential alternative analysis of (71). Following Bach and Horn (1976), the PP in at least (71)b may be directly modifying the verb, in which case it would not be part of the object NP. Furthermore, if the PP modifies the verb as an adjunct, the strong unacceptability of (71)b would also follow.

<sup>30</sup> The most plausible candidates for PP nominal complements in English are in fact NPs in SC.

quantification construction from SC, where a QP is projected above NP even in SC. We have seen that due to the presence of QP, NP ceases to be a phase in SC in this context. In other words, QP voids the phasehood of NP in SC, just like DP voids the phasehood of NP in English. All of this indicates that it is the highest phrase in the traditional NP that functions as a phase, regardless of the categorial status of the TNP in a particular language (or construction). There is then no real crosslinguistic variation regarding phasehood in TNPs, the only variation lies in the amount of structure a TNP has in DP and NP languages. More generally, the above discussion favors a dynamic approach to phasehood, where the phase status of a phrase can be affected by the syntactic context in which it appears, over a rigid, once a phase, always a phase approach, where the syntactic context is irrelevant to the phasehood of a phrase. The test case came from NP, whose phasal status is affected by the syntactic context in which it occurs in both English and SC. In English, due to the syntactic context in which it occurs (i.e. the presence of DP) NP never functions as a phase, while in SC NP sometimes functions as a phase, and sometimes it does not, depending again on the syntactic context in which it occurs.<sup>31</sup>

### 3.3.3. Genitive of quantification in Russian

I will now discuss genitive of quantification in Russian, which presents an interesting puzzle for the system argued for above. Russian behaves like SC with respect to the paradigm discussed in sections 3.1 and 3.2: deep LBE, movement of the nominal complement, and deep adjunct extraction are unacceptable in an adnominal genitive contexts, with an improvement with inherent case context.<sup>32</sup> Regarding genitive of quantification, a context which I will focus on here because, as discussed below, it appears to raise a problem for the analysis developed so far, Russian again patterns with SC with respect to the basic paradigm from section 3.2.2.<sup>33</sup> As shown in (72), deep LBE, deep adjunct extraction, and nominal complement extraction are all possible in this context, just as in SC.

- (72) a. Dorogix            on kupil    pjat'    mašin.  
          expensive<sub>GEN</sub> he bought five    cars<sub>GEN</sub>  
          'Five expensive cars, he bought.'  
       b. Dorogix            on kupil mnogo mašin.  
          expensive<sub>GEN</sub> he bought many cars<sub>GEN</sub>  
          'Many expensive cars, he bought.'  
       c. Dorogix            mašin on kupil    pjat'.  
          expensive<sub>GEN</sub> cars<sub>GEN</sub> he bought five  
          'Five expensive cars, he bought.'  
       d. Dorogix            mašin on kupil mnogo.

<sup>31</sup> Notice also that although under the dynamic approach the phase status of an NP, for example, depends on its syntactic context, no look-ahead is required to accommodate the variable status of NP with respect to phasehood. X can either move to the edge of NP or not; if X does not move to the edge of NP and no additional TNP-related structure is inserted above NP, which means that the first merger is with for example a V, with V projecting and turning NP into a phase, X will not be able to move out of the NP. If the structure requires movement of X out of the NP the structure will simply crash. The problem will not arise if X does move to the edge of NP before merger with the verb. Moreover, under Chomsky (2001) definition of the PIC, X in the complement domain of an NP phase would actually be able to move to SpecVP (even SpecNP if the cycle is defined on phases) after the NP merges with the verb since PIC effects kick in only when a higher phase head, in this case  $v$ , is merged. No look-ahead problem then arises here (or any other relevant case we have been concerned with.)

<sup>32</sup> For relevant data, see Bošković (2010b). (As noted in Bošković 2010b, the same holds for Polish.)

<sup>33</sup> In fact, the same holds for the data discussed in section 3.3.2.1.

- expensive<sub>GEN</sub> cars<sub>GEN</sub> he bought many  
 ‘Many expensive cars, he bought.’  
 e. Iz kakogo goroda on videl [pjat’ devušek t]?  
 from which city he saw five girls

As in the case of SC, there are two possibilities here. Either QPs do not function as phases, or QPs function as phases but there is additional structure present with QPs which makes it possible for extraction out of a QP not to violate anti-locality. The latter alternative, which I will refer to as the QP-as-a-phase analysis, is preferable, since it allows us to maintain the position, which was independently motivated in the previous section, that the highest phrase in the extended projection of NP counts as a phase crosslinguistically, in which case there is no real crosslinguistic variation in phasehood—the only variation lies in the amount of structure that TNPs have crosslinguistically, a variation that is also independently motivated. We have seen that the QP-as-a-phase analysis can be easily maintained for SC. In fact, there was independent evidence for it since SC genitive of quantification is an inherent case. The lack of locality effects in the genitive of quantification context is then just another illustration of the structural vs inherent case difference, and can be captured in exactly the same way as the lack of locality effects with nouns that assign inherent case. Most importantly, given the above proposal that inherent case involves additional structure, it is not necessary to exempt inherent case assigning heads from phasehood; the lack of locality effects can be captured even if inherent case assigning nouns project phases, just like genitive assigning nouns. QPs can be treated in the same way as the former given independent evidence, provided by Franks (1994), that SC genitive of quantification is an inherent case. QPs can then be considered to be phases, in line with the approach where the highest phrase in the extended projection of NP counts as a phase.

At first sight, it appears that Russian should not change the overall picture. As noted above, Russian patterns with SC with respect to the basic structural vs inherent case assigning nouns paradigm, which then can be handled in the same way as the SC paradigm. Russian genitive of quantification also behaves just like SC genitive of quantification in all relevant respects. The obvious step to take here would be to treat Russian genitive of quantification just like SC genitive of quantification, with QP functioning as a phase. The analysis is, however, not easy to implement in light of Franks's (1994) claim that, in contrast to SC genitive of quantification, Russian genitive of quantification is a structural case. His claim is based on the fact that, in contrast to what we have seen above regarding SC, Russian genitive of quantification does not have to be assigned; it can in fact be overridden by an inherent case of the verb, as shown by (73).

- (73) Ivan pomogaet pjati devočkam.  
 Ivan helps five<sub>DAT</sub> girls<sub>DAT</sub>  
 ‘Ivan helps five girls.’

Since structural case does not come with additional structure the Russian data may then favor the no-QP phase analysis. By extension, the analysis could also be applied to SC. However, we could then no longer assume that the highest phrase in the extended projection of NP counts as a phase and the absence of relevant locality effects with SC genitive of quantification would not then simply fall out from the independently motivated inherent case status of this case in SC. Even a bigger problem would arise for Russian if Zlatić's (1997) Q-as-N analysis is adopted for Russian. It would be extremely difficult to adopt the no-phase account for Russian genitive-of-quantification numerals under this analysis, which would treat them as NPs, while still maintaining the NP-as-a-phase analysis developed

in section 3.1. (Recall that Russian behaves like SC with respect to the crucial tests from section 3.1.)

I will therefore explore the possibility of an alternative analysis, on which QPs in both Russian and SC can be considered to be phases, which will allow us to maintain the highest-phrase-is-a-phase approach. The analysis, however, should not conflict with the independently motivated claim by Franks (1994) that SC genitive of quantification is inherent, while Russian genitive of quantification is structural. This means that we cannot handle the Russian paradigm in (72) on a par with the SC data in (53)-(55) since that would entail assuming that Russian genitive of quantification is an inherent case. What could then be the relevant factor in Russian, which would have the effect of voiding the usual phasehood locality effects with Russian numerals?

Interestingly, there is evidence that Russian genitive of quantification does not work the same way as SC genitive of quantification. I have tacitly assumed above that the numeral assigns genitive of quantification in SC (which means that the numeral is the head of QP). In fact, I do not know of any data that would be incompatible with this assumption in SC. Significantly, there is evidence that Russian genitive of quantification is not assigned by the numeral, but by another element below the numeral. Thus, as discussed by Franks (1994), there is a construction where the noun following the numeral bears genitive, but the numeral itself clearly has a non-genitive case form (this situation never arises in SC). This is illustrated in (74), where the distributor *po* is a dative case assigner. (The case pattern from (74) is not the only possibility here, see Franks 1994.)<sup>34</sup>

- (74)   Každyj učenik   polučil   po           pjati   rublej.  
         each   student   received   distributor   five<sub>DAT</sub>   rubles<sub>GEN</sub>  
         ‘Each student received five rubles.’

Based on this type of examples, Franks (1994), Bailyn (2004), and Bošković (2006) argue that in Russian the numeral itself does not assign genitive of quantification, which they argue is assigned by a null head below the numeral. (As discussed in Bošković 2006, the underlying assumption here is that the same element cannot function as a case assigner and a case assignee, a situation which is otherwise never found (see also Stowell’s 1981 Case Resistance Principle.) A structure along the lines of (75) can then be applied to Russian genitive-of-quantification numerals, with the null Q functioning as the genitive case assigner.

- (75)       [<sub>XP</sub> numeral [<sub>QP</sub> Q [<sub>NP</sub> expensive [<sub>NP</sub> cars

But this structure is very similar to (48). The above discussion of (48) can then be applied to Russian numerals. We can then continue to assume that the highest extended projection of a TNP is a phase, which in the case of (75) is the projection marked as XP, whose exact nature I leave open here. Movement of the NP complement of Q, deep adjunct extraction, and deep LBE from under Q can still proceed without a violation of anti-locality. Furthermore, the structure in (75) is fully compatible with Franks’s claim that Russian genitive of quantification is a structural case and the current claim that no additional structure is present right above a structurally case-marked NP, in contrast to inherently case-marked NPs.

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<sup>34</sup> While Russian numerals can clearly bear case SC numerals are always caseless. Thus, SC *pet* ‘five’ has only one form, in contrast to its Russian counterpart, which has different case forms. Russian and SC numerals also differ regarding agreement, which, like the case difference, can be tied to the categorial difference proposed below in the main text (the issue is discussed later in this section).

Another aspect of the current analysis is worth noting here. I have assumed above that while SC numeral phrases are QPs (with the numeral heading the QP), Russian numeral phrases at least can have additional structure on top of QP, which I have referred to as XP, leaving its precise nature open. The difference was tied to the ability of Russian numerals to receive case from a TNP external case assigner, numerals in XP being accessible to an external case assigner. Note now that SC numerals never get case (see footnote 34), while I have argued in Bošković (2006) that Russian numerals have both cased and caseless forms (see also Franks 1994).<sup>35</sup> Taking seriously the connection between the additional structure (XP) and the accessibility to an outside case assigner would then lead to the conclusion that SC numeral phrases are always QPs while Russian numeral phrases can either be QPs or XPs, where XP is projected on top of QP. Focusing on Russian numerals for a moment, this is precisely the state of affairs that Franks (1994) argued for. In particular, Franks argued that Russian numeral phrases can either be QPs or involve an additional phrase on top of QP.<sup>36</sup> Franks's main concern was to account for the optionality of agreement with numeral phrases in Russian.

- (76) Devjattnadcat'    samolëtov    pereleteli/pereletelo granicu.  
                                  nineteen            planes<sub>GEN</sub>    flew-across<sub>PL/SG</sub>    border

Franks connected this with the amount of structure present in the numeral phrase: QPs cannot undergo agreement, while the phrase on top of QP (XP in current terms) undergoes agreement. The optionality of agreement was in fact also the main concern of Bošković (2006). However, in contrast to Franks (1994), I have argued that what is responsible for the optionality of agreement is not a difference in the categorial status of numeral phrases; rather what is responsible is case: Russian numerals have both case and caseless forms, where case forms undergo agreement and caseless forms do not undergo agreement (see footnote 35). The above suggestion then reconciles Franks's (1994) and Bošković (2006) proposals. Agreeing and non-agreeing numerals differ both in case properties and the amount of structure, where the two are directly related: XP is needed both for agreement and to make the numeral accessible for external case assignment.

Returning to SC, as noted above, SC numerals clearly never get case, which I have interpreted above as indicating that they are always QPs, with the numeral heading the QP. Significantly, SC numerals also fail to agree.<sup>37</sup>

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<sup>35</sup>Putting aside (74), in examples where genitive of quantification is assigned it is not clear whether the numeral is caseless or nominative/accusative since the two forms would be expected to look exactly the same morphologically, given the Russian case paradigm. In fact, in Bošković (2006) I argue that the numeral in the genitive of quantification context is ambiguous between a caseless and an accusative/nominative form, the ambiguity being revealed through the optionality of agreement with subject numerals, as discussed below.

<sup>36</sup> The additional phrase for Franks is DP (since Franks worked in a framework that simply assumed the possibility of DP even in article-less languages). Given the discussion in section 1, the additional phrase should not be a DP. The actual labels do not really matter here. My main point here is to note the similarity in the amount of structure projected in Russian numeral phrases between the current system and Franks (1994).

<sup>37</sup>As discussed in Franks (1994), the plural in (78) is not fully unacceptable due to the possibility of apparently still degraded extragrammatical (i.e. semantic) agreement (plural here makes sense semantically).

It is worth noting here that Franks actually suggests that SC numerals do project additional structure, XP in current terms. However, he then basically stipulates that SC numerals cannot agree, although for him they have the right kind of structure for agreement. It seems preferable not to adopt this analysis. If SC numerals are simply QPs it follows that they do not agree and that they cannot get case from outside case licensors, which are indeed their properties: they are caseless and do not agree. Franks suggested that SC numerals are XPs because he wanted to work in another factor, namely structural height. Franks showed that Russian numerals are structurally lower on the non-agreeing option, than on the agreeing option and that SC numerals pattern structurally with Russian agreeing numerals. I take this to indicate that agreement should not

- (77) Devetnaest aviona je prešlo granicu.  
 nineteen planes is flown-across<sub>SG</sub> border
- (78) ???Devetnaest aviona su prešli granicu.  
 nineteen planes are flown-across<sub>PL</sub> border

Being QPs, SC numeral phrases then can never agree, while Russian numeral phrases optionally agree (since they can be QPs or XPs). The conclusions we have reached here about the structure of numeral phrases in SC and Russian are thus compatible with Franks's (1994) system, which means that the structures assumed here can be tied to the agreement patterns displayed by SC and Russian numeral phrases.<sup>38</sup>

#### 4. Going beyond clauses and TNPs

I will now discuss phrases other than TNPs, applying the above tests to them. As noted in the introduction, most of the discussion of phases in the literature concerns clausal-level projections, CP and  $\nu$ P (both of which are actually extended projections of V). We have seen above that left-branch extraction and related constructions can be used as a rather powerful tool for determining the phase status of the TNP. The tests are also applicable to PPs and APs, phrases which are rarely discussed in terms of phases. The tests in question provide evidence for the phasehood of these phrases. I will first consider PPs.<sup>39</sup>

##### 4.1. PPs

Before applying the tests from section 3.1., we need to determine whether the case assigned by prepositions is structural or inherent. In a case rich language like SC, different prepositions assign different cases. It is standardly assumed that prepositional cases are inherent. Surprisingly, Franks's (1994) test for structural/inherent case distinction reveals that prepositional cases in SC are structural. More precisely, prepositional cases behave like structural cases with respect to genitive of quantification in that they can be overridden by genitive of quantification (see Franks 2002). Thus, (79)-(80) pattern with (51) rather than (58).

- (79) a. u Londonu/sobi  
       in London<sub>LOC</sub>/room<sub>LOC</sub>  
       b. u pet soba  
       in five rooms<sub>GEN</sub>

---

be correlated with structural height, given that agreeing numerals in Russian pattern with non-agreeing SC numerals with respect to structural height. The current analysis thus correlates only case properties of numerals, the amount of structure they have, and their agreement properties, leaving aside the structural position of numeral phrases. However, since the structural position is important for locality effects, I will not try to examine here interactions between locality and agreement.

<sup>38</sup> It is way beyond the scope of this paper to provide a full account of the complex behavior of numeral phrases in SC and Russian. My point here is a modest one, simply to point out the similarity between what I have assumed here and Franks's (1994) seminal analysis, which may make it possible to import at least some of the accomplishments of Franks's analysis into the current system.

<sup>39</sup> I will also briefly discuss VPs in the conclusion.

- (80) a. *prema* Londonu/sobi  
           toward London<sub>DAT</sub> /room<sub>DAT</sub>  
       b. *prema* pet soba  
           toward five rooms<sub>GEN</sub>

The conclusion raises all kinds of interesting issues.<sup>40</sup> Putting these issues aside, since they go well beyond the scope of this paper, let us consider the predictions that the conclusion makes with respect to the phenomena examined in this paper. The predictions are clear: Suppose that PP is a phase in SC, which has in fact been proposed by Abels (2003). Given that P assigns structural case, movement of the P-complement, left-branch extraction, and adjunct extraction from under P should all be disallowed. It is well-known that SC indeed disallows preposition stranding, as illustrated by (81).<sup>41</sup>

- (81) a. \*Sobu on uđe u (juče).  
           room he entered in yesterday  
       b. \*Njoj on hoda prema.  
           her he walks toward  
       c. On hoda prema njoj.

As predicted, deep LBE and adjunct extraction are also disallowed.<sup>42</sup>

- (82) \*Veliku on uđe u sobu.  
           big he entered in room

- (83) \*Iz kojeg grada je on hodao prema [djevojkama t]?  
           from which city is he walked toward girls

PPs thus confirm the validity of the tests that were used to determine the phase status of TNPs, given that the three diagnostics established in section 3.1. pattern together with PPs, just like they do with TNPs (putting aside the one exceptional case discussed in section 3.3.2.1). Furthermore, these diagnostics reveal that PPs are phases in SC.

I will now briefly consider the case of English. Deep LBE and adjunct extraction are irrelevant for English, since these movements are ruled out independently in English due to the presence of DP.

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<sup>40</sup> For example, while all verbs assign the same structural case, prepositions apparently differ in this respect. It may then be necessary to lexically specify which case a particular preposition assigns, which means that lexical specification is not enough to consider a particular case inherent. In fact, the dative assigned by Russian preposition *po*, discussed in section 3.1.3. (see (74)), clearly has to be considered a structural case since it is assigned in an ECM configuration (see section 3.1.3. and especially Franks 1994 for a detailed justification of this property of the case assigned by *po*).

<sup>41</sup> *U* is actually a proclitic, while *prema* is not.

<sup>42</sup> SC also has a very interesting construction which in Bošković (2005b) I called extraordinary left-branch extraction, illustrated in (i) below. I refer the reader to Bošković (2005b) and references therein for discussion of this construction, which turns out not to affect the conclusions reached above.

- (i) U veliku on uđe sobu.  
       in big he entered room  
       ‘He entered the big room.’



The preposition stranding test is, however, relevant. It is well-known that, in contrast to SC, English allows P-stranding.

(84) What are you looking at?

It is beyond the scope of this paper to provide an account of the SC/English difference with respect to P-stranding. I will only note here two obvious possibilities. One possibility is that PPs are not phases in English. This is in fact what Abels (2003) argues for (see, however, Bošković 2004 and Ticio 2003). Under Abels's analysis, languages differ regarding the phasal status of PPs. In PPs-as-phases languages, movement out of a PP must proceed via SpecPP, which in the case of movement of the complement of P yields an anti-locality violation, hence the ban on preposition stranding in SC. The problem does not arise in English, where PP is not a phase according to Abels, hence movement out of a PP does not need to proceed via SpecPP.

Another option is that PP is a phase in both SC and English, i.e. in both P-stranding and non P-stranding languages. The relevant difference between the former and the latter would then be that English PPs have a richer structure than SC PPs (see, e.g. Svenonius 2010 for rich PP structure for English), which makes it possible for movement out of a PP in English not to violate anti-locality.<sup>43</sup>

It is interesting to note in this respect that Sener (2006) observes that in Turkish, a language which normally disallows P-stranding, P-stranding is allowed in the cases where there is evidence for a richer structure. Thus, preposition stranding is disallowed in (85)a, containing a bare preposition. However, it is allowed in (85)c,d, involving a complex preposition which also contains an agreement morpheme.

- (85) a. \* Biz [NP Pelin-in arkadaş-ı]<sub>i</sub> dün [PP t<sub>i</sub> için] para topladı-k.  
 we<sub>NOM</sub> Pelin<sub>GEN</sub> friend<sub>POSS</sub> yesterday for money collect<sub>PAST.1PL</sub>  
 'Yesterday, we collected money for Pelin's friend.'
- b. cf. Biz dün [PP [NP Pelin-in arkadaş-ı] için] para topladı-k.  
 we<sub>NOM</sub> yesterday Pelin<sub>GEN</sub> friend<sub>POSS</sub> for money collect<sub>PAST.1PL</sub>
- c. Ben Pelin-in<sub>i</sub> dün [PP t<sub>i</sub> yan-ın-da] konuştu-m.  
 I<sub>NOM</sub> Pelin<sub>GEN</sub> yesterday side<sub>3SG.AGR.LOC</sub> speak<sub>PAST.1SG</sub>  
 'I spoke (while I was) next to Pelin yesterday (not while I was behind her).'
- d. Ben araba-nın<sub>i</sub> dün [PP t<sub>i</sub> ön-ün-de] dur-du-m.  
 I<sub>NOM</sub> car<sub>GEN</sub> yesterday in.front.of<sub>3SG.POSS.LOC</sub> stand<sub>PAST.1SG</sub>  
 'Yesterday, I stood in front of the car (not behind it).'

<sup>43</sup> This could be tied to a difference in the nature of the case assigned by Ps. If English Ps assign inherent case, as Chomsky (1980, 1986b) and Hornstein and Weinberg (1981) suggested (but see Kayne 1984), then we would expect English PPs to have a richer structure than SC PPs, allowing them to circumvent the ban on P-stranding. Obviously, this is a highly speculative remark. While there is independent evidence that SC prepositional cases are structural, as discussed above, I don't know of any clear independent evidence for either structural or inherent case status of English prepositional case.

It should also be noted that the conclusions reached here about the structure of SC PPs (which follow Abels's bare PP line of research) conflict with the conclusions reached by Radkevich (2010), which assigns SC PPs rich internal structure. I leave it open here how to reconcile the two (note that the two lines of research are motivated by very different phenomena and theoretical concerns), merely noting that we are dealing here with a tension that is familiar from the CP and the IP domain (compare, for example, Chomsky's (2000, 2001) position that only TP and CP are present above vP with the tradition of the split IP and the split CP analysis; for much interesting discussion (and criticism of the mainstream cartographic approach, which is not adopted in this paper) see Abels 2009).

Sener (2006) applies to (85)a the anti-locality analysis adopted above for SC: Since PP is a phase, the complement of the preposition must move to SpecPP, which results in an anti-locality violation (see (86)a). He argues that the problem does not arise in (85)c,d since the preposition involves a richer structure, as indicated by its morphological make-up. Sener in fact posits three projections within the PP, as shown in (86)b. Assuming in line with the current system that the highest phrase within the extended projection of the PP counts as a phase, movement of the complement of the preposition then does not yield an anti-locality violation in this case (see (86)b).

- (86) a. [ <sub>PP</sub> NP<sub>i</sub> [ P' t<sub>i</sub> ]  
 b. [ <sub>C<sub>pl</sub>locP</sub> NP<sub>i</sub> [ <sub>AgrP</sub> [ <sub>PP</sub> t<sub>i</sub> ] ] ]

It is then possible that English, and P-stranding languages in general, involve a richer P-structure than non-P-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 languages like English.<sup>44</sup> This analysis departs from Abels (2003), who does not assume a structural difference between languages like English and languages like SC. He in fact assumes a bare PP structure for both, placing the relevant point of variation in the domain of phases: while PP counts as a phase in SC, it does not count as a phase in English. The above suggestion is, however, in line with the overall approach adopted here, which does not posit any crosslinguistic differences with respect to phasehood, the relevant locality differences resulting from structural differences, i.e. the amount of structure languages project within particular phrases.

At any rate, as noted above, it is beyond the scope of this paper to account for crosslinguistic (or language-internal) variation with respect to P-stranding. What is important for our purposes is that the three diagnostics that were employed above in the discussion of the phasal status of TNPs all work in the same way in the case of PPs, which confirms the validity of these diagnostics and provides evidence that PPs are phases in SC.

## 4.2. *Adjectives*

I now turn to adjectives, applying the diagnostics in question to APs. First, the genitive of quantification test indicates that adjectives assign inherent case, given that genitive of quantification cannot override the case assigned by adjectives.

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<sup>44</sup> In this respect, it is worth noting that, as observed by Hornstein and Weinberg (1981), a PP complement of P cannot be extracted in English.

- (i) \*[Behind which car] did they take a shot at him from t (Cinque 1990)

If the additional structure is case/agreement related it may not be present when a P takes a PP complement. (i) is then easily ruled out via the PIC/anti-locality conspiracy.

It should be noted that Sugisaki (2002) also proposes that languages may differ in the amount of structure in their PPs and ties this difference to the availability of P-stranding. However, on his analysis other factors are involved in the availability of P-stranding too (more precisely, head movement of the preposition). Also, the analysis of P-stranding Sugisaki (2002) presents is quite different from the analysis adopted above. Sugisaki does not rely on anti-locality; moreover, he actually bans A'-movement out of PPs quite generally (in all languages), P-stranding involving remnant PP movement under his analysis.

- (87) a. lojalan studentima  
           loyal students<sub>DAT</sub>  
           ‘loyal to students’  
       b. \*lojalan pet studenata  
           loyal five students<sub>GEN</sub>

We then make the following predictions: complement of an adjective should be movable, deep LBE should be allowed, and adjunct extraction should also be possible. The predictions are all borne out.

- (88) ?Studentima je on [lojalan t]  
       students is he loyal
- (89) Njegovim je on lojalan [ t studentima]  
       his is he loyal students
- (90) ?Iz kojeg grada je on lojalan [studentima t]  
       from which city is he loyal students

The reader should note that the three diagnostics that were used above to investigate the phasehood of TNPs again pattern together; however, while they all fail in the case of PPs, they all work in the case of APs. What does that tell us about the phasal status of APs? The relevant facts can all be accounted for if adjectives are treated just like inherent case assigning nouns, which seems natural given that adjectives also assign inherent case. APs then work as phases; the reason why LBE, adjunct extraction, and complement movement are possible with APs is the richer structure that inherent case is associated with. The alternative would be to assume that APs do not count as phases; there would then be no reason to expect that the above movement operations should be blocked in the case of APs. I will adopt here the first option for two reasons: (a) under this analysis all major phrases serve as phases in SC (i.e. NP, PP, and AP; see below for VP), which is a conceptually appealing conclusion; (b) the option requires adjectives to assign inherent case, which they indeed do; this option then links in a principled way two properties of APs, the behavior of APs with respect to locality and the fact that adjectives assign inherent case.

## 5. Conclusion and some theoretical consequences

In conclusion, we have seen that left-branch extraction and related constructions involving extraction out of nominal domains can be used as a very useful test for phasehood. More precisely, we have seen that deep left-branch extraction, deep adjunct extraction, and complement movement pattern together, they are either all allowed or all disallowed with SC TNPs as well as PPs and APs.<sup>45</sup> These phenomena are all crucially affected by the structural/inherent case distinction, given that whether they are allowed or disallowed depends on this distinction; more precisely, whether the relevant NP bears inherent or structural case, the three phenomena in question being disallowed only with the latter. The general pattern then is that inherent case is less constrained than structural case with respect to extraction out of

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<sup>45</sup>There is only one exceptional configuration where they are divorced (for independent reasons), discussed in section 3.3.2.1.

NPs.<sup>46</sup> Based on this I have argued that the inherent/structural case distinction must be structurally represented. I have also provided a unified phase/anti-locality account of all these facts, where unacceptable extractions are ruled out via a PIC/anti-locality conspiracy because satisfaction of one of these requirements inevitably leads to a violation of the other requirement due to the conflicting nature of the requirements in question at phasal edges (roughly, the PIC requires movement to be short, while anti-locality requires it to be long). I have argued that the difference between inherent and structural case is that the former involves additional structure which enables inherently case-marked NPs to satisfy the PIC without violating anti-locality.

In addition to the inherent/structural case distinction, the current analysis has important consequences for the phasehood of traditional Noun Phrases, as well as PPs and APs. I have provided a phase-based account of the ban on left-branch extraction and adjunct extraction out of English TNPs that was crucially based on the assumption that DP is a phase. Since (putting aside the case of nominals that assign inherent case) NP has the same blocking effect on these movements in SC as DP does in English, it then follows that NP works as a phase in SC. The crosslinguistic variation regarding what counts as a phase in the traditional Noun Phrase tracks the independent crosslinguistic variation regarding the categorial status of the traditional Noun Phrase, given that traditional Noun Phrases in article-less languages like SC lack the DP layer, as argued in Bošković (2008a, 2010a): NP is a phase in NP languages, and DP is a phase in DP languages. The effects of DP phasehood are not observed in NP languages for a trivial reason, given that such languages lack DP. There is then no real variation with respect to phasehood here. With both language types the highest phrase in the TNP domain counts as a phase; it just happens that there is a difference regarding the structure of TNP, i.e. what counts as the highest phrase. In fact, we have seen that when additional structure is present above NP in NP languages, as in the case of numerals, which in SC project QP above NP, this additional structure determines phasehood. Thus, with numerals, QP, which is the highest phrase in the TNP domain when numerals are present, works as a phase. (And in Russian, which has an additional projection above QP, this higher projection works as a phase.) The real source of parametric variation then concerns the

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<sup>46</sup>We may be dealing here with a more general pattern, where inherently case-marked NPs are quite generally less constrained with respect to the locality of movement than structurally case-marked NPs. One relevant phenomenon in this respect concerns the scope of Japanese *dake* 'only'. Consider the following Japanese data. ((i) is taken from Takahashi in pres.)

- (i) Taro-ga migime-dake-o tumur-e-ru.  
Taro<sub>NOM</sub> right.ey<sub>ACC</sub>-only close-can-pres  
'Taro can close only his right eye.' (\*only > can, can > only)
- (ii) Taroo-wa Daitooryoo-dake-ni a-e-ru.  
Taro<sub>TOP</sub> president-only<sub>DAT</sub> meet-can-pres  
'Taro can meet only with the president' (only > can can > only)

While the accusative NP in (i) must scope under the potential affix, the dative NP in (ii) can take wide scope with respect to the potential affix. Takahashi (in press) successfully analyzes the lack of ambiguity in (i) in terms of a locality violation. His basic idea is that in order to scope over the potential affix, the *dake* NP has to undergo QR (see also Bobaljik and Wurmbrand 2007 regarding QR of *dake*). The long QR that is needed to obtain this reading results in a locality violation in the case of (i) under Takahashi's analysis. Significantly, the locality violation apparently does not arise in (ii), where the relevant NP is inherently case-marked and is able to take wide scope. Under Takahashi's analysis of (i) the contrast between (i) and (ii) can be taken as another argument that inherently case-marked NPs are less constrained with respect to the locality of movement than structurally case-marked NPs (it is beyond the scope of this paper to offer an account of this contrast but see Bošković 2010b for a suggestion).

amount of structure TNPs have crosslinguistically, not phasehood of TNPs, since the highest projection in a TNP always counts as a phase. This is in line with the dynamic approach to phases, where the phasal status of X can be affected by the syntactic context in which X is found.

I have argued that APs and PPs also function as phases, which leads to the conceptually appealing conclusion that all major phrases (VP, NP, AP, and PP) project phases, with the exact phasal projection depending on the amount of functional structure above the major phrases (see the discussion below for VPs).

Regarding TNPs, I have also provided evidence that movement out of DP in DP languages like English must proceed via SpecDP. Requiring this step of movement was crucial in the account of the ban on left-branch extraction and adjunct extraction in English. Providing arguments that movement out of DP must proceed via SpecDP is important given that cases that are standardly offered as arguments for successive cyclic movement via SpecDP in the literature, like the impossibility of extraction across possessors, involve interfering factors, namely the Specificity Condition and the stipulation that, in contrast to other phasal heads, which allow multiple Specs, multiple Specs are not available for D.

I will conclude by noting some additional consequences of the discussion in this paper. Notice first that due to the presence of  $\nu$ P, which functions as a phase, structural case assigning verbs allow movement of their complement TNP. As should be clear from (91), such movement does not violate anti-locality. The same holds for left-branch and adjunct extraction out of a complement of a verb (in languages where such extraction is in principle possible).

(91) NP<sub>i</sub> [ <sub>$\nu$ P</sub> t<sub>i</sub> [ <sub>$\nu'$</sub>  [<sub>VP</sub> V t<sub>i</sub>]]]

This means that there shouldn't be a small  $n$  or a small  $p$  in TNPs and PPs; otherwise, nominal and prepositional domains would pattern with verbal domains in the relevant respect. This is an important conclusion, in light of the fact that such projections are often posited for TNPs and PPs, mostly to achieve a parallelism with VP. However, we have seen above that the three phrases in question do not display uniform behavior with respect to phenomena that are sensitive to the presence of  $\nu$ P/ $n$ P/ $p$ P.

Consider what would happen if an  $n$ P is posited for SC.<sup>47</sup> Given that  $n$ P is generally posited to obtain a parallelism with  $\nu$ P, under this analysis it is natural to assume that  $n$ P, rather than NP, should function as a phase in SC (this would anyway be the highest projection within TNP in SC). To allow left-branch and adjunct extraction in SC in any context it would then be necessary to assume that APs and adjuncts are  $n$ P rather than NP adjoined. (If the latter were the case even simple left-branch extractions like (6) and adjunct extractions like (13) would be blocked.) However, if these elements were  $n$ P adjoined deep left-branch extraction and deep adjunct extraction would be incorrectly ruled in even in the cases where they are unacceptable: the elements undergoing deep left-branch extraction and deep adjunct extraction in (38)b and (40) respectively would cross a full phrase, namely the higher NP, on their way to the Spec of the  $n$ P dominating the higher NP (see (92)), which means that movement to the phasal edge, Spec $n$ P under this analysis, would not violate anti-locality.

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<sup>47</sup>The discussion also extends to  $p$ P. Notice, however, that the problems about to be noted arise in SC, but not in English. The following discussion then does not completely rule out the possibility that an  $n$ P (or a  $p$ P) could be posited in English, but not SC, perhaps as part of a more general difference in the structural richness of the TNP between article and article-less languages in the case of  $n$ P (note also that Sugisaki 2002 argues that languages may differ regarding the presence/absence of  $p$ P).

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