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## Extraordinary complement extraction: PP-complements and inherently case-marked nominal complements<sup>\*</sup>

### Abstract

Bosnian/Croatian/Serbian (BCS) appears to allow extraction of PP-complements out of NPs and APs. This extraction is problematic for Bošković's (to appear a) approach to phases because BCS NPs and APs are phases in this system and complements of phase heads in principle do not move (Abels 2003a). I show that there is a mechanism that can be extended to account for this extraction (LBE), and provide a unified account for these movements, a certain type of left-branch extraction, and extraction of inherently case-marked nominal complements, where all of these involve P-incorporation into the element moved to SpecPP. Independent evidence for P-incorporation comes from accent shift from the host to the preposition that occurs in BCS.

### Key Words

phases, left-branch extraction (LBE), inherent case, P-incorporation, rescue by deletion, accent shift

### Streszczenie

W języku bośniackim-chorwackim-serbskim (BCS) możliwe jest przesunięcie dopełniowej frazy przyimkowej poza obręb frazy, której ośrodkiem jest rzeczownik lub przymiotnik. Stanowi to problem dla modelu faz derywacyjnych Boškovića (w druku a), który opiera się na założeniu, że frazy rzeczownikowe (NP) i przymiotnikowe (AP) tworzą fazy derywacyjne a dopełnienia ośrodków determinujących fazę derywacyjną nie podlegają przesunięciu (Abels 2003a). Celem artykułu jest zastosowanie mechanizmu wyjaśniającego możliwość szczególnego typu przesunięć znanych jako *left branch extraction* (LBE) do wyjaśnienia możliwości wspomnianego przesunięcia dopełnienia przyimkowego, jak również

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frazy rzeczownikowej z cechą tzw. przypadku leksykalnego dopełniającego rzeczownik. Wszystkie wymienione typy przesunięć umożliwia inkomporacja ośrodka przyimkowego (P) do składnika przesuniętego do pozycji specyfikatora frazy przyimkowej (PP). Dowodem na inkomporację przyimka jest zmiana akcentu obserwowana w języku bośniackim-chorwackim-serbskim.

### Słowa klucze

fazy derywacyjne, LBE, przypadek leksykalny, inkomporacja przyimka, ocalenie przed eliminacją derywacji przez elizję w PF, zmiana akcentu

## 1. Introduction

A recent line of research in the theory of phases, referred to as the *contextual* or *dynamic* approach, proposes that the phasehood of an element is affected by the syntactic context it occurs in.<sup>1</sup> Bošković (to appear a) argues that the highest phrase within the extended projection of every major lexical category functions as a phase, which means Vs, Ns, Ps, and As all project phases. Languages without articles have been argued to lack DP (e.g. Corver 1992; Zlatić 1997; Bošković 2012a). As Bošković notes, in the contextual approach to phases, this means that the phasal status of NP differs in languages with articles and languages without articles, i.e., NP is not a phase in English due to the presence of DP in the same extended projection, but it is a phase in BCS where DP is absent. This difference has empirical consequences for extraction out of Traditional Noun Phrases (TNP) in different languages.<sup>2</sup> In particular, given the conflicting requirements imposed by the Phase-Impenetrability Condition (PIC) (Chomsky 2000, 2001) and anti-locality (e.g. Bošković 1994; Abels 2003a, among others), the ban on movement that is too short, complements of phase heads are immobile. Consequently, English allows extraction of nominal complements since NP is not a phase, but BCS, where NP is a phase, disallows extraction of NP-complements of N, unless they receive inherent case, which is explained by assuming more structure in these NPs (see section 2).

In this paper, I point out a serious problem for this analysis regarding movement of PP-complements of Ns and As in BCS: they are expected to be immobile in this system, but I show that they can undergo movement. As I will argue, this problem can be resolved by employing a mechanism used for

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<sup>1</sup> Details of contextual/dynamic approaches offered by different authors (Bobaljik and Wurmbrand 2005; Bošković 2005, to appear a, to appear b; Gallego and Uriagereka 2007; den Dikken 2007; Despić 2011; M. Takahashi 2011; among others) vary to a great extent. This paper addresses Bošković's (to appear a, to appear b) implementation of it, so I will refer to this particular version as "the contextual approach" throughout the paper for ease of exposition.

<sup>2</sup> I will use the term TNP to refer to noun phrases when there is no need to commit to their categorial status, i.e. functional structure that may be present above NP.

certain cases of left-branch extraction (LBE). I will show that the proposed analysis receives independent support from certain accent shifts. I start by laying out the contextual phasehood approach adopted here, as applied to traditional noun phrases (TNPs) and traditional adjective phrases (TAPs), focusing on facts concerning nominal and adjectival complement extraction in section 2. Section 3 reveals problems for Bošković (to appear a). The mechanism underlying the proposed account of the problematic extractions in BCS is introduced in section 4. Finally, the analysis of the problematic constructions is given in section 5.

## 2. Contextual approach to phases

It is standardly assumed that CPs and vPs are phases (Chomsky 2000, 2001), and some of the subsequent research in this area also extends the notion of phases to DPs (Svenonius 2004; Bošković 2005; Hiraiwa 2005; Chomsky 2008; among others). Under Chomsky's original approach to phases, if a phrase is a phase, it always functions as a phase; phasehood does not depend on the syntactic context.

Bošković (to appear a) points out that this rigid approach to phases goes against the spirit of barriers (Chomsky 1986), the phases' predecessors, and argues that phases are context sensitive, i.e. the phasehood of a projection depends on the syntactic context in which it occurs (see also Bobaljik and Wurmbrand 2005; Bošković 2005; Gallego and Uriagereka 2007; Despić 2011, 2013; den Dikken 2007; M. Takahashi 2011). Bošković (to appear a) in particular maintains that the highest phrase in the extended projection of a lexical category functions as a phase. The amount of functional structure can vary across languages (as well as within a single language), which can yield superficial differences in phasehood. However, Bošković argues that phasehood is not subject to variation. What can vary across languages (and different structures within a single language) is the amount of structure projected within the extended domain of a lexical category, but the phase is always (and only) the highest projection. The crucial evidence for this approach comes from an interaction of the PIC (Chomsky 2000, 2001) and anti-locality, i.e. the ban on movement that is too short (Bošković 1994, 1997, 2005; Grohmann 2003 (who originally gave this term); Abels 2003a; among many others). Regarding anti-locality, Bošković argues that movement must cross at least one full phrase (not just a segment). Abels (2003a) observes that the PIC and anti-locality prevent phasal complements from undergoing movement due to the conflicting requirements of these two mechanisms: the PIC requires phasal complements to move to the Spec of the phase, but since this movement does not cross a full maximal projection, it is ruled out by anti-locality. Abels demonstrates that

phasal complements are indeed immobile. One argument for this effect comes from the impossibility of extraction of an IP complement of C, a phasal head:

- (1) a. \* $[_{CP} TP_i [_C C t_i]]$  (Abels 2003a: 131)  
 b. \* $[_{TP} \text{Anything will happen}]_i$ , nobody believes  $[_{CP} t_i [_C \text{that } t_i]]$ .  
 (Abels 2003a: 116)

Based on Abels's generalization, Bošković (to appear a) provides evidence for the contextual approach to phases regarding NP-complements in TNPs and TAPs. It is argued that there is parametric difference between languages with articles and the ones without articles in that the former have a DP projection, while the latter lack it (Bošković 2008, 2012a). In the contextual approach to phases outlined above, this leads to an immediate conclusion that NP is not a phase in DP-languages, while it is a phase in NP-languages, being the highest projection in the nominal domain. Keeping in mind Abels's generalization, the first consequence of this claim is the following (see also Bošković (2012a) for further differences between the two language types):

- (2) N-complements are extractable in DP-, but not in NP-languages.

Second, Bošković (to appear a) also shows that the interaction of the PIC and anti-locality has consequences for LBE of adjectives and adjunct extraction in different languages (3). In DP-languages, the PIC requires APs and adjunct PPs, which Bošković assumes are NP-adjoined, to move to SpecDP, but this movement crosses only a segment of a phrase and is ruled out by anti-locality. Given that DP is missing in NP-languages, the problem does not arise in these languages because NP-adjoined elements originate at the edge of the phase.

- (3) a. LBE of adjectives can only be allowed in NP-languages.<sup>3</sup>  
 b. NP-adjuncts are only extractable in NP-languages.

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<sup>3</sup> Stjepanović provides strong support for the direct extraction analysis of LBE, arguing against analyses of LBE that involve remnant movement (Franks and Progovac 1994) or scattered-deletion (Fanselow and Čavar 2002). Stjepanović (2010) observes a contrast between (i) and (ii) below, where LBE of *ni* negative concord adjective out of the subject NP is blocked (i), but moving the whole subject NP is allowed (ii). It is impossible to capture this contrast under the alternative analyses, both of which involve movement of the whole NP even in (i).

- (i) \*Nijedan<sub>j</sub> nikog<sub>i</sub> [t<sub>j</sub> momak] ne vidi t<sub>i</sub>.  
 no.NOM nobody.ACC guy not sees  
 'No guy sees anybody.'  
 (ii) [Nijedan momak]<sub>j</sub> [nikog]<sub>i</sub> t<sub>j</sub> ne vidi t<sub>i</sub>.  
 no.NOM guy nobody.ACC not sees  
 'No guy sees anybody.'

See also Stjepanović (2012) for evidence based on interpretation properties of multiple wh-questions involving LBE of a wh-element.

The predictions in (2)–(3) are borne out<sup>4</sup>: N-complements can extract in English (4a), but not in BCS (4b–c). In contrast, LBE is disallowed in English (4d), and allowed in BCS (4e) (phases are given in bold).

- (4) a. [Of whom]<sub>i</sub> do government employees see [<sub>DP</sub> [<sub>NP</sub> pictures t<sub>i</sub> ]] every day?  
 b. ?\*[Ovog studenta]<sub>i</sub> sam pronašla [<sub>NP</sub> slike t<sub>i</sub>]  
     this.GEN student.GEN am found pictures.ACC  
     ‘Of this student I found pictures.’  
 c. \*[Kojeg studenta]<sub>i</sub> si pronašla [<sub>NP</sub> slike t<sub>i</sub>]?  
     which.GEN student.GEN are found pictures.ACC  
     ‘Of which student did you find pictures?’  
 d. \*Beautiful<sub>i</sub>, he saw [<sub>DP</sub> [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> houses]]].  
 e. Lijepe<sub>i</sub> je vidio [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> kuće]].  
     beautiful.ACC is seen houses.ACC  
     ‘Beautiful houses, he saw.’ (Bošković 2005, to appear b)

Furthermore, Bošković shows that BCS disallows deep LBE out of NPs that function as nominal complements (5). The *wh*-adjective in (5) is at the edge of the lower NP, but there is another phase right above it, projected by the N *prijatelja* – ‘friend.ACC’, which blocks its movement via the PIC/anti-locality interaction.

- (5) \*Čije<sub>i</sub> je on vidio [<sub>NP1</sub> prijatelja [<sub>NP2</sub> t<sub>i</sub> [<sub>NP2</sub> majke]]]?  
     whose.GEN is he seen friend.ACC mother.GEN  
     ‘Whose mother did he see a friend of?’  
 cf. Čiju<sub>i</sub> je on vidio [<sub>NP</sub> t<sub>i</sub> [<sub>NP</sub> majku]]?  
     whose.ACC is he seen mother.ACC  
     (Bošković, to appear a)

Note that under the contextual approach, the phasal status of a category changes if more structure is added within the same domain. Bošković (to appear a) and Despić (2013) argue that QP is projected above NP in BCS by higher numerals.<sup>5</sup> This QP, rather than NP, is then a phase in such contexts. As a result, N-complement extraction improves when a numeral is present (6b). Since the higher NP is not a phase here, the moving complement only has to stop in SpecQP: this movement crosses a full maximal projection, satisfying anti-locality.<sup>6</sup>

<sup>4</sup> Bošković (to appear a) also provides evidence regarding adjunct extraction, which I do not discuss here. I will focus on complement extraction in this paper; although there will be some discussion of LBE below as well.

<sup>5</sup> See Bošković (to appear a) and Despić (2013) for evidence for this effect based on binding properties of possessives.

<sup>6</sup> See Bošković (to appear b) regarding the extraction of the complement of Q. For space reasons, I will not discuss QPs further here.

- (6) a. ?\*[Ovih studenata]<sub>i</sub> sam vidjela [<sub>NP</sub> sliku t<sub>i</sub>].  
 these.GEN students.GEN am seen picture.ACC  
 b. ?[Ovih studenata]<sub>i</sub> sam vidjela [<sub>QP</sub> pet [<sub>NP</sub> slika t<sub>i</sub>]].  
 these.GEN students.GEN am seen five pictures.GEN  
 ‘I have seen five pictures of these students.’

We have seen that genitive N-complements cannot move if NP is the highest projection in the nominal domain (4b–c). Genitive is the nominal structural case – the counterpart of verbal accusative. However, just like there are Vs that assign cases other than accusative, there are Ns in BCS that assign cases other than genitive, i.e. they assign lexically specified inherent cases to their complements.<sup>7</sup>

- (7) a. Pružili su otpor neprijateljima.  
 put-up are resistance enemies.DAT  
 ‘They put up resistance to the enemies.’  
 b. Mrzio je prijetnje zatvorom.  
 hated is threats prison.INSTR  
 ‘He hated threats of prison.’

Importantly, Zlatić (1994) and Bošković (to appear b) note that nouns assigning inherent case allow complement extraction (8a), as well as deep LBE (8b).

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

Bošković (to appear b) argues that NPs assigning inherent case have more structure, which enables movement steps in (8) to obey the PIC, without violating anti-locality.

- (9) [<sub>NP1</sub> threat [<sub>FP</sub> F [<sub>NP2</sub> what-kind-of.INSTR [<sub>NP2</sub> death.INSTR ]]]]

Regarding the nature of FP, Bošković (to appear b) appeals to the frequently adopted assumption that a preposition is involved in inherent case assignment. Following this view, he suggests that F is a preposition-like element similar to English *of*.

<sup>7</sup> See Franks (1994), Bošković (to appear b), and references therein for independent evidence that adnominal genitive case is a structural case, while the cases about to be discussed are inherent.

Adjectives can also take NP-complements, and they pattern with nouns assigning inherent case: they allow complement extraction (10b), and deep LBE (10c).

- (10) a. lojalan/zahvalan          studentima  
           loyal/grateful            students.DAT  
           ‘loyal/grateful          to students’
- b. ?Studentima<sub>i</sub> je          on          [lojalan/zahvalan    t<sub>i</sub>.]  
           students.DAT is          he          loyal/grateful
- c. Njegovim<sub>i</sub>          je          on          lojalan/zahvalan    [t<sub>i</sub> studentima].  
           his.DAT          is          he          loyal/grateful          students.DAT

Bošković claims APs with NP-complements also have more structure that is involved in inherent case assignment, just like NPs in (8). Thus, the structure proposed for these APs is in (11):

- (11) [<sub>AP</sub> grateful [<sub>FP</sub> F [<sub>NP</sub> his.DAT [<sub>NP</sub> students.DAT]]]]

Having summarized the major arguments for Bošković’s version of the contextual approach to phases, I will now show that this system faces several serious problems.

### 3. Problems

#### 3.1. Problems with FP: Domain of FP and F-stranding

The first issue is that it is not clear which domain FP in (9) and (11) exactly belongs to. There are three options: (i) FP belongs to the extended projection of the lower NP, (ii) FP belongs to the domain of the higher NP in (9) and AP in (11), or (iii) FP is a separate domain between the two NPs in (9) or between the AP and the NP in (11).

The first option is clearly problematic. It is crucial in this system that FP is not part of the extended projection of the lower NP. The reason for this is twofold: its head is not a nominal element (PPs with overt Ps are not in the extended domain of N), and, more importantly, maintaining this assumption would lead to undergeneration. If FP were part of the domain of the lower NP, it would be a phase, the lower NP would be a complement of a phasal head (F), and we would wrongly predict that it could not move.

The second option would be rather strange: functional projections in the domain of a lexical category X are normally introduced after X, i.e. they are higher than X in the structure.

What remains is the third option – that the FP is a real PP (headed by a null preposition), which does not belong to either the domain of the lower or the higher NP. However, this option also does not solve the issue. Since the highest projection in the domain of any lexical category (including PPs) is a phase under the contextual approach to phases (Bošković to appear a), this FP will then also be a phase. This will yield the same effect as the first option, the only difference being that the lower NP will also be a phase, which is not relevant for this case.

Bošković (to appear b) points out a related issue with the claim that F is a preposition. In (8a) and (10b), the F must be stranded. This represents a problem for Bošković (to appear a, to appear b) because BCS otherwise does not allow P-stranding:

- (12) \*Čemu<sub>i</sub> pričaš o t<sub>i</sub>?  
 what talk about  
 ‘What are you talking about?’

I will return to these issues after introducing a more serious problem for this approach.

### 3.2. PP-Complements of nouns and adjectives

English allows extraction of PP-complements out of DPs ((4a) & (13a)) and TAPs (13b):

- (13) a. ?[To which problem]<sub>i</sub> did you discover [solutions t<sub>i</sub>]. (Bošković to appear b)  
 b. [Of John]<sub>p</sub> he is [proud t<sub>i</sub>].

PP-adjuncts cannot extract in English (14) (Huang 1982; Chomsky 1986; Stowell 1989; Lasnik and Saito 1992; Culicover and Rochement 1992; Bošković to appear b), which means that the PP in (13a) is a complement, rather than an adjunct:

- (14) \*[From which city]<sub>i</sub> did you meet [girls t<sub>i</sub>].

What about (13b)? If this PP is a complement of A, and if AP is the topmost projection in the English TAP, then the PP should not be movable. However, there is independent motivation for positing more structure above AP in English TAPs, which may explain why extraction in (13b) is allowed. Consider the contrast in (15):

- (15) a. \*Terribly<sub>i</sub> he was [t<sub>i</sub> tired].  
 b. Užasno<sub>i</sub> je bio [t<sub>i</sub> umoran].  
 terribly is been tired



AP-modifiers are not extractable in English (15a), unlike in BCS (15b). Assuming that they originate as AP-adjoined, on a par with NP-adjoined adjectives, we get a very simple account of the difference in (15) if we posit more structure for English TAPs.

- (16) a. [<sub>XP</sub> [<sub>AP</sub> terribly [<sub>AP</sub> tired]]]  
 b. [<sub>AP</sub> užasno [<sub>AP</sub> umoran]].

What blocks AdvP-movement in (15a) is the same mechanism that blocks LBE in English – the PIC/anti-locality conflict. The issue does not arise in BCS, since the AP is the highest projection (= phase) and the AdvP originates at its edge.

In sum, extraction of PP-complements of As and Ns is possible in English because English has additional structure on top of NPs and APs.

### 3.2.1. Problematic PP-complements: Apparent phasal complement extraction

PPs parallel to the ones in (13) are also extractable in BCS:

- (17) a. ?[Za koji problem]<sub>i</sub> si otkrio [rješenja t<sub>i</sub>]?  
 to which problem are discovered solutions  
 ‘To which problem did you discover solutions?’  
 b. [Na koga]<sub>i</sub> je Ivan [ponosan t<sub>i</sub>]?  
 of whom is Ivan proud  
 ‘Of whom is Ivan proud?’

This represents a serious problem for Bošković’s contextual approach to phases because we seem to be dealing here with phasal complement extraction. Recall that BCS lacks functional structure above NP and AP. Thus, NP and AP are phases in BCS and PPs in (17) should not be extractable (cf. genitive complements in (4b–c)). Notice also that we cannot assume that (17) involves additional structure associated with inherent case (cf. (9) & (11)) since, unlike NPs, PPs do not receive case in the first place.

To deal with this issue, Bošković (to appear b) suggests that PPs are never nominal complements in BCS; in particular, he argues that BCS nouns may not be able to take PP-complements since they can take true NP-complements. BCS adjectives also take NP-complements, so the same would apply to APs. Thus, all BCS PPs in his view are treated as adjuncts. This would cover the facts in BCS because these adjuncts would be at the edge of NP or AP, with no higher projection that would block their movement. However, this cannot be extended to English – if all English PPs were adjuncts, no PP would ever be extractable in this language, since the DP layer would block its movement (PIC/anti-locality). The contrast between PP-extraction in (13a) and (14) shows

a distinction between the complement and adjunct PPs in English. Therefore, it is crucial in this system to treat English and BCS differently.

There are several issues here. First, why would these semantically identical PPs be complements in one language (13) and adjuncts in the other (17)? Second, even within one language (BCS), there appears to be a difference between nouns and verbs taking complements. Namely, nouns that take NP-complements cannot take PP-complements, but verbs, which can also take NP-complements, are capable of taking PP-complements as well.

It would obviously be more appealing to treat BCS and English in the same way, which means that both languages have PP-adjuncts and PP-complements, and that the PPs in both (13) and (17) are complements. The fact that PP-complements are extractable in English and that adjunct extraction is allowed in BCS but disallowed in English follows from the contextual approach to phases (see the discussion above). However, we still need to account for PP-complement extraction out of BCS NPs and APs, which is ruled out by the system. In the next section, I will introduce an independent mechanism that can be extended to cover the cases of unexpected complement movement in BCS, as well as help us deal with the issues regarding FP noted above.

#### 4. Extraordinary LBE

Recall that BCS allows AP LBE (cf. (4e)). Such extraction can be allowed only in languages that lack articles, i.e. where DP is missing (Corver 1992; Chierchia 1998; Bošković 2012a).<sup>8</sup> Furthermore, when an NP modified by an adjective is located within a PP in BCS, the “P+AP” complex can be extracted, as in (18) below. Bošković refers to this kind of LBE as “extraordinary LBE” because it appears to involve non-constituent movement since P and AP do not form a constituent in their base positions.

- (18) [U veliku]<sub>i</sub>            on        ude        [t<sub>i</sub> sobu].        (Bošković 2005: 30)  
       in big                    he        entered        room  
       ‘He entered the big room.’

Bošković (2005) considers different approaches to this kind of extraction: remnant PP-fronting (Franks and Progovac 1994; Abels 2003b), and ordinary LBE

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<sup>8</sup> Note that among Slavic languages, only Bulgarian and Macedonian, the only two Slavic languages that have articles, disallow LBE; Latin differs from modern Romance in that it allowed LBE, and it also lacked articles; colloquial Finnish has developed an overt article and stopped allowing LBE, while literary Finnish allows LBE and lacks the article (Franks 2007). Note that the LBE generalization is a one-way correlation; hence, if a language lacks articles, it does not necessarily mean it will allow LBE.

analysis with P adjoining to A (Borsley and Jaworska 1988); providing evidence against the first analysis based on (19):<sup>9</sup>

- (19) a. On uđe pravo u veliku sobu. (Bošković 2005: 31–32)  
 he entered straight in big room
- b. \*Pravo u veliku<sub>i</sub> on uđe t<sub>i</sub> sobu.  
 straight in big he entered room
- c. \*Sobu<sub>i</sub> on uđe u veliku t<sub>i</sub>.  
 room he entered in big
- d. Zbog čijih je došao studenata?  
 because-of whose is arrived students  
 ‘He arrived because of whose students?’

Remnant PP-fronting involves NP-extraction, followed by movement of the whole PP. If this analysis were right, extraordinary LBE should be possible even if the PP is modified by an adverb (19a), in which case the adverb would be pied-piped with the PP. (19b) shows that this is not possible. Another problem is that we would expect to be able to front the NP alone and leave the PP in its base position. This is also not possible (19c). The most serious problem for this analysis is the fact that extraordinary LBE is allowed out of adjuncts too (19d), which means that the initial step of the remnant movement analysis, NP-extraction, would take place out of an adjunct island, hence should be ruled out.

Borsley and Jaworska’s (1988) account involves ordinary LBE, with the adjective carrying the preposition that adjoins to it (see also Corver 1992; Franks and Progovac 1994; Bošković 2005). Bošković notes two possible analyses of P-adjunction: (i) P lowers to AP, or (ii) AP moves to a position c-commanding P, and then P raises to it. I will return to the choice between the two analyses below. Now, ordinary LBE cannot extract an adjective alone in the presence of an intensifier (20a), and deep LBE out of a complement of N is disallowed (20b):

- (20) a. \*Veliku<sub>i</sub> je kupila [[izuzetno t<sub>i</sub>] kuću].  
 big is bought extremely house  
 cf. [Izuzetno veliku<sub>i</sub>] je kupila [t<sub>i</sub> kuću].
- b. \*Čije<sub>i</sub> je on [prijatelja [t<sub>i</sub> majke]] vidio.  
 whose.GEN is he friend.ACC mother.GEN seen  
 (Bošković 2005: 9)

Parallel to that, extraordinary LBE has to affect the intensifier together with the adjective (21a), and deep extraordinary LBE out of a complement of N is not permitted (21b):

<sup>9</sup> Bošković (2005) also argues against a scattered-deletion analysis (Čavar and Fanselow 2000), which I put aside here.

- (21) a. [U izuzetno veliku]<sub>i</sub> on uđe t<sub>i</sub> sobu.  
 (Bošković 2005: 33–34)  
 in extremely big he entered room  
 cf. \*[U veliku]<sub>i</sub> on uđe t<sub>i</sub> izuzetno t<sub>i</sub> sobu.
- b. \*O kakvim<sub>i</sub> je Jovan pročitao  
 About what-kind-of.INSTR is Jovan read  
 članak t<sub>i</sub> studentima?  
 article.ACC students.INSTR  
 (cf. [O kakvim studentima]<sub>i</sub> je Jovan pročitao članak t<sub>i</sub>?)

These parallelisms support the intuition that extraordinary LBE should be treated as ordinary LBE, with the preposition attaching to the moving AP.

It is important to note that whenever extraordinary LBE is possible, ordinary LBE is not, i.e. it is impossible to only extract an AP out of an NP-complement of P (22a). Bošković (2005) ties this to the impossibility of P-stranding in BCS (22b), stating the ban as in (23):

- (22) a. \*Veliku<sub>i</sub> on uđe u t<sub>i</sub> sobu.  
 big he entered in room  
 b. \*Sobu<sub>i</sub> on uđe u t<sub>i</sub> (juče).  
 room he entered in yesterday.

(23) Movement out of a PP is possible only if the PP is not headed by a lexical element.

Assuming that BCS PP is a phase, both (22a) and (22b) are accounted for: P-stranding is impossible since it would involve phasal complement extraction (cf.(1) & (4b–c)),<sup>10</sup> and ordinary LBE is impossible since moving an element adjoined to a phasal complement also violates the PIC/anti-locality (cf.(4d) & (5a)). Why can AP move if P moves as well? Bošković uses rescue by PF-deletion to account for this.

Ross (1969) observes that island violations can be rescued by ellipsis (PF-deletion). Consider the following data from Merchant (2001):

<sup>10</sup> Bošković argues that in P-stranding languages like English, PP structure is richer than in BCS:

(i) [<sub>XP</sub> [<sub>PP</sub> [<sub>DP</sub> ]]]

XP is the phase of the P-domain in (i), leaving enough room for the DP to move out. See Bošković (to appear a) for the difference between English and BCS PP, and evidence from Turkish that supports this claim. Turkish has both patterns of P-structure. With more complex PPs, which overtly show that they have more structure, P-stranding is allowed, just like in English. However, simple PPs that lack the additional layer of structure disallow it, just like in BCS.

- (24) a. \*Ben will be mad if Abby talks to one of the teachers, but she couldn't remember [which (of the teachers)]<sub>i</sub> Ben will be mad [if she talks to t<sub>i</sub> ]
- b. Ben will be mad if Abby talks to one of the teachers, but she couldn't remember [which (of the teachers)]<sub>i</sub> ~~Ben will be mad~~ [if she talks to t<sub>i</sub> ]

Chomsky (1972) formalizes the ellipsis amelioration effect as follows: a \* (a # in Chomsky's original version) is assigned to an island once a moving element crosses it. If the \*-marked category remains in the final structure, the derivation crashes, but if it gets deleted before it is pronounced, the derivation is saved. Applying this to (24), a \* is assigned to the island after the wh-movement takes place out of it. The \* remains in the final structure of (24a), leading to ungrammaticality, but it is removed by ellipsis in (24b), which rescues the derivation. Bošković (2011) extends this effect to copy-deletion, deducing in that way Chomsky's (1995, 2001) generalization that traces do not count as interveners for relativized minimality effects: in such structures the \*-marked intervener is deleted in PF via copy-deletion. Furthermore, Bošković argues that a \* is assigned to the head of the island/barrier rather than to the whole island when a violation occurs. Hence, if the head of the island moves, its base-generated copy is deleted together with the \*, and the derivation is rescued. Evidence for this effect comes from Galician D-incorporation facts noted by Uriagereka (1988, 1996):

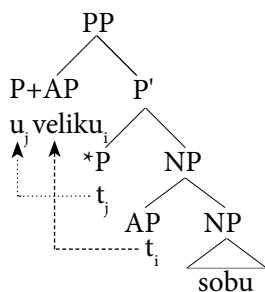
- (25) a. \*De quén<sub>j</sub> liches os mellores poemas de amigo t<sub>j</sub>?  
           of whom read (you) **the** best poems of friend
  - b. (?De quén<sub>j</sub> liche-**los**<sub>i</sub> [<sub>DP</sub> [<sub>D</sub> t<sub>i</sub> [mellores poemas de amigo t<sub>j</sub> ]]])  
           of whom read-(you)-**the** best poems of friend
- ‘Who did you read the best poems of friend by?’

Wh-movement from DPs headed by the definite article is disallowed in Galician (25a), suggesting that they are islands for movement. However, when the article heading the DP incorporates into the verb, this wh-movement becomes possible (25b). After the wh-element moves, a \* is placed on D. In (25a), the \* is not removed in PF because the article is pronounced in D, leading to a crash. In (25b) the article also moves, and its copy in D is deleted in PF, removing the \* as well. If the \* were placed on the whole DP after wh-movement, it would still be present in PF, even after the deletion of the D-head. In contrast, if the \* is placed on the D-head after wh-movement, then it is deleted under copy-deletion.

Bošković (2012b) accounts for BCS extraordinary LBE (18) in the same way. This extraction causes two anti-locality violations: AP-movement from the NP-adjoined position to SpecPP, and P-movement to the element in SpecPP (see below for details of this movement). After the violations take place, a \* is

placed on the head P. Since this position contains only a trace of P, i.e. it is deleted in PF, the derivation is rescued.

(26)



Note that (22a) is ruled out because the \* caused by AP movement to SpecPP remains in the structure, the starred PP head not undergoing PF deletion. The system thus accounts for why extraordinary LBE, but not ordinary LBE, is possible in this context. Having introduced the background mechanism for the analysis I will propose for PP-complement extraction, we can now return to the problems noted above.

## 5. Back to the problems

### 5.1. “PP-complement movement” is NP-movement in disguise, not PP-movement

Recall the problematic extraction of PPs out of NPs and APs in BCS:

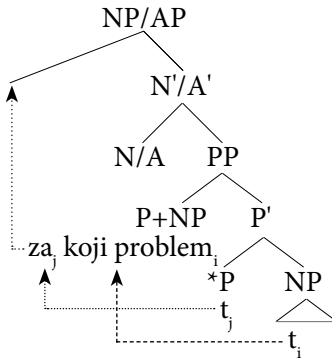
- (27) a. ?[Za koji problem]<sub>i</sub>      si      otkrio      rješenja t<sub>i</sub>?  
           to    which problem      are.SG    discovered      solutions  
           ‘To which problem did you discover solutions?’
- b. Na koga<sub>i</sub> je      Ivan      ponosan t<sub>i</sub>?  
           Of    whom is      Ivan      proud  
           ‘Of whom is Ivan proud?’

As discussed above, PPs in (27) are complements of N and A (phase heads). This is problematic because these complements should be trapped in their base positions by the PIC and anti-locality due to the lack of functional structure above NP and AP in BCS, but (27) shows that this does not happen.

As previously shown, certain locality violations can be ameliorated by PF-deletion. An example of this effect was illustrated above with extraordinary LBE. To deal with the problematic PP-complement extraction in (27), I propose that these constructions can be analyzed in a similar fashion as extraor-

dinary LBE ((18) & (26)). Recall that PPs in BCS are phases, which accounts for the fact that their complements cannot extract (22b). As discussed above, this account extends to the impossibility of genitive complement extraction out of NPs in BCS. Regarding the problematic PP-complement movement, I argue that this movement is actually not movement of the whole PP, but rather, movement of the NP complement of P, and that the preposition adjoins to the NP on its way up, similar to the above account of extraordinary LBE (26). The NP-complement first moves to SpecPP, violating anti-locality, so a \* is assigned to the head of the phase in which the violation occurred (\*P). The preposition moves to the NP, adjoining to its leftmost element,<sup>11</sup> and subsequently, the NP moves out of SpecPP to the Spec of the next phase, NP or AP in (27). From there, it is able to move through phasal edges all the way up. Only the first step violates anti-locality, the subsequent ones are perfectly legitimate. Since the \*-marked element is deleted in PF for independent reasons (i.e. this copy of P is a trace), the derivation does not crash. The initial steps of this derivation are shown in the diagram below:<sup>12</sup>

(28)



Therefore, extraordinary LBE in ((18) & (26)) and “extraordinary complement extraction” in ((27) & (28)) are in essence the same phenomenon.

The initial step of this analysis of PP-complement extraction out of APs and NPs involves P-complement (NP) movement to SpecPP, followed by P-incorporation to the first element of the moved NP. Apart from theoretical motivation for such steps that enable us to deal with this problematic extraction, there is also empirical evidence for it. The main argument will be presented in sec-

<sup>11</sup> This could be an instance of head-to-XP adjunction, argued for in T. Takahashi (2001), Matushansky (2006), Vincente (2007), or just P-incorporation into the left-most head of the phrase moved into SpecPP. For ease of exposition, I will often use the term incorporation in the text, without committing myself to this particular analysis.

<sup>12</sup> The analysis can be extended to adjectival PP-complements.

tion 5.1.1. Before that discussion, consider (29), which shows the derivational steps discussed above:

- (29) a. [Na mlađeg<sub>j</sub>] je on [t<sub>j</sub> sina]<sub>i</sub> [ponosan [t<sub>i</sub>]] (a ne na kćerku).  
 of younger is he son proud (and not of daughter)  
 ‘He is proud of his younger son (not of his daughter)’.
- b. On je [<sub>AP</sub> ponosan [<sub>PP</sub> na [<sub>NP</sub> [<sub>AP</sub> mlađeg] [<sub>NP</sub> sina]]]].

(29a) is derived as follows: (i) the whole P-complement (AP+NP) moves to SpecPP, (ii) P moves to the moved element, (iii) “P+AP+NP” moves out of the PP, (iv) “P+AP” complex moves further alone. Given that the whole NP moves out of PP in (29a), we can conclude that the entire P-complement can in principle move to SpecPP, if this is followed by P-movement.

Recall that N-complements that receive genitive case cannot extract in BCS (30a). The same complement of *knjigu* (‘book. The analysis can be extended to adjectival PP-complements’) can also be expressed by a PP headed by *od* (‘of’). This dramatically changes the state of affairs in that the extraction of the complement suddenly becomes available (30b).

- (30) a. ?\*Ovog studenta<sub>i</sub> sam pronašla knjigu t<sub>i</sub>?  
 this.GEN student.GEN am found book.ACC
- b. Od ovog studenta<sub>i</sub> sam pronašla knjigu t<sub>i</sub>.  
 of this.GEN student GEN am found book.ACC  
 ‘Of this student I found a book.’

(Nadira Aljović; Amna Brdarević-Čeljo (p.c.))

I suggest that (30b) is another instance of extraordinary complement extraction (see (28)). The NP *ovog studenta* (‘this.GEN student.GEN’) can move only if there is a P that can pull it out, i.e. if it has the option to pass through the loop created within the PP, with the help of the moving preposition (through the mechanism of rescue by PF deletion). Interestingly, leaving this PP headed by *od* (‘of’) in situ is degraded for most speakers.

- (31)?? Pronašla sam knjigu od ovog studenta.  
 found am book of this student.GEN

This may indicate that in this particular case we may be dealing with last resort P-insertion. A similar process was claimed by Bošković (2006) (see also Leko 1986; Franks 1995, 2002) to exist for the preposition *sa* (‘with’) in the following situation.

- (32) a. On je ovladao zemljom. (Bošković 2006)  
 he is conquered country.INSTR
- b. \*On je ovladao pet zemalja.  
 he is conquered five countries.GEN



- c. On je ovladao sa pet zemalja.  
 he is conquered with five countries.GEN
- d. sa zemljom  
 with country.INSTR
- e. \*On je ovladao sa zemljom.  
 he is conquered with country.INSTR

The verb in (32) assigns inherent instrumental case (32a), which has to be assigned, so the verb cannot take a complement with a numeral that assigns genitive (32b).<sup>13</sup> This violation can be repaired by inserting *sa* ('with'), a preposition that otherwise assigns instrumental (32d). Furthermore, this insertion is a last resort mechanism; it cannot be applied if the numeral is absent (32e). Similarly, in the case of the preposition *od* ('of') in (30b), we may also be dealing with a last resort insertion, which explains why it is degraded with the complement in situ (31).

### 5.1.1. The obligatoriness of P-Incorporation

The unified extraordinary complement/extraordinary left-branch extraction analysis involves P-incorporation into the moving element. The question that arises is whether this P-incorporation is obligatory or not. The contrast in (33) below may shed light on this issue. Recall that ordinary LBE is ruled out where extraordinary LBE can take place (22a) due to the PIC/anti-locality. Based on (33a), Bošković (2012b) argues that sluicing can improve PIC/anti-locality violations, parallel to Ross's effect from (24).<sup>14</sup> Importantly, there is no improvement in (33b) where the whole NP moves, stranding the preposition:

- (33) a. On je ušao u neku sobu, ali ne znam kakvu je on ušao [PP u [NP t<sub>i</sub> [NP sobu]]  
 he is entered in some room but neg. know what-kind is he entered in room  
 'He entered some room, but I don't know what kind of room.'  
 (Bošković 2012b)
- b. \*Neko je glasao protiv nečega, ali ne znam ko čega je glasao [PP protiv t<sub>i</sub>].  
 Someone is voted against something but not I know who what is voted against  
 'Someone voted against something, but I don't know what.'  
 (Stjepanović 2008: 182)

<sup>13</sup> For further discussion of inherent case clashes see (Franks 2002; Bošković 2006, to appear b).

<sup>14</sup> Merchant (2001) argues that a language allows P-stranding under sluicing if it allows it under wh-movement. As Bošković (2012b) shows, (33a) represents evidence against the spirit of that generalization. Almeida and Yoshida (2007) note that Brazilian Portuguese allows P-stranding under sluicing, but not with wh-movement, and Bošković notes that Turkish contexts where P-stranding is disallowed (i.e. with simple prepositions) also improve under sluicing.

Both (33a) and (33b) involve violation of either the PIC or anti-locality, so the question is: Why does sluicing not repair (33b) as well? This contrast can be captured if P-incorporation is obligatory. If this is so, we would expect P to always be carried along with the moving NP, so the problem in (33b) is that the preposition failed to incorporate. (33a) involves only movement of the AP, leaving the rest of the NP inside the PP, so P still has a host to incorporate in. Hence, the only violation in (33a) is a PIC/anti-locality violation, which can be repaired by sluicing.<sup>15</sup>

### 5.1.2. Evidence from accent shift

Independent evidence for P-incorporation comes from accent shifts that occur in Bosnian. This language is characterized by a pitch accent, and the pitch contour can be either falling or rising on both long and short vowels. Proclitics, including prepositions, can take over a falling accent from the first syllable of the host (Riđanović and Aljović 2009; Riđanović 2012).<sup>16</sup> In addition to phonological constraints on this shift, which I will put aside here, there are also syntactic requirements that need to be met. A preposition can take over the accent from a following noun (34), or from an adjective, but only when one adjective modifies the noun, not if two adjectives modify it. Compare (35a) and (35b).<sup>17</sup>

- (34) u kùći → **ú**\_kući 'in the house'
- (35) a. u nòvoj kùći → **ú**\_novoj kući 'in the new house'  
 b. u nòvoj vèlikoj kùći → \***ú**\_novoj vèlikoj kući 'in the new big house'

In (35b) both adjectives are descriptive and the accent shift is degraded. Significantly, the shift in the context of two adjectives improves if the adjectives do not belong to the same class. This is illustrated by (36), where a descriptive adjective is followed by a possessive adjective (possessives are morphologically and syntactically adjectives in BCS, see Zlatić (1997); Bošković (2005); Despić (2011)).

<sup>15</sup> (33a & b) represent clear cases of P-stranding under AP- and NP-extraction. Stjepanović (2008) also discusses examples of sluicing that appear to involve P-stranding with NP-extraction, but she points out that there is an interfering factor in such cases concerning the availability of P-drop with PP coordination, which indicates that they do not involve P-stranding under sluicing at all.

<sup>16</sup> See Riđanović and Aljović (2009) for a more detailed description of this phenomenon. Note that this accent shift is optional, and not all speakers have it.

<sup>17</sup> The low line will be used [ \_ ] to connect the accented clitic with its de-accented host; the acute accent mark [ ' ] is used for the rising pitch contour, and the grave accent mark [ ` ] is used for the falling one. The relevant vowels are given in bold.

- (36) Pojavio se      **ú**\_novom      bratovom      kaputu.  
 appeared SE      in new      brother's      coat  
 'He showed up in his brother's new coat.'

What has not been observed before is that this behavior of accent shift patterns very closely with allowed and disallowed contexts for LBE in BCS. BCS allows LBE (see (4e) above), but LBE is impossible when two adjectives of the same type modify the same NP (37a). However, this extraction also improves if the adjectives belong to different classes (37b) (Bošković 2005).

- (37) a. \*?Staru      je      vidio      oronulu      kuću.  
           old      is      seen      dilapidated      house  
       b. Novi      je      obukao      bratov      kaput.  
           new      is      put-on      brother's      coat  
           'He put on his brother's new coat.'

There is actually variation among speakers regarding the acceptability of LBE in (37b). Crucially, speakers who disallow (37b) also disallow accent shift in (36). Based on the data in (34)–(37), we can formulate the following generalization:

- (38) A proclitic (preposition) can take over the accent from its host only if the host is allowed to move independently.

The current analysis structurally captures the correlation between accent shift and the mobility of the relevant element. I suggest that the host and P must be in the same Spell-out domain (SOD) for P to take over the accent. In the base positions, P and AP (NP) in (34)–(36) belong to different SODs. The contrast between (35b) and (36) shows that AP must move for the shift to happen, which immediately follows from the analyses of (18) and (27) given above, where it was argued that Ps incorporate into APs and NPs moved to SpecPP. The accent shift data in fact provide strong independent evidence for the current analysis. (35b) is also evidence for the raising analysis of P-incorporation adopted above (where the P moves to the element in SpecPP), and against the lowering analysis (where the P lowers to the element following it). It is difficult to capture the contrasts between (35a) and (35b), and between (35b) and (36) under the P-lowering analysis. If the Ps were able to lower to their hosts, accent should also shift in (35b), since the P should be able to lower to the SOD of the host, but this does not happen. On the other hand, the raising analysis captures the connection between adjective mobility and accent shift. Furthermore, since Ps raise to their host, (34) shows that the whole P-complement can move to SpecPP.

## 5.2. Inherent case assigning FPs are PPs

The P-complement extraction analysis developed above can also resolve the issues noted earlier regarding inherent case contexts. Recall that some BCS Ns can take NP complements to which they assign inherent (non-genitive) case.<sup>18</sup> Importantly, these inherently case-marked complements of Ns can move (8a), in contrast to genitive-marked complements (4b). Bošković (to appear b) posits an additional FP in such inherent case assigning contexts, as in (39), as a result of which it is possible to extract these complements.

(39) [<sub>NP1</sub> threat [<sub>FP</sub> F [<sub>NP2</sub> cruel.INSTR [<sub>NP2</sub> death.INSTR]]]]

The nature of this FP projection is not at all clear (see section 3.1). It is often assumed that a null preposition is responsible for inherent case assignment, and Bošković hints that F is a preposition. However, although quite intuitive, this assumption is rather problematic in his system: if FP were indeed a PP, it would be a phase on its own, and should still block extraction (recall that BCS disallows P-stranding). This in fact seems to be the only reason why Bošković does not consider this FP to be a PP.

Under the current analysis of P-complement extraction, we can easily resolve the problem and in fact consider FP to be a PP headed by a preposition, which happens to be null. This assumption makes the example in (8a) parallel to the ones with P-complement extraction discussed above, and can be dealt with in exactly the same manner. FP in (39) can be considered a separate phase, which is not part of either the lower or the higher NP. The moving NP in inherent case contexts moves to SpecFP (SpecPP), parallel to the NP-movement in (28) above. This movement violates anti-locality and a \* is placed on F. The null preposition cliticizes to the moved NP, and finally the NP with the preposition incorporated into it moves out of the FP. The anti-locality violation is voided in the same way as with overt Ps, given that the copy of F with the \* in the base position (trace) is deleted in PF.<sup>19</sup> This resolves the problem of the identity of the FP, since it is a real PP under this analysis. Furthermore, the issue of P-stranding disappears, since the P moves along with the NP-complement.

<sup>18</sup> I will discuss only nouns, but the analysis can be extended to adjectives that assign inherent case.

<sup>19</sup> A question arises: is it necessary to assume that the null-P (F) moves at all. In other words, does a \* placed on a null element cause a problem in PF? Recall that LBE is disallowed in English – this fact does not change even with DPs headed by a null article (\**Beautiful he has seen houses*), so the fact that a phase is headed by a null element is not enough to void phasehood effects. In fact, Bošković (2011) shows that \*s assigned to null elements quite generally cause a problem, unless the null elements are turned into traces. Thus, it is necessary to assume that F in inherent-case environments does move together with the moving NP.

## 6. Conclusion

I have argued that complements of phase heads cannot extract unless the head of the phase also moves. I have provided an account of a serious problem for Bošković's (to appear a) phasal system and Abels's (2003a) generalization that phasal complements are immobile concerning apparent extraction of PP-complements of Ns and As in BCS, phasal heads in the language. I have argued that PP-complement movement here is just an illusion; these complements are in fact immobile. I related the apparent phasal complement extraction to an independent mechanism that can be extended to it: parallel to extraordinary left branch extraction where P moves to the moving AP, there is also extraordinary complement extraction – i.e. it seems that the PP moves, but what moves is in fact the NP-complement of P, carrying along the incorporated preposition (= proclitic). Independent evidence for P-incorporation comes from accent shifts that occur when P and its host are pronounced in the same Spell-Out domain. Issues raised by FP, an additional projection that is present in inherent case assigning contexts (the identity and the domain of FP, as well as F-stranding), and that makes extraction in these contexts possible, are also removed since FP is a PP under the current analysis. Bošković hints that F is a preposition-like element, but is unable to claim that it is a full preposition. Under the analysis developed here, we can claim that F is indeed a preposition and treat it in the same way as overt prepositions. This way we not only manage to cover the facts about the problematic PP-extractions, and remove problems regarding FP in inherent case contexts, but we also unify three intuitively very similar phenomena: extraordinary LBE, apparent PP-complement extraction (= extraordinary complement extraction), and the extraction of inherently case-marked NPs.

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