An agreement-based analysis of extraction from nominals

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Abstract

In this paper, I argue that the extended projection of N (xNP) is a phase that does not permit successive-cyclic movement via an edge position (cf. Bach and Horn 1976; Bosque and Gallego 2014). As has been observed previously, languages in which AP and xNP can be extracted from xNP typically involve an overt agreement relation between the extractee and the 'host'. I argue that the agreeing morpheme is itself theta-marked by the host N, and that this morpheme also establishes an interpretable Agree relation with the extractee. Given well-motivated assumptions about adjunction and Agree, this enables the extractee to be base-generated outside the host's extended projection, and hence to be extracted without violating the Phase Impenetrability Condition. As well as accounting for the robust cross-linguistic correlation between overt agreement and extraction, not accounted for under successive-cyclic analyses, the proposed analysis accounts for the peripherality restriction on extraction, the possibility of deep extraction, and exceptions to these. Finally, I examine an apparent exception to the agreement/extraction generalisation, the mobility of PP and inherent-case dependents of N, arguing that this can be captured in terms of an Agree relation between the preposition and the head N.

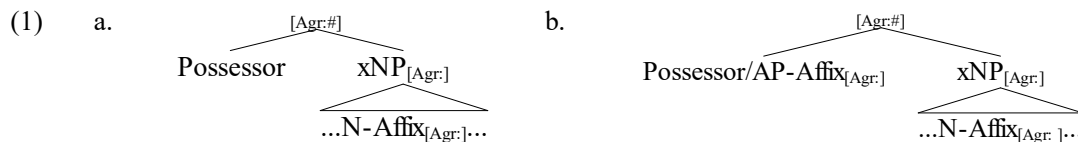**Keywords:** agreement, case, extraction, phases, successive-cyclicity

1. Introduction

Various authors have attempted to capture restrictions on extraction from the extended projection of N (xNP) by treating xNP as a phase on a par with CP and *v*P (e.g., Svenonius 2004; Bošković 2005; Heck 2009). A crucial aspect of these proposals is the idea that xNP, like other phases, has an 'escape hatch' specifier that permits extraction out of xNP without violating the Phase Impenetrability Condition (PIC) (also see earlier proposals by Cinque 1980; Szabolcsi 1983/84; Giorgi and Longobardi 1991). According to this view, the reason why certain constituents cannot move out of xNP is that they are unable to move to the escape hatch position. For example, Bošković (2005) argues that, in languages such as English, extraction of left-branch constituents (possessors, APs) and PP adjuncts to SpecDP is ruled out by an anti-locality condition. Other languages, such as Russian, permit extraction of such constituents from xNP. According to Bošković (following Uriagereka 1988; Corver 1990), this is because nominals in these languages lack a DP layer, as diagnosed by the fact that they lack definite and indefinite articles. Hence possessors, APs and PP-adjuncts can move directly out of xNP without needing to move to SpecDP first.

Perhaps the main appeal of this analysis is that it straightforwardly captures the robust correlation between the presence of articles and the impossibility of AP-extraction from xNP. On the other hand, as Bošković himself observes, his analysis does not explain why non-article languages sometimes disallow left-branch extraction, nor why many article languages allow possessor-extraction. While these gaps are not in themselves fatal, they suggest that factors besides the article/non-article distinction must enter into the determination of extraction possibilities in a given language. In this connection, it has been observed that in many cases the presence of overt agreement appears to facilitate extraction from xNP (e.g., Duguine 2008). In fact – and this is the fundamental claim of the present article – the possibility of AP and (nominal) possessor-extraction from xNP can, in a large range of cases, be determined on the basis of whether a language has articles and/or agreement, effectively closing the above-mentioned gaps in Bošković's analysis. Nevertheless, there seems to be a fundamental incompatibility, or at least redundancy, between an agreement-based account of

extraction from xNP and an account, such as Bošković's, based on a purely structural notion such as anti-locality. These considerations strongly suggest, I believe, that an alternative account should be pursued that can account for the relevance of both articles and agreement without needing to invoke anti-locality.

In this paper, I argue for the view that xNP is a phase that lacks an escape hatch position (e.g., Bosque and Gallego 2014), and thus that what looks like extraction from xNP must in fact involve base-generation of the extractee in a position not dominated by (a label of) xNP. I argue that the importance of overt agreement is precisely that it permits base-generation of a possessor or AP in a position adjoined to xNP, but not dominated by any of its categorial labels. More specifically, the claim is that languages in which a dependent of N (e.g., a possessor or AP) enters an overt agreement relation with N permit one of the structures in (1) – (1a) if N agrees with the dependent, and (1b) if the dependent agrees with N. The structure in (1a) is found in languages such as Hungarian and Turkish in which possessors trigger person and number agreement on the possessum, while the structure in (1b) is found in languages such as Russian and Hindi in which possessors and APs show gender, number and case agreement with the head N:

(1)   a. $\quad [\text{Agr:}\#]$ b. $\quad [\text{Agr:}\#]$

      Possessor   xNP$_{[\text{Agr:}]}$ Possessor/AP-Affix$_{[\text{Agr:}]}$ xNP$_{[\text{Agr:}]}$

              ...N-Affix$_{[\text{Agr:}]}$...   ...N-Affix$_{[\text{Agr:}]}$...

The basic idea encapsulated in (1), to be presented in more detail in §2.2, is that an agreeing affix establishes a (Reverse) Agree relation (e.g., Zeijlstra 2012; Ackema and Neeleman to appear) with the agreement controller, as indicated by the 'Agr' subscript on the affix, which percolates upwards to a position immediately dominating the agreement controller. The main claim to be made below is that this Agree relation enables the possessor or AP to be base-generated in a position adjoined to xNP, which I assume (following, e.g., Hornstein and Nunes 1998) is not dominated by a categorial label of xNP.[1] The analysis relies on the following independently motivated assumptions about agreement: (i) agreement involves interpretable phi-features (e.g., Brody 1997), (ii) agreement morphemes may be interpreted as bound variables (e.g., Franco et al. 2015), (iii) Agree is posited by the learner only where there is at least some overt morphological evidence for it (e.g., Holmberg and Platzack 1995; Zeijlstra 2008); and (iv) Agree is not subject to the PIC (e.g., Bošković 2007). On this basis, it is possible to treat the agreeing affix in (1a), for example, as saturating the possessor theta-role of N, with the Agree relation, interpreted semantically as a variable-binding relation, enabling the possessor to be interpreted as an argument of N. Essentially, then, possessor agreement gives rise to a structure that is similar to left-dislocation, with the difference that it is Agree, rather than coreference between a pronoun and its antecedent, that enables the dislocated phrase to be interpreted as an argument. By contrast, in languages without possessor agreement, I make the standard assumption that a possessor must be base-generated within the projection of N, and directly theta-marked by N, in order to be interpreted as its argument. The proposed difference between xNP-external and xNP-internal base-generation, I claim, is what accounts for the possibility of possessor-extraction in languages with possessor agreement and its impossibility in languages without possessor agreement. Put simply, the structures in (1) permit extraction of the possessor because it is not dominated by the phasal category

[1] As explained in more detail in §2, this is based on Neeleman and Van de Koot's (2002) proposal that syntactic dependencies are established by a 'selectional function' (here, simply a 'selector') introduced by the dependent element and satisfied through immediate domination of the antecedent. Here, the agreeing affix is the dependent in the Agree relation, and introduces an 'Agree selector' (marked $_{[\text{Agr:}]}$ on the agreeing affix) that percolates to a node dominating the agreement controller, where it is satisfied (as indicated here by $_{[\varphi:\#]}$).

xNP, while xNP-internal possessors must remain within xNP, given the PIC together with the assumption that xNP has no escape hatch.

I show that this analysis accounts for the implicational relation between articles and lack of AP-extraction from xNP, while avoiding problems of undergeneration and overgeneration from which successive-cyclic analyses suffer.[2] First, in contrast to Bošković's analysis, the present analysis predicts that both article and non-article languages will allow possessor-extraction provided that the possessum potentially agrees overtly with the possessor, as in Hungarian for example, and the possessor may independently surface on the periphery of xNP. The situation is somewhat different in the case of agreeing APs and possessors. In article languages, such elements are arguably generated lower than D. Thus, extraction of agreeing APs and possessors in article languages is straightforwardly ruled out by the PIC, capturing Bošković's observations that article languages rule out LBE without the need for a separate anti-locality condition. If non-article languages lack obligatory DP, on the other hand, agreeing possessors and APs can be extracted without violating the PIC, even if recursively embedded; this captures Bošković's observation that article languages allow both 'simple' and 'deep' left-branch extraction. Again in contrast to Bošković's analysis, however, the present analysis predicts, apparently correctly, that extractability is restricted to possessors and APs that potentially agree overtly with the head N.

The analysis, and the basic observations underlying it, are presented in more detail in §2. §3 explores the main predictions of the analysis, concerning the overt agreement requirement (§3.1), the peripherality requirement (§3.2), exceptions to peripherality (§3.3), and the possibility of deep LBE (§3.4). §4 turns to the question of why certain non-agreeing dependents of N (PPs and inherent-case xNPs) can be extracted from xNP, and advances a proposal based on the idea that inherent-case xNPs are actually PPs (e.g., Emonds 1987) and that P can take xNP as an 'external argument'. §5 briefly concludes.

2. An agreement-based analysis of extraction from xNP

2.1. Successive-cyclic approaches to left-branch extraction

As is well-known, languages differ in whether they allow extraction of xNP possessors from xNP; for example, Hungarian and Russian allow it, while English and Mandarin Chinese do not:

(2)   a.   * Whose$_i$ are you reading [t_i book]?
      b.   * Zhāngsān (de)   wǒ rènshi   [t_i mǔqin]. [Mandarin]
           Zhangsan LNK   I   know   mother
           'I know Zhangsan's mother.' (adapted from Huang 1982:500)
      c.   Marinak$_i$ fekete   volt [t_i a   kalapja]. [Hungarian]
           Mari:DAT black   was   the hat:POSS.3SG:NOM

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[2] I will not have anything to say about other types of LBE, such as *was für* and *combien* splits (e.g., Grosu 1974; Corver 1990), beyond speculating that the presence of a preposition (*für*, *de*) may be crucial to permitting extraction in these cases (cf. §4). I will also not address the topic of 'inverse splits' in German, Slavic and other discourse-configurational languages, which may be amenable to an ellipsis analysis (e.g., Fanselow and Ćavar 2002). For example, Warlpiri seems to exhibit an agreement restriction in 'standard' splits such as (ia) (Hale 1981), but not in inverse splits such as (ib), in which a sentence-final demonstrative is construed with a sentence-initial object:

(i)   a.   Kurdu- jarra- rlu ka- pala maliki wajilipi- nyi   wita- jarra- rlu.
           child   DUAL   ERG PRES DUAL dog   chase   NPAST small   DUAL   ERG
           'The two small children are chasing a dog.' (Hale 1981:2)
      b.   Wawirri kapi-rna   panti- rni   yalumpu.
           kangaroo AUX 1SUBJ speak NPAST that
           'I will spear that kangaroo.' (Speas 1990:139)

'Mari's hat was black.' (Szabolcsi 1994:181)

d.　　Č'ju$_i$　　　　ty　čitaeš [t_i knigu]? [Russian]
　　　whose:ACC.FSG　you　read　　book:ACC.FSG
　　　'Whose book are you reading?' (Ross 1967:237)

Ross (1967) accounts for (2a) in terms of his Left Branch Condition, but notes that, unlike the other island constraints he proposes, this condition cannot be universal, given the acceptability of examples such as (2c–d). Research since Ross's work has attempted to find more principled reasons for this cross-linguistic variation. Perhaps the most widely adopted approach is based on the observation that languages that obey the LBC tend to have definite and indefinite articles, while languages that can violate the LBC tend to lack articles. Within the GB framework, Bowers (1987), Uriagereka (1988:113–114) and Corver (1990) argue that article languages have a DP layer that blocks external government; as a result, extraction of non-complements from DP, as in (2a), yields an ECP violation. Within Minimalism, in which government is generally eschewed, left-branch effects have instead been accounted for in terms of the idea that DP is a phase, on a par with CP and vP (e.g., Svenonius 2004; Bošković 2005; 2014a; Hiraiwa 2005; Heck 2009). Under this assumption, the Phase Impenetrability Condition (PIC; e.g., Chomsky 2000; 2001; 2008) forces movement out of DP to proceed via SpecDP (cf. Szabolcsi 1983/84). Bošković (2005) accounts for the impossibility of left-branch extraction of APs from DP in English in terms of an anti-locality requirement stipulating that XP-movement must cross a full XP category, as opposed to one adjunction segment of an XP (cf. Saito and Murasugi 1999). Assuming that APs are adjoined to NP, and that there is no projection intervening hierarchically between DP and NP, this means that AP-extraction is prevented by a combination of anti-locality (the AP cannot move to SpecDP) and the PIC (the AP cannot move out of DP without moving to SpecDP).[3] Further assuming that nominal possessors are likewise adjoined to NP, the ungrammaticality of (2a) can be accounted for in the same way. By contrast, complements of N, such as *of*-PPs in English, are free to move to SpecDP because in this case the PP will cross the whole NP category.

　　　This analysis predicts that AP-extraction from xNP should never be possible in article languages, which appears to be correct (Bošković 2005; 2008; 2012). As Bošković notes, however, the correlation between articles and extraction cannot be strengthened to a biconditional, as not all non-article languages permit AP-extraction (cf. Mandarin Chinese (2b)). Bošković's account must thus assume that additional factors rule out AP-extraction in (2b), but the question of what these factors are is left open. Possessor-extraction raises still more serious questions for the analysis: for example, why does Hungarian, an article language, block AP-extraction but allow possessor-extraction, as in (2c)? The upshot of this observation is that no implication can be established between articles and lack of possessor-extraction, in either direction. This is a serious problem, as not only must it be assumed that additional factors are at work in non-article languages that disallow possessor-extraction, but special provision must also be made for possessor-extraction in article languages, in order that this does not violate anti-locality.[4]

　　　Bošković (2005:4 fn. 5) does in fact cite Hungarian possessor-extraction as a potential problem for his analysis, and suggests two possible ways to account for it within his proposal. One is to generate the possessor in SpecDP, permitting it to be extracted directly without violating anti-locality or the PIC. A second is to adopt Den Dikken's (1999) proposal that Hungarian dative possessives involve a left-dislocation structure in which the possessor is linked to a *pro* within DP.

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[3] Bošković accounts for the impossibility of PP adjunct extraction (cf. Culicover and Rochemont 1992) in a similar manner.
[4] A similar point is made by Mathieu and Sitaridou (2002) concerning 'DP-splitting' in Modern Greek, though with reference to Corver's (1990) ECP-based analysis.

The problem with the first suggestion is simply that it must either invoke an *ad hoc* assumption about differences in the base-generation position of possessors cross-linguistically, or it must invoke an *ad hoc* assumption about the possibility of movement of possessors to SpecDP cross-linguistically (e.g., there is additional silent structure in Hungarian that prevents an anti-locality violation; cf. Abels 2012 on extraction from PP). The second suggestion is appealing in that it offers a potential means of reducing one phenomenon reliant on overt agreement (possessor-extraction) to another (pro-drop). This suggestion faces the problem, however, that possessor-extraction in both Hungarian and Russian is sensitive to islands such as complex NPs (see also Aissen 1996:469 on Tzotzil PP islands):

(3)   a.   *[A fiúknak]$_i$ olvastam a könyvet, amiben elveszett [t_i a kutyája]. [Hun.]
              the boys:DAT I.read the book which:in lost the dog:POSS:3SG
              'The boys, I read the book in which their dog got lost.' (Anikó Lipták p.c.)

    b.   *Č'i$_i$ ty znaeš' kogo-to, kotoryj nenavidet [t_i druz'ja]? [Rus.]
              whose:MPL you know someone who hates friends(MPL)
              'Who is such that you know someone who hates his friends?' (Elena Titov p.c.)

This is unexpected if the possessor is linked to a possessum-internal *pro*, as pronominal dislocation is not in general sensitive to islands.[5]

       In the face of facts such as these, it may be tempting to abandon the connection between articles and extraction. On the other hand, there does not seem to be a plausible alternative to the DP/NP distinction in accounting for the one-way implication between articles and lack of AP-extraction, as well as the various other phenomena that Bošković (2008; 2012) argues are correlated with the article/non-article distinction. What I would like to propose here is that the benefits of the DP/NP analysis can be maintained if the assumption of successive-cyclic movement through SpecxNP, together with the anti-locality condition adopted to filter the resulting overgeneration, are abandoned (cf. Bach and Horn 1976; Bosque and Gallego 2014). Instead, I will argue, the possibility of possessor- or AP-extraction in a given language is partially determined by whether the extractee potentially participates in an overt agreement relation with the xNP to be extracted from (henceforth the 'host xNP').[6] The basic pattern for possessor-extraction can already be seen in (2) above: in Hungarian (2c), the possessum bears an affix that agrees with the possessor in person and (sometimes) number, and the possessor can be extracted; in Russian (2d), the possessor agrees with the possessum in gender and number, and again the possessor can be extracted. By contrast, in English (2a) and

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[5] This argument would lose its force if there were some independent reason why the possessor must be generated in the same DP as *pro*. Yet, under Den Dikken's analysis, there is no direct connection between the generation of *pro* within DP (licensed by possessor agreement) and the generation of the dative within DP, so there does not seem to be an intrinsic requirement for the two to be licensed by the same DP. Furthermore, given the dialectal variation in anti-agreement discussed by Den Dikken, at least some cases of possessor-extraction must be derived by movement of the possessor out of DP, even under his analysis. Specifically, *pro* is only permitted if licensed by overt agreement; thus, the fact that some speakers allow dislocated possessors in the context of anti-agreement means that they allow movement. It is important to note that I am making a weaker claim than Den Dikken about the relevance of agreement, namely that the Agree relation on which possessor-extraction depends is licensed if the language shows at least *some* evidence of overt agreement between the two positions. That is, the presence of Agree in a particular case does not necessarily require overt agreement in that case (cf. note 7). Thus, provided that Den Dikken's 'liberal' speakers have possessor agreement in at least some cases, the fact that they allow extraction in the context of anti-agreement is consistent with the present proposal.

[6] Authors that have noted the potential relevance of overt inflection include Ross (1967), Horn (1983), Tappe (1989), Zlatić (1997), Gavruseva (2000), Rappaport (2000), Duguine (2008) and Bošković (2013a). Rackowski and Richards (2005) also argue for a connection between Agree (reflected in overt agreement) and extraction, but in a somewhat different sense from the present proposal: Agree must hold between the phase to be extracted from (CP) and the next phase head up (*v*), rather than between the phase to be extracted from and the extractee. I hope to pursue the connection between the two types of agreement/extraction phenomena in future work.

Mandarin Chinese (2b), which show no agreement in either direction, possessor-extraction is ruled out. Thus, for the four languages in (2), the possibility of possessor-extraction cross-cuts the article/non-article distinction, but correlates with the agreement/non-agreement distinction.[7]

The same four languages can be used to illustrate the pattern for AP-extraction:

(4) a.   * Tall$_i$ he saw [t_i girls].
     b.   * [Duōme xiángxì de]$_i$ tā yào   [yī fèn t_i míngdān]? [MC]
            how   detailed LNK   he want one CL   list
            'How detailed a list does he want?' (Wei 2011:258)
     c.   * Magasakat$_i$ látott   [t_i lányokat]. [Hun.]
            tall:PL:ACC saw:3SG   girl:PL:ACC
            'Tall girls, he saw.' (Bošković 2005:4 fn. 5)
     d.   Interesnuju$_i$ oni predložili moej   dočke   [t_i rabotu]. [Rus.]
            interesting:ACC.SG they offered   my.DAT daughter:DAT work:ACC.SG
            'They offered my daughter interesting work.' (Sekerina 1997:188)

In this case, agreement appears to be relevant in the case of non-article languages: AP-extraction is possible in Russian, in which the AP agrees with N in gender and number, but not in Mandarin, where no agreement is present.[8] On the other hand, AP-extraction is impossible in both of the article languages illustrated: English, in which AP does not agree, and Hungarian, in which it does. This difference can be expressed in terms of peripherality: the XP to be extracted must not only be in a potentially overt agreement relation with xNP, but must also independently be able to surface on the periphery of xNP. For example, while unextracted dative possessors in Hungarian appear to the left of determiners (as indicated by the position of the trace in (2c)), APs in the same language must surface to the right of D. Assuming, as is standard, that D is obligatorily present in DP languages even when

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[7] As has been detailed in a number of publications (e.g., Den Dikken 1999; Bartos 2000; É. Kiss 2014), the possessive affix in Hungarian does not always show full agreement with the possessor. Specifically, for the majority of speakers, the possessive affix does not show number agreement with (unextracted) non-pronominal possessors ('anti-agreement'), either nominative or dative. Bartos (2000) argues, based on coordination data, that there is no zero third person singular agreement morpheme in this case. If this is correct, then it is not possible to argue that possessor extraction always relies on the presence of overt agreement. The claim I make here is somewhat weaker: the presence of overt agreement on some member(s) of the paradigm to which the possessive affix belongs is sufficient for the language learner to posit an Agree relation relating the affix to the possessor for the paradigm as a whole. Note, furthermore, that the implementation of Agree here in terms of selection for a D element by a D element makes it possible to separate the establishment of the relation from the realisation of that relation in terms of agreement. Thus, it may be that, given the cross-linguistic rarity of overt agreement with dative DPs in general, it is possible to establish a selectional relation between a possessive affix and a dative non-pronominal possessor in Hungarian, but not possible for the selector to access the phi-features (or, at least, the number feature) of the dative DP, hence the lack of actual agreement.

On the other hand, there are some cases even within Hungarian that appear to involve extraction being licensed specifically by overt agreement. As Den Dikken (1999) observes, speakers of what he calls the 'majority' dialect do allow full agreement with non-pronominal dative possessors that have been extracted, while some stricter speakers even require full agreement in this case. One possibility is that agreement here arises from clitic-doubling, rather than from Agree, as clitic-doubling with dative DPs is quite common (being found, e.g., in Basque, Greek and Spanish). Preminger (2009) argues that when an Agree relation cannot be established ('fails'), either ungrammaticality or default third person singular agreement results, whereas when a clitic-doubling relation cannot be established, this does not give rise to ungrammaticality, but simply entails the absence of a clitic. If 'full agreement' with dative DPs is an instance of clitic-doubling, we can account for the fact that the possessor-possessum relation is island-sensitive with either full agreement or anti-agreement, given that both Agree and clitic-doubling are subject to locality restrictions.

[8] I do not have an account of the fact, noted in Grosu (1974), that relative pronouns, which agree with the 'head' of the relative, may not be extracted out of NP, but I would speculate that this has to do with information-structural restrictions on 'split scrambling' (e.g., Sekerina 1997; Fanselow and Ćavar 2002; Pereltsvaig 2008b).

not pronounced, then (4c) involves extraction of AP from a non-peripheral position. By contrast, in Russian, an NP language, D is not obligatorily present, hence the AP in (4d) is arguably extracted from a peripheral position in NP, assuming an NP-adjunction analysis with no silent functional projections dominating NP (e.g., Bošković 2009; Despić 2013). To summarise, then, the patterns in (2) and (4) suggest that extraction of a possessor or AP from xNP is only possible in language L if (i) possessors or APs potentially agree overtly with xNP in L and (ii) possessors or APs may surface 'outside' all obligatory elements of xNP in L.

Although the potential relevance of overt agreement and peripherality for extraction from xNP has been recognised in the literature, it is striking that very few previous analyses of LBE predict their effects.[9] This is particularly clear in the case of successive-cyclic analyses such as Bowers (1987), Corver (1990), Bošković (2005) and Ticio (2005), which account for the failure of extraction in terms of the ECP (Bowers, Corver) or anti-locality (Bošković, Ticio). As it does not seem plausible that overt agreement could 'repair' these kinds of violations, the role of agreement can at best be stipulated as an additional restriction under these approaches.[10,11] A number of other analyses do make reference to the agreement/extraction generalisation, including Gavruseva (2000), Rappaport (2000) and Duguine (2008). Yet these analyses, too, fail to account for why extraction is dependent specifically on overt agreement.[12] Gavruseva (2000) (in essence following Szabolcsi 1983/84) argues

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[9] Boeckx (2003) goes as far as to argue that it is *lack* of agreement that correlates with extractability, specifically citing the case of Hungarian possessors. He assumes that nominative possessors represent the agreeing case, while dative possessors represent the non-agreeing case, despite the fact that both nominative and dative (both moved and non-moved) possessors may trigger agreement, and in the face of the massive empirical evidence linking agreement to extractability. It is therefore difficult to see how his analysis can be maintained.

[10] In the appendix to Bošković (2005), he proposes a potential alternative to the idea that the possibility of LBE is related to the absence of DP. He suggests that a link might be established between LBE and the possibility of scrambling, with scrambling languages allowing LBE and non-scrambling languages disallowing it. He further suggests that, if Bošković and Takahashi's (1998) base-generation approach to scrambling is adopted, the relevance of agreement might be captured if the scrambled XP must enter an Agree relation with its 'host', and that this Agree relation could be the trigger for the LF-lowering of the scrambled XP that Bošković and Takahashi posit. As evidence, Bošković cites the fact that scrambled APs in Warlpiri must agree overtly with their NPs, whereas agreement is optional if the AP is not scrambled. The main problem with this proposal, it seems to me, is that Bošković's definition of scrambling as "extreme freedom of word order" (2005:37 fn. 54) is too vague to make clear predictions. A language such as (Colloquial) Finnish is a discourse-configurational language, like Hungarian and Russian, yet lacks LBE. It would thus seem to constitute the example of a DP language with scrambling but without LBE that Bošković claims would be an appropriate counterexample to this alternative analysis, but in the absence of a more precise definition of scrambling, this is not clear. In addition, the analysis has nothing to say about the difference between (extractable) dative possessors and (non-extractable) APs in Hungarian.

Bošković (2013) also acknowledges the importance of overt agreement, and proposes an analysis to capture it, but his remit is restricted to a small class of non-agreeing APs in Serbo-Croatian that cannot be extracted from NP. He proposes a solution based on the idea that non-agreeing A must incorporate into N. While this may work for the data in his paper, it does not extend to most of the cases discussed here.

[11] A reviewer suggests that a link between agreement and anti-locality could be established by positing an agreement projection that intervenes between D and NP in languages with overt possessor agreement. Under the assumption that extraction via SpecDP is possible provided anti-locality is respected, an argument of N should be extractable in a DP language with agreement. I agree that this does offer a potential analysis of possessor extraction in DP languages. What would not be not clear under this account is why only agreement of the head N with the possessor should obviate anti-locality, while agreement between AP and the head noun does not. Furthermore, it is not clear how such an analysis would handle the dependence of extraction on agreement in NP languages, as anti-locality is presumably irrelevant in this case.

[12] It is true, as a reviewer points out, that this criticism only applies to the analyses of Duguine, Gavruseva and Rappoport to the extent that they rely on LF-deletion of uninterpretable features. On the other hand, it is difficult to see how the connection between agreement and extraction could be maintained in a principled way under these analyses if the assumption of LF-deletion were dropped. What the present analysis claims is that Agree has interpretative import, and that this explains the greater freedom of extraction in possessor-agreement languages. By contrast, if agreement has no import for the LF interface at all, it is not clear why the presence of

that possessor-extraction from a nominal is only possible if the possessor checks a 'strong' uninterpretable feature on the highest projection of the nominal, and hence moves overtly to the edge of the nominal phase (SpecDP). Rappaport's (2000) proposal for LBE of APs in Polish is quite similar: in order for the extractee to be able to move to SpecDP, an Agree relation must be established between the AP and D of the nominal, and this Agree relation is reflected by the presence of overt agreement on the adjective. Finally, for Duguine (2008) the relevance of possessor agreement on the possessum is that it indicates assignment of structural case to the possessor, which she takes to be the precondition for possessor-extraction.[13] The main problem with these three analyses is that they assume the standard Minimalist view of Agree as a means of valuing and thus enabling deletion of LF-uninterpretable features (e.g., Chomsky 2000; 2001; Pesetsky and Torrego 2001; 2007).[14] On this view, whether or not the phi-features involved in Agree receive a morphophonological realisation at PF is merely matter of surface realisation that does not bear on the presence of the underlying Agree relation itself. It is therefore not clear why an Agree relation between the possessor and the possessum (and, for Duguine, the accompanying valuation of structural case on the possessor) could not hold in the absence of PF-realisation.[15] A similar point can be made with respect to the peripherality requirement. Although the above analyses of LBE rely on the idea that extraction from xNP requires successive-cyclic movement through SpecxNP, this of course does not entail that the extractee must be able to surface in SpecxNP (cf. Bosque and Gallego 2014).

2.2. An agreement-based account

As noted above, the pattern in (2) and (4) suggests that possessor- and AP-extraction from xNP are subject to two conditions: (i) overt agreement between the extractee and xNP and (ii) potential surface peripherality of the extractee in xNP. Ideally, we would want an analysis of possessor/AP-extraction to make a connection between these two conditions. This can be achieved if, for example, Hungarian possessor agreement enables a kind of dislocation structure of the type in (5), in which the possessor is adjoined to the possessum's xNP.

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agreement (under this alternative a purely morphophonological phenomenon) should facilitate movement out of an otherwise impenetrable domain; in particular, why it should facilitate movement to the escape hatch SpecDP.
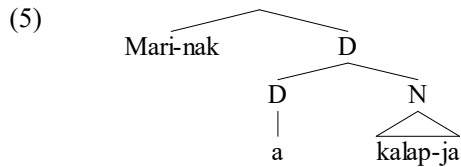[13] Duguine does not make it clear why there should be a causal link between structural case and extraction. See also Baker (2015) for arguments that structural case is not always dependent on agreement.
[14] Zlatić's (1997) HPSG analysis does not share this assumption, but seems to amount to a stipulation that an extracted left-branch constituent must share the CONCORD feature of the host xNP. Furthermore, the analysis would not extend to agreeing-possessum languages without an additional stipulation.
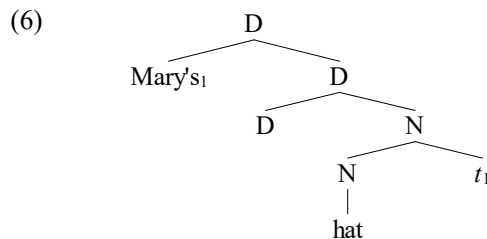[15] Almost the converse problem holds of proposals such as Hale (1981) and Nash (1986), if generalised beyond the Warlpiri data for which they were designed, such as (i):

(i)   Kurdu-jarra-rlu ka-pala   maliki wajili-pi-nyi   wita-jarra-rlu.
        child-DUAL-ERG PRES-3DS dog   chase-NPST small-DUAL-ERG
        'Two small children are chasing the dog.' (Hale 1981:2)

The gist of their proposals is that the two parts of the NP are generated separately and 'merged' at the level of 'logical form' or 'semantic interpretation'. This merger relies on the overt morphology present on both parts of the NP (which is optional on the modifier if the modifier appears adjacent to the noun). This analysis, however, predicts that 'extraction' requires identical overt morphology on both parts of the xNP, which is of course not the case for Hungarian-style possessor agreement, nor for languages such as Hindi, in which, in some cases, only the possessor overtly represents the relevant features (e.g., (29a), where the noun *kitaab* bears no overt morphology representing feminine singular).

(5)

```
        ┌──────┴──────┐
   Mari-nak            D
                   ┌───┴───┐
                   D       N
                   │     ┌─┴─┐
                   a   kalap-ja
```

I assume here that adjunction involves creation of an unlabelled mother node (e.g., Hornstein and Nunes 2008; cf. Collins 2002; Chomsky 2013; Rizzi 2015), which provides a natural way of implementing the frequently-assumed (and, here, crucial) idea that adjuncts are not dominated by the projections to which they adjoin (e.g., Chomsky 1986; Hornstein and Nunes 2008:77–83).[16] Suppose, by contrast, that in a language without possessor agreement, such as English, the possessor must be generated within the projection of the possessum N in order to be interpreted as an argument of N, as in (6). I assume that the possessor then moves to SpecDP (e.g., Abney 1987; Radford 2000; Alexiadou et al. 2007):[17]

(6)

```
              D
          ┌───┴───┐
    Mary's_1       D
               ┌───┴───┐
               D       N
                   ┌───┴───┐
                   N       t_1
                   │
                  hat
```

The difference in extraction possibilities between Hungarian and English can then be captured in terms of the PIC, provided that the highest specifier in xNP (SpecDP) cannot function as an escape hatch for movement, as proposed above.[18] Given that the possessor in (5) is not dominated by a

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[16] The alternative – and more standard – 'multiple segments' treatment (e.g., May 1985; Chomsky 1986; Kayne 1994) seems to be motivated only by the assumption that selection takes place only under sisterhood, which is far from obvious (e.g., Collins 2002). Furthermore, the idea that categorial projection is optional in adjunction structures provides a straightforward way of capturing the optionality of stranding adjuncts in VP-fronting contexts; fronting can simply be assumed to apply to the highest node in the V-projection:

(i)   a.   * I said I would read some long book, and read$_i$ I did t_i *LSLT*.
      b.   I said I would read *LSLT*, and [read *LSLT*]$_i$ I did t_i quite happily.
      c.   I said I would read *LSLT* quite happily, and [read *LSLT* quite happily]$_i$ I did t_i.

That said, nothing empirical in this paper appears to hinge on the distinction between the two treatments of adjunction, and the primary advantage of the 'unlabelled node' treatment for the purposes of the paper is perspicuity.

[17] The evidence that the prenominal possessor forms a constituent with the possessum is straightforward: the two together may undergo operations that target a single constituent, such as focus-movement in Hungarian (Szabolcsi 1994) or clefting in English.
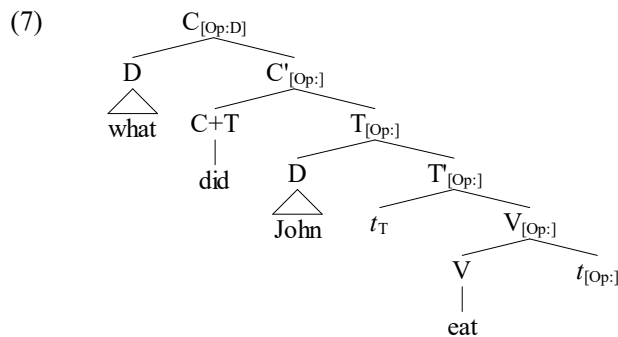
[18] For concreteness, I assume the following formulation of the PIC, based on Chomsky (2001:13):

(i)   Movement of a category X from a position dominated by a phasal node P to a position not dominated by P is impossible. (Category-specific parameter: unless X is a specifier/adjunct of P.)

Under the present proposal, then, the difference between the extended projections of V and N is that the 'parameter' in (i) is set to 'yes' for V but 'no' for N (in Chomsky's terms, the extended projection of N has no 'edge'). As a reviewer points out, this difference could not plausibly be derived in terms of a difference in the ability to host 'edge features' attracting elements to the phase edge, because I do make use of features (selectors) that attract phrases to the specifier of D (see the discussion of (9b) below). While I admit that the 'parameter' in

categorical label of the xNP to which it adjoins, it can be extracted without violating the PIC. By contrast, the possessor in (6) is prevented from extracting by the PIC, as it is generated within xNP, and is still dominated by a projection of xNP (DP) after moving to SpecDP (see below for details).[19]

Two important questions now arise: (i) why is the structure in (5) contingent on overt agreement, and (ii) how does the possessor in (5) satisfy its thematic and Case requirements? As background, I will first outline my assumptions about how possessors in English are licensed. I assume that theta-marking uniformly takes place between a theta-marker X and an argument YP that c-commands X and is m-commanded by X. For concreteness, I will implement this requirement in terms of Neeleman and Van de Koot's (2002) treatment of grammatical dependencies. The primary aim of their paper is to account for five properties that hold of dependencies such as theta-marking, anaphoric binding and movement: obligatoriness of the antecedent, c-command by the antecedent, locality, uniqueness of the antecedent and non-uniqueness of dependents (Koster's 1987 'configurational matrix'). NVK account for these properties by encoding dependencies in the form of a 'selectional function' (henceforth 'selector'), a lexical property of the dependent element that must enter into a relation with an appropriate antecedent in order to be 'satisfied'. NVK assume two fundamental principles, Inclusiveness (Chomsky 1995) and Accessibility, that restrict the flow of information in a syntactic tree. These principles have the consequence that a selector may percolate upwards, but never downwards, and may be satisfied by immediately dominating the antecedent, but by no other relation.[20] I first illustrate the case of *wh*-movement, which NVK encode as a selector Op that is a lexical property of A′-trace. Op percolates upwards in the tree to VP, TP and finally CP, where it is satisfied through immediate domination of a *wh*-category. (Here, selectors are indicated by a colon to distinguish them from ordinary syntactic features, with the satisfier following the colon.):

(7)

$C_{[Op:D]}$
  D — what
  $C'_{[Op:]}$
    C+T — did
    $T_{[Op:]}$
      D — John
      $T_{[Op:]}$
        t_T
        $V_{[Op:]}$
          V — eat
          $t_{[Op:]}$

(i) is a stipulation, and I make no attempt to derive it here, it seems to me that the notion of 'edge feature' is also a stipulation, as there is no independent evidence supporting the existence of such features. Finally, I assume (following Bošković 2014a) that only the highest projection of an extended projection is phasal. This means that in a DP language, DP is phasal while NP is not, while in an NP language, NP is phasal.
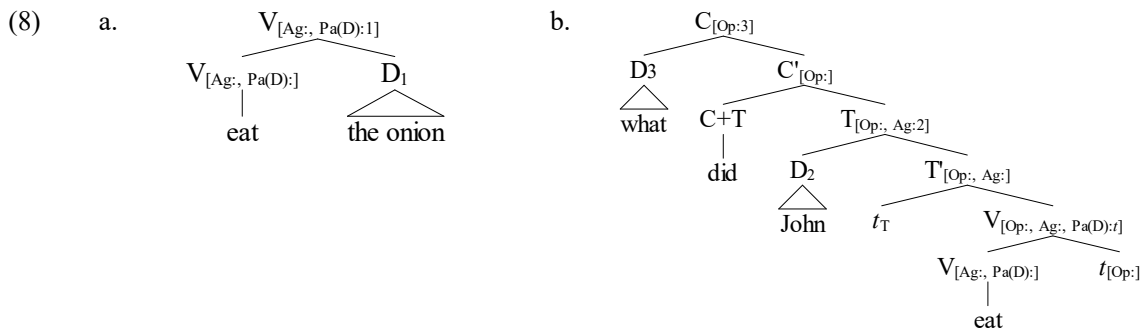
[19] A similar analysis is proposed by Kariaeva (2009), who argues that split NPs in Ukrainian are base-generated as discontinuous and linked via Agree. The main differences between her analysis and the present analysis are that she does not explicitly make the Agree operation dependent on the presence of overt morphology, and she assumes that Agree only operates downwards, which would mean that the analysis could not as it stands be extended to cases where the agreeing element appears on the lower member of the split, as in Hungarian. As a reviewer suggests, however, Kariaeva's analysis otherwise seems to be consistent with the present analysis.

[20] The full definitions are as follows:

(i)   a.   *Inclusiveness*
             The syntactic properties of a nonterminal node are fully recoverable from the structure it dominates; the syntactic properties of a terminal node are fully recoverable through mapping procedures [procedures linking a terminal node to its lexical entry – MJR]. (NVK:529; cf. Chomsky 1995:209)
       b.   *Accessibility*
             Relations between nodes require immediate domination. (NVK:532)

This accounts for the fact that *wh*-trace must have an antecedent, that the antecedent must c-command it, that it can only have a single antecedent, and – given the assumption of 'function identification' (NVK:547ff.; cf. Higginbotham 1985) – that multiple traces may be linked to a single antecedent, as in the case of across-the-board movement. (See Neeleman and Van de Koot 2010 for more specific discussion of how movement is implemented in this system.)

Now let us turn to the question of how thematic dependencies are handled in this system. Arguably, the predicate in a thematic dependency is the dependent element: it requires an argument to satisfy it. Accordingly, NVK encode thematic dependencies in terms of selectors (i.e., theta-roles) that are a lexical property of the predicate. For example, the verb *eat* is lexically specified as having two thematic selectors, as indicated in (8), distinguished by linking of the selectors to an 'ordering tier' containing numerical indices. The single internal theta-role of the verb *eat* is satisfied by the object of the verb as depicted in (8). In addition to the thematic dependency between the verb and the object, the two also participate in a c-selectional dependency, which NVK encode as a distinct selector of V that is linked to the relevant theta-selector. For convenience, I indicate this linking here by annotating the theta-selector with '(D)'. The structure in (7) can now be updated as in (8b):[21]

(8)   a.

$$V_{[Ag:,\ Pa(D):1]}$$

$$V_{[Ag:,\ Pa(D):]} \qquad D_1$$

eat   the onion

b.

$$C_{[Op:3]}$$

$$D_3 \qquad C'_{[Op:]}$$

what $C+T$ $T_{[Op:,\ Ag:2]}$

did D_2 $T_{[Op:,\ Ag:]}$

John t_T $V_{[Op:,\ Ag:,\ Pa(D):t]}$

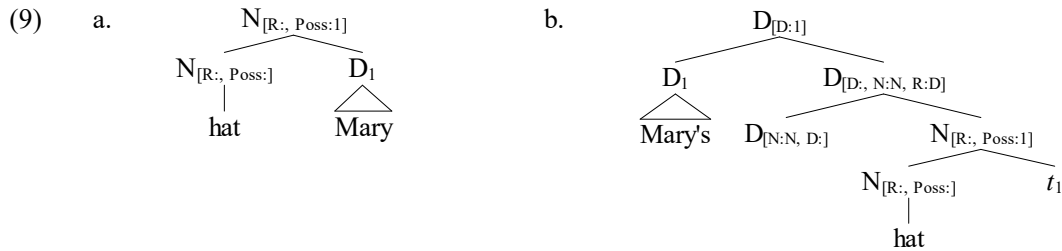$$V_{[Ag:,\ Pa(D):]} \qquad t_{[Op:]}$$

eat

A further important aspect of (8a) is the percolation of V's categorial feature, along with the theta-selector, to the dominating node. NVK argue that this is necessary to capture the independently-needed distinction between 'internal' and 'external' dependencies. Internal dependencies are those that must be satisfied within the categorial projection of the selecting head; external dependencies are those that may or must be satisfied outside the categorial projection of the selecting head. (Internal) theta-marking and c-selection are examples of internal dependencies. For example, NVK (2002:533) point out that, although a head may select the category of arguments within its maximal projection, an argument may not select for the category of the head in whose projection it is contained. If V did not project to the topmost node in (8a), this generalisation would be hard to capture.[22]

Let us return to (6). Suppose that the possessive interpretation is encoded as an optional theta-selector on N (see, e.g., Partee and Borschev 2003 for evidence that possession is encoded on the possessum), which, unlike the theta-selector in (8a), is not associated with a c-selectional restriction. A reasonable underlying structure for the English possessive in (6) would therefore be as in (9a). I assume that the possessor moves to SpecDP, as in (9b), to satisfy a c-selectional feature of possessive

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[21] Henceforth, for convenience I use referential indices to make clear which element satisfies a given selector, despite the fact that Inclusiveness would ban such indices (see esp. Chomsky 1995:209). I also use abbreviations of pre-theoretical theta-role names (e.g., Ag for Agent, Poss for Possessor), in contrast to NVK's use of undifferentiated labels for theta-roles in the syntax (e.g., Grimshaw 1990).

[22] The reader is referred to NVK for details of how they derive the requirement for categorial projection and the consequent distinction between internal and external dependencies. Note also that they treat the relation between the verb and its external argument as an external dependency, which means that external argument subjects are base-generated in SpecTP (see esp. Neeleman and Van de Koot 2010:341-343).

D. Finally, I assume, following Williams (1981), that nouns also bear an R-role (R for 'referential') that enables them to function either as predicates (when the R-role is satisfied by a subject DP) or to make up a referential DP (when the R-role is satisfied by D; cf. Higginbotham 1985):[23]
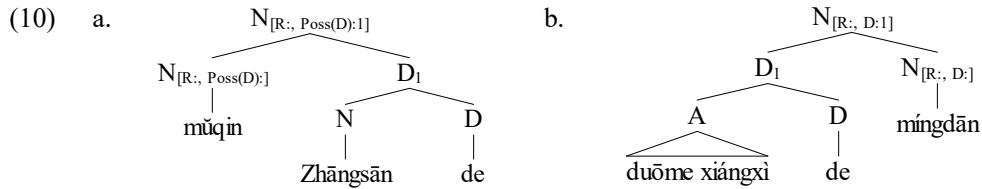
(9) a.

$$N_{[R:, \; Poss:1]}$$
$$N_{[R:, \; Poss:]} \quad\quad D_1$$
$$| \quad\quad\quad\quad \triangle$$
$$hat \quad\quad\quad Mary$$

b.

$$D_{[D:1]}$$
$$D_1 \quad\quad\quad\quad D_{[D:, \; N:N, \; R:D]}$$
$$\triangle \quad\quad\quad D_{[N:N, \; D:]} \quad\quad N_{[R:, \; Poss:1]}$$
$$Mary's \quad\quad\quad\quad\quad N_{[R:, \; Poss:]} \quad\quad t_1$$
$$\quad\quad\quad\quad\quad\quad\quad\quad | $$
$$\quad\quad\quad\quad\quad\quad\quad\quad hat$$

I assume that the 'structural case' requirement of DPs is simply a requirement for them to be formally licensed in addition to being thematically licensed. In other words, a DP must not only satisfy a theta-selector, but also a c-selector.[24] In the case of the object in (8a), these selectors are linked, and the object is licensed in situ. In the case of the possessor in (9), the c-selector occurs on a distinct node (D) from the theta-selector (N), forcing movement. Crucially for the present analysis, the fact that c-selection forces categorial projection ensures that even after movement, *Mary's* remains within the possessum's xNP. Thus, further movement of *Mary's* is ruled out by the PIC. The analysis also extends naturally to the ban on possessor-extraction in Mandarin, illustrated in (2b). Although Mandarin is arguably an NP language (Bošković 2008), N in Mandarin possessives does not bear an affix that could satisfy N's possessor theta-selector. Under the above assumptions, then, the lexical possessor must be generated within NP, as shown in (10a), where it satisfies this theta-selector. If this selector is associated with a c-selector for the linker *de*, the ban on extraction of attributive APs, which also normally bear *de*, can also be accounted for. Specifically, if N can bear an optional c-selector for *de* that is not associated with a theta-selector, the relevant NP in (4b) can be analysed as in (10b):[25]
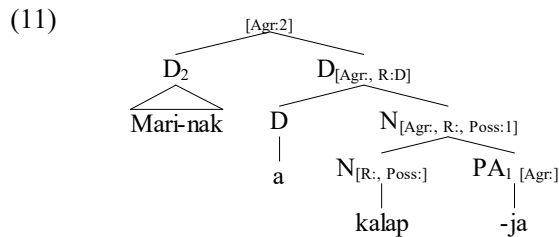
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[23] For simplicity of presentation, I indicate movement here in the standard fashion, rather than in terms of a selector.

[24] The main problem that the reduction of structural case to c-selection appears to face concerns ECM constructions, in which a DP is licensed by a verbal element that does not c-select it. I would suggest the following tentative analysis. Suppose, as seems reasonable, that an ECM verb bears a c-selector (for D) and a theta-selector. Suppose further that the topmost node of its TP complement remains unlabelled (e.g., Chomsky 2013; Rizzi 2015). In that case, the ECM subject and the TP proper (its sister) are equidistant from the V-projection that dominates them. The ECM subject might then plausibly satisfy the verb's c-selector (which would require satisfaction to be under 'closest domination', rather than 'immediate domination' as in NVK), while the TP would satisfy its theta-selector. Where the ECM verb selects a finite clause instead, the two features could both be satisfied by CP, under the assumption that complementisers such as *that* bear a nominal feature (cf. Rosenbaum 1967; Kayne 1984; see also the related suggestion of Bošković 2007 that C bears phi-features in languages without long-distance agreement into CPs).

[25] The possessor must surface to the left of the possessum in Mandarin, as in (2b); I assume that this is due to movement forced by the need for the linker *de* to be adjacent to the head noun (Philip 2012:ch. 3). I assume, following Franco et al. (2012), that linkers in languages such as Mandarin are D elements. Note, though, that Mandarin is still an NP language, as D is not an obligatory component of xNP in this language (see footnote 45). Finally, certain adjectives in Mandarin do not need to bear the linker *de*, as illustrated in (2b), but this is only possible when a certain semantic relationship holds between the head noun and the adjective, and when the adjective is non-phrasal (Paul 2015:147, 156ff.). One possibility here is that A projects and selects for N (Abney 1987). Again, extraction of A alone would be prevented, either by the PIC or by the Head Movement Constraint.

(10)   a.

N[R:, Poss(D):1]
  ├─ N[R:, Poss(D):] — mǔqin
  └─ D1
       ├─ N — Zhāngsān
       └─ D — de

b.

N[R:, D:1]
  ├─ D1
  │   ├─ A — duōme xiángxì
  │   └─ D — de
  └─ N[R:, D:] — míngdān

Now let us consider Hungarian (5) once again. I suggested above that this is a kind of dislocation structure in which the possessor *Marinak* occupies an adjunct rather than a specifier/complement position. Given this, the question needs to be addressed of how the possessive relation arises if the possessor is never inside NP. Suppose that in this case it is in fact the possessive affix– e.g., *-ja* in (5) – that satisfies N's theta-selector, and is subsequently linked to the 'true' possessor.[26] More specifically, suppose that the possessive affix establishes a (Reverse) Agree relation with the possessor *Marinak*, and that this Agree relation is what makes it possible to interpret the xNP-adjoined possessor as an argument of N.[27] (5) can thus be updated as in (11), where Agree is represented in terms of a selector 'Agr':

(11)

[Agr:2]
  ├─ D2 — Mari-nak
  └─ D[Agr:, R:D]
       ├─ D — a
       └─ N[Agr:, R:, Poss:1]
            ├─ N[R:, Poss:] — kalap
   └─ PA1 [Agr:] — -ja

Here, the noun *kalap-* bears two selectors, the R-role that all nouns bear and an optional possessive theta-selector. The possessive affix (PA) introduces an Agree selector. All three selectors percolate to the dominating N node, where the possessive selector is satisfied by PA. In the next node up, the R-role selector is satisfied by definite D, delivering the interpretation of the possessum as a definite referential DP. Finally, Agr is satisfied outside the projection of D, in the topmost node, by the possessor *Marinak*.[28]

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[26] On this view, (5) is a kind of nominal counterpart of Jelinek's (1984) 'pronominal argument' proposal for languages such as Warlpiri. According to Jelinek, it is the agreement affixes in such languages that function as 'true' arguments of a verb, while the lexical NPs whose features they index are syntactically adjuncts. Although the latter aspect of Jelinek's proposal seems to have become widely accepted in the literature, it has often been argued or assumed that it is not the agreement morphemes themselves that are theta-marked, but instances of *pro* that are themselves licensed by the agreement morphemes (e.g., Baker 1996; Adger et al. 2009). The main reason for this position seems to be that these languages show the same kinds of subject-object asymmetries (e.g., with respect to binding and weak crossover) as 'configurational' languages. Baker's main argument against expressing these generalisations over morphological structure rather than over syntactic structure in Mohawk is that "there are no clear conceptual advantages to doing so. There would be a decrease in the abstractness of the syntactic representation, but there would be a corresponding increase in the abstractness of the conditions that are defined over syntactic representations. I do not know of anything that would be gained by doing this" (1996:16). As far as I can see, this implies that the choice between the two is empirical, pending further understanding of how we can compare the abstractness of structure and conditions on structure. I believe that the findings in this paper can be taken as empirical evidence that something would be gained by adopting the idea of morphological theta-marking. See also Ackema and Neeleman (2004:85ff.), Jelinek (2006) for more recent defences of the non-pro-drop analysis of pronominal argument languages.

[27] See, e.g., Baker (2008), Zeijlstra (2012), Ackema and Neeleman (to appear) for evidence in favour of Reverse Agree.
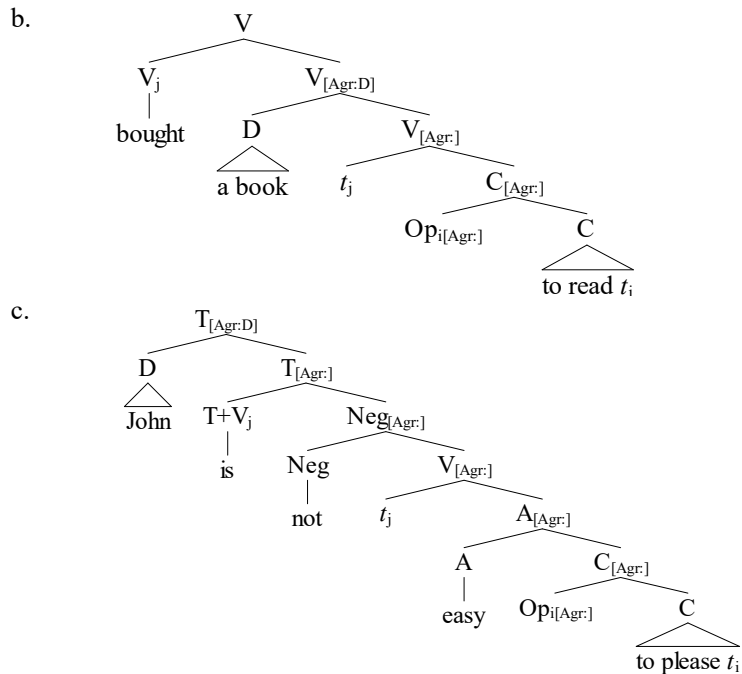
[28] A reviewer asks why the Agr selector could not be satisfied by the possessum's D, given the reasonable expectation that a selector should be satisfied by the closest appropriate c-commanding element. I simply

This analysis relies on four independently motivated assumptions: (i) agreement morphemes consist of interpretable phi-features (e.g., Brody 1997); (ii) Agree can be semantically interpreted as a variable binding relation (e.g., Franco et al. 2015); (iii) Agree is only posited by the language learner where there is overt evidence of agreement between the two relevant positions (e.g., Holmberg and Platzack 1995; Zeijlstra 2008);[29] (iv) Agree is not subject to the PIC (e.g., Bošković 2007; Kariaeva 2009 and references cited there). The claim is, then, that the agreeing affix that satisfies the host N's theta-selector is interpreted as a variable bound by the 'true' possessor. Thus, Agree functions as a means of 'externalising' a thematic relation – that is, enabling an argument of a predicate to be base-generated outside the predicate's projection. This is in fact not a new claim, and there is independent reason to think that agreement must be able to fulfil this externalising function. For example, Browning (1987) argues that null operator constructions involve a predication relation between the null operator and an antecedent nominal, mediated by an 'agreement chain'. This analysis is illustrated (adapted to present assumptions) in (12a) for restrictive relative clauses, in (12b) for object purpose clauses, and in (12c) for *tough*-constructions:

(12) a.
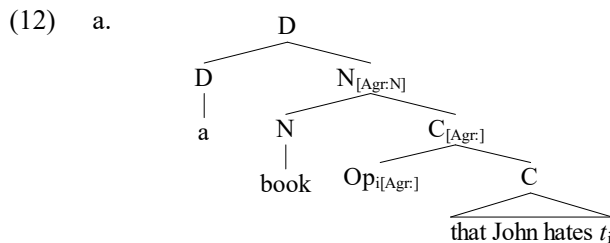
assume here that, because Agree in general establishes an external dependency (i.e. one that must be satisfied outside the projection of the category that introduces it), the Agr selector is added to the left of selectors that establish internal dependencies, such as the possessive theta-selector in NP and the R-role in DP. This means that it will be last to be satisfied. Given NVK's Exclusivity condition (2002:549), which ensures that a given node may only satisfy a single (licensing) function in the immediately dominating node, this will entail that Agr cannot be satisfied by either N (which satisfies Poss) or D (which satisfies R).

[29] That is, I am assuming that there is no such thing as 'abstract agreement' in the sense that languages that never realise agreement nevertheless have Agree (cf. Preminger 2017). A reviewer suggests that the presence of possessor extraction in the primary linguistic data might serve as a cue for the language learner to posit Agree, even where there is no overt agreement. I would simply respond that, if syntactic categories and relations are only postulated on the basis of overt evidence in a given language, such examples should not occur in the PLD of a language without agreement in the first place. Furthermore, the case of null operator constructions, mentioned by the reviewer as a case where I would have to posit abstract agreement, should not be problematic given that English does have overtly agreeing operators (*who* and *which*, which also participate in number agreement within their clause). That is, the learner would posit that operators in general introduce Agree on the basis that some of them overtly do so. Another reviewer comments that the connection between overt agreement and Agree is just a stipulation, and structures such as (11) "a mere theoretical restatement of the empirical facts". In a sense, I think the reviewer is correct: the overtness condition is stipulated. This does not, however, seem to me to be a serious problem – it simply goes back to the idea of Borer (1984) that parametric variation should be reduced to morphological variation, the difference here being that variation affects LF-interpretable aspects of structure as well as PF-interpretable aspects. It does not seem to me to be any more questionable theoretically to link overtness with the presence of the relation (i.e., the relation being variable) than to assume that the presence of the relation is universal and its realisation is variable.

b.

```
              V
        ┌─────┴─────┐
       V_j        V_[Agr:D]
        │       ┌────┴────┐
      bought    D       V_[Agr:]
              ┌──┴──┐  ┌───┴───┐
            a book  t_j      C_[Agr:]
                          ┌────┴────┐
                      Op_i[Agr:]    C
                                ┌───┴───┐
                              to read t_i
```

c.

```
                T_[Agr:D]
            ┌──────┴──────┐
            D           T_[Agr:]
            │        ┌─────┴─────┐
          John     T+V_j       Neg_[Agr:]
            │        │       ┌────┴────┐
                    is      Neg      V_[Agr:]
                             │    ┌────┴────┐
                            not   t_j     A_[Agr:]
                                       ┌────┴────┐
                                       A       C_[Agr:]
                                       │    ┌────┴────┐
                                     easy  Op_i[Agr:]  C
                                                   ┌────┴────┐
                                                 to please t_i
```

While such constructions have more recently been analysed in terms of movement of the DP/NP (*book*, *a book*, *John*) via SpecCP (e.g., Hornstein 2001; Nunes 2004; Hicks 2009), there are strong arguments in favour of a null operator analysis in many cases. Nissenbaum (2000) argues for an operator analysis of parasitic gaps over a movement analysis on the basis of reconstruction data, while Aoun and Li (2003) argue that both movement and base-generation (*wh* or null operator) derivations are necessary for restrictive relative clauses, again relying partly on reconstruction data. To the extent that base-generation analyses are required, then, there must be a mechanism for mediating thematic relations that permits the ultimate antecedent of a theta-selector to be base-generated outside the selecting head's categorial projection. Under the present proposal, then, the possessive affix in (11) functions analogously to an operator: it both saturates a theta-role and 'externalises' it via Agree.

A final question that is worth addressing for the particular case of Hungarian is how a dative possessor satisfies its own licensing requirements. I have assumed that English prenominal possessors are subject to a thematic requirement (they must satisfy a theta-selector) and a formal requirement (they must satisfy a c-selector), but the analysis in (11) does not appear to permit the dative possessor in Hungarian to fulfil these two requirements. The assumption I will make here is that Agree serves as both thematic and formal licenser in this case. The requirement that each XP interpreted as an argument must receive a theta-role (viz., satisfy a theta-selector) is clearly too strict, given the existence of pronominal dislocation constructions, for example (e.g., Pereltsvaig 2008a:65-6; cf. Brody 1993). I will therefore simply assume that each DP argument must be linked to a theta-position either (i) through direct satisfaction of a theta-selector or (ii) through a semantic binding relation (e.g., pronominal anaphora, Agree) with an element that directly satisfies a theta-selector. As for the formal licensing of the possessor, Agree, in addition to its interpretative role, can be seen as a type of 'external' c-selection: it seeks a nominal category, matching its phi-features with those of the affix. On this view, 'structural Case' and agreement can be seen as two complementary types of c-selection (internal vs. external c-selection respectively), capturing the frequently expressed insight that

agreement and case are two sides of the same coin in terms of their licensing function (e.g., Nichols 1986).[30]

In summary, then, the present analysis attributes the extractability of possessors in languages such as Hungarian to: (i) the presence of an agreeing affix on the possessum N, which satisfies a theta-selector of N, (ii) the fact that Agree enables a thematic dependency to be established with an xNP outside the predicate's categorial projection, allowing the possessor to be generated in a position not dominated by xNP, (iii) the idea that xNP is subject to a formal licensing requirement that can be satisfied either by standard c-selection or by Agree, and (iv) the PIC, assuming that xNP is a phase with no escape hatch. In the next section, I outline the main advantages of this analysis.

3. Agreement, peripherality and locality

3.1. The agreement condition

The clearest prediction made by the analysis is that possessor-extraction of xNPs from xNP should only be possible in languages in which the possessor and possessum potentially enter into an overt agreement relation. As has already been observed in the literature, the connection between overt agreement and extraction holds in a large number of languages covering a wide geographical and genetic range. For example, Duguine (2008) cites Abaza, Boumaa Fijian, Chamorro, Inuktitut, Southern Quechua, Tzotzil (and other Mayan languages) and Yup'ik as possessor-extraction languages of the Hungarian type, in which the possessum bears an affix that agrees in phi-features with the possessor (see her paper for original references).[31] To these can be added Mohawk (Baker 1996:136 fn. 19), Chickasaw (Munro 1999), Palauan (Georgopoulos 1991:70-71), Turkish (Bošković and Şener 2014), Tz'utujil (Aissen 1999) and Udmurt (Assmann et al. 2014:474). Duguine provides particularly convincing evidence for the relevance of agreement from Boumaa Fijian and Chamorro, which have two possession strategies, one involving possessor agreement, and a second involving an invariant 'linker' morpheme. Notably, only the agreement strategy is compatible with possessor-extraction, as shown in (13) for Chamorro (examples from Duguine 2008, via Chung 1991:109 & p.c.):[32]

(13) a. *Hayi$_i$ un-yulang   [muñika-n t_i]?
          who   INFL-break   doll-LNKR
          'Whose doll did you break?'

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[30] This discussion neglects the question of how the dative case on the possessor is licensed. Unfortunately, there is far from a consensus on the nature of dative case in Hungarian. Szabolcsi (1994) argues that it is not a case, but an operator affix, Rákosi (2006) assumes that it is an inherent case and Ürögdi (2006) describes it as a 'structural case' but proposes a negative licensing environment for it (it occurs when the DP does not occur locally to T). I will not attempt to enter into this debate, but I will merely note that the range of extractable possessors covers both morphologically case-marked and non-case-marked DPs (Tzotzil and other Mayan languages are good examples of the latter), and that it seems to be agreement which is the unifying factor, which suggests that it has a primary licensing role in these cases. On the other hand, it is undoubtedly the case that inherent case facilitates (apparent) extraction from xNP even in the absence of agreement. I return to this observation in §4.

[31] Duguine cites Finnish, Mohawk and Palauan as potential counterexamples (cf. Baker 1991:553), but does not discuss the issue further, referring to her own unpublished work. However, it is not clear that any of these are real counterexamples: Mohawk (e.g., Baker 1991:555; 1996:136 fn. 19) and Palauan both show agreement and allow possessor-extraction (Georgopoulos 1991) and Colloquial Finnish both lacks LBE and lacks agreement.

[32] As Boumaa Fijian and Chamorro are article languages (Chung 1991; Dixon 1988:114–116), they can be assumed to be DP languages. Therefore, the impossibility of possessor-extraction in (13a) and its Boumaa Fijian equivalent can be accounted for in the same terms as the failure of linker phrase extraction in DP languages generally, as discussed in 3.2 below.

b.   Hayi$_i$ ti   man-mäguf [famagon-ña t_i]
           who not INFL-happy children-3SG
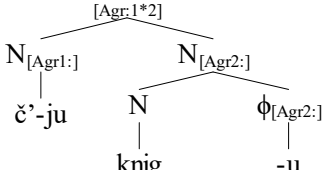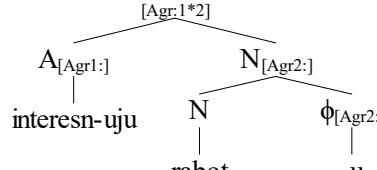   'Whose children are unhappy?'

Duguine makes a similar observation with respect to the contrast between Southern and Imbabura Quechua: Southern Quechua, in which the possessum agrees with the possessor, allows extraction, while Imbabura, which lacks agreement, also disallows extraction:

(14)   a.   Pi-qpa-ta$_i$ reqsi-nki [t_i tura-n-ta]? [SQ]
            who-GEN-ACC know-2SG   brother-3SG-ACC
            'Whose brother do you know?' (Sánchez 1996)
      b.   * Pi-paj-taj$_i$ riku-rka-ngui [t_i alku-ta]? [IQ]
            who-GEN-INTER see-PAST-2SG   dog-ACC
            'Whose dog did you see?' (Cole 1985:115)

Thus far, we have only considered languages in which the possessum agrees with the possessor. Let us now turn to languages of the Russian type, in which the possessor agrees with the possessum. Consider Russian (2d), repeated below as (15):

(15)   Č'-ju$_i$ ty čitaeš [t_i knig-u]?
      whose-ACC.FSG you read   book-ACC.FSG
      'Whose book are you reading?'

Given certain plausible assumptions about the Agree relations holding in (15), the present analysis can straightforwardly capture the possibility of possessor-extraction here. Note that in (15) both the possessor and the possessum bear a *-u* suffix encoding accusative case and feminine singular phi-features. Suppose, following Franco et al. (2015), that in a DP such as Italian *l-a ragazz-a biond-a* 'the blonde girl', each of the *-a* suffixes (representing feminine singular) is semantically interpreted as a variable bound by the determiner base *l-*, this interpretation being mediated by syntactic Agree relations (cf. Higginbotham's 1985 'theta-binding' analysis of restrictive modification). I will adopt a similar analysis for Russian (15). In keeping with the analysis proposed in §2, suppose that each *-u* suffix introduces an Agree selector, and that these selectors percolate up to a single node where they undergo 'function identification' (cf. Higginbotham 1985; Neeleman and Van de Koot 2002), being represented in this node as a single selector. Of course, as Russian is an NP language, unlike Italian, there is no D that could satisfy ('theta-bind') this selector. I therefore further assume that, in this case, the 'identified' selector is satisfied 'by default' in the node to be interpreted as an argument, with the same semantic effect: binding (existential closure for an indefinite interpretation; iota-binding for a definite interpretation) of the variables represented by the two affixes (cf. Chierchia 1998). Thus, in (16a) the Agree selectors of the possessor and the possessum both percolate to the topmost node, where they undergo function identification (as indicated by '1*2') and are satisfied by default in this node (as indicated by '#'). The same analysis can be given for agreeing attributive APs, as illustrated in (16b) for the relevant NP in (4d):

(16) a.

The analysis in (16a) raises the important question of how the possession relation is mediated in Russian, as it is clear that there is no element, aside from the lexical possessor itself, that could receive a possessor theta-role from the possessum N. A potential solution is provided by the fact that prenominal possessors in Russian normally bear a special possessive suffix 'inside' the agreement suffix. That the two suffixes are distinct can be seen in the paradigm below for the possessive forms of *mama* 'mother', adapted from Pereltsvaig (2007:75). Here it is clear that each form contains an invariant element *-in* suffixed to the root, to which a second suffix expressing agreement in gender, number and case is attached:

(17)

	Masc.	Neut.	Fem.	Pl.
Nominative	*mam-in*	*mam-in-o*	*mam-in-a*	*mam-in-y*
Genitive	*mam-in-a*	*mam-in-a*	*mam-in-oj*	*mam-in-yx*
Dative	*mam-in-u*	*mam-in-u*	*mam-in-oj*	*mam-in-ym*
Accusative	*mam-in-(a)*	*mam-in-(a)*	*mam-in-u*	*mam-in-y(x)*
Instrumental	*mam-in-ym*	*mam-in-ym*	*mam-in-oj*	*mam-in-ymi*
Prepositional	*mam-in-om*	*mam-in-om*	*mam-in-oj*	*mam-in-yx*

I assume that, whereas in Hungarian and English possessives the possession relation involves an optional theta-selector on the possessum N, in Russian the theta-selector is introduced by the *-in* suffix attached to the possessum. Given the idea introduced above that the agreement suffix is semantically interpreted as a bound variable, this suffix can be seen as bearing the same semantic relation to the possessive suffix that the possessum N bears to the possessive suffix in Hungarian. I will assume, following Franco et al. (2015), that *-in* represents a semantic part/whole relation that gives rise to the possessive reading; i.e., the possessum is interpreted as a 'part' of the possessor. The agreement suffix is then linked indirectly to the possessum N via function identification of the Agree relations introduced by the agreement suffix and the suffix on the possessum N. This analysis is illustrated below for the possessive phrase *mamina kniga* 'mother's book':

(18)
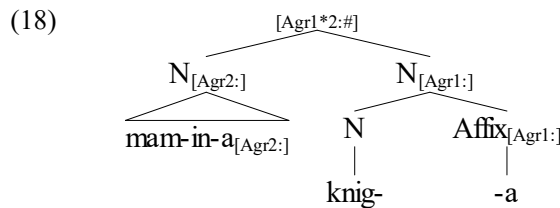
Again, because the dependency between the possessor and possessum is established through Agree (though this time through function identification rather than satisfaction), categorial projection of N to the topmost node is not required to license this dependency, and thus the possessor is free to move without violating the PIC. This accounts for examples such as (15) in Russian, which are also possible in other languages with such agreement, including most of the other Slavic languages (we return to the exceptions in §3.2 below), as well as Hindi (Mahajan 1992; Roberts 2000:118), Bangla (Priyanka Biswas p.c.), Punjabi (Rajvir Kaur p.c.) and Chichewa (Morimoto and Mchombo 2004:355).[33] Examples from Hindi and Chichewa are given below, where the agreeing elements are underlined:

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[33] Huallaga Quechua appears to make use of agreement in both directions in possessor-extraction (Assmann 2014). Possessors trigger number agreement on the possessum, and in addition undergo 'case-stacking' when (and only when) extracted. It is not clear to me why both types of agreement should be able to occur in a single

(19) a. Kis-<u>kii</u>ᵢ tum-ne [*t*ᵢ <u>kitaab</u>] paRh-ii thii?
 who-GEN.F.SG you-ERG book.F.SG read-PERF.F.SG PAST
 'Whose book had you read?' (Roberts 2000:118, via Rajesh Bhatt p.c.)

 b. <u>Chá</u> kazitápé anyaní á mísala a-ku-chí-pwány-a <u>chipanda</u>.
 7ASSOC 1-spy 2-baboon 2ASSOC 4-madness 2-PRES-smash-FV 7-calabash
 'The mad baboons are smashing the calabash of the spy.' (Morimoto and Mchombo 2004:355)

The analysis of Russian prenominal possessors in (18) makes a further prediction. Because the interpretative link between the possessor and possessum is established through function identification of Agree selectors originating in each, we expect that not just the possessor, but also the possessum, must potentially bear overt morphology of the relevant type. This is because of the assumption stated above that Agree is only postulated where there is at least some overt evidence in the language of the relevant agreement relation. Indeed, in most of the languages mentioned above, the possessum potentially bears an overt suffix encoding its phi-features and/or case. In Hindi and Punjabi, nouns may bear a suffix encoding gender, number and case (e.g., Shackle 2003:600-601; Kachru 2006:43ff.). In Chichewa, as in other Bantu languages, nouns bear a prefix encoding noun class and number (e.g., Mchombo 2004:6).[34]

 Perhaps the major prediction of the proposal is that there should exist no languages without overt possessor agreement that also allow xNP-extraction from xNP, as indeed appears to be the case in general. Besides the languages that have been discussed so far (English, Imbabura Quechua and Mandarin Chinese), this is true of Finnish (Franks 2007), German (Gavruseva 2000:745), Hebrew (Borer 1988:52), Icelandic (Webelhuth 1992), Irish (Duffield 1995:170ff), Korean (Nikolaeva 2002), Levantine Arabic (Hoyt 2010:71) and Welsh (Borsley et al. 2007:59).[35] Furthermore, 'linker phrases'

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language, but it may be that case-stacking is the type of agreement licensing possessor-extraction in this language, while agreement on the possessor has no interpretative import here; cf. footnote 54 on Finnish.

[34] The potentially problematic case here is Bangla, in which nouns do not bear suffixes encoding gender or number. Instead, the singular/plural distinction is encoded in terms of 'classifiers' that have been argued to be functional heads in xNP rather than affixes on N (e.g., Bhattacharya 1998). I must leave this as an open question.

[35] Some of these languages (e.g., Irish) do allow apparent possessor-extraction with the use of a resumptive pronoun in the possessum, but these are normally taken to involve base-generation rather than true extraction (e.g., McCloskey 1990; Duffield 1995). Mandarin Chinese, too, has apparent cases of possessor-extraction, but these are also arguably base-generated (see, e.g., Huang et al. 2009:142). Although Hsu (2009) claims that Mandarin has genuine possessor-extraction, qua movement, the arguments given seem inconclusive. Examples such as (ia), with apparent violation of a subject island, are possible. Yet Hsu uses examples such as (ib-c) as evidence for movement, treating them as violations of the Coordinate Structure Constraint and the Complex NP Constraint respectively (examples from Hsu 2009:96–97):

(i) a. Zhangsan xianran baba hen youqian.
 Zhangsan obviously father very rich
 'Zhangsan, obviously his father is very rich.'

 b. * Zhangsan xianran baba he Lisi baba dou hen youqian.
 Zhangsan obviously father and Lisi father all very rich
 'Zhangsan, obviously his father and Lisi's father are very rich.'

 c. * Zhangsan xianran baba xie de shu dou mai de hen hao.
 Zhangsan obviously father writeLNK book all buy DE very good
 'Zhangsan, obviously the books that his father wrote all sell very well.'

Such a pattern suggests that this may be a true 'external possession' structure that is base-generated (see the discussion in the main text below, and also Vermeulen 2005:71–72, where the same problem is noted for Japanese). As for why possessor 'extraction' from objects also shows sensitivity to the CSC and the CNPC, one

in languages such as Pashto (Roberts 2000:119), Persian (Samvelian 2006) and Sorani Kurdish (Yadgar Karimi p.c.) also cannot be extracted from xNP. Given the view that linkers are D elements (e.g., Franco et al. 2015), this can also be subsumed under the generalisation that extraction of xNP from xNP requires overt agreement.

Despite the strong evidence for a connection between agreement and extraction, there are certain cases in which it appears to break down. First, consider the phenomenon known as 'external possession', a subcase of 'possessor-extraction' that has given rise to a large literature in its own right. In contrast to the examples of possessor-extraction that we have seen so far, in which the possessor moves to a left-peripheral A´-position, external possession involves a possessor that appears to function as an argument of the matrix verb, giving the appearance of A-extraction.[36] In French, for example, external possessors are assigned dative case, the case normally assigned by V to indirect objects, rather than appearing in the agreeing possessive form characteristic of internal possessors, as in (20b) (examples from Deal 2017):

(20) a.   Je lui   ai   coupé les cheveux.
              I   DAT.3SG have cut   the hair
      b.   J'ai   coupé ses cheveux.
              I-have   cut   his hair
              Both: 'I cut his hair.'

The fact that there is no agreement between the possessor and the possessum in (20a) would pose a serious problem for the present analysis if the possessor could be shown to have moved from a position internal to the possessum's extended projection. Even though the possessor might not need to be dominated by a projection of the possessum for case reasons, as it is case-licensed by the verb, it might be expected to be generated NP-internally in order to be theta-marked by the possessum. In that case, extraction should be prevented by the PIC. The present analysis is therefore incompatible with 'raising' analyses of external possession in which the possessor originates within the projection of the

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possibility is that this is because they violate Huang's (1989) Generalised Control Rule – see especially Li (2014), who argues that subject *pro* is subject to the GCR (requiring it to take the closest c-commanding nominal as its antecedent), but object *pro* is not. If possessive *pro* is more like subject *pro*, this would account for most of Hsu's 'island-violation' cases. The exception is (iib), to be contrasted with the acceptable (iia) (Hsu 2009:95):

(ii) a.   ?* Zhangsan wo   renshi baba.
              Zhangsan I   know father
      b.   Na zhi tuzi   wo   mingming kanjian le   erduo!
              that CL rabbit I   obviously   see   PERF ear

Hsu attributes the difference to an information-structural restriction, but another possibility is that (iia) represents a *pro*-possessor structure violating the GCR, while (iib) simply involves an 'inferential' relation between a base-generated topic and an NP. Note in this connection that English shows a similar kind of contrast between the following examples:

(iii) a.   * As for John, I saw the father.
       b.   As for the rabbit, I saw the ears!

More research is needed, however, to determine whether this analysis can be maintained.

[36] For example, Payne and Barshi (1999:3) use the term 'external possession' to describe "[c]onstructions in which a semantic possessor-possessum relation is expressed by coding the possessor as a core grammatical relation of the verb and in a constituent separate from that which contains the possessum", and Deal (2017) describes external possession as "a phenomenon where a nominal is syntactically encoded as a verbal dependent but semantically understood as the possessor of one of its co-arguments."

possessum and moves to a possessum-external position.[37] Such analyses typically cite locality restrictions on the relation between the possessor and possessum as the main evidence for movement. For example, Landau (1999) and Lee-Schoenfeld (2006) show that external possessors in Hebrew and German respectively must not be separated from their possessum by a clause or DP boundary:

(21)   a.   *Jan hat Luise   beschlossen, [CP die Haare zu waschen].
             Jan has Luise.DAT decided   the hair   to wash
             'Jan decided to wash Luise's hair.' (Lee-Schoenfeld 2006:116)
       b.   Tim   pflegte Lena   [DP das   Fohlen [DP der   Stute]] gesund.
             Tim   treated Lena.DAT the.ACC   foal   the.GEN mare   healthy
             'Tim cured the mare's foal which belongs to Lena.' (not: 'the foal of Lena's mare')
             (ibid.:113)

Yet facts such as these do not provide unambiguous support for a movement analysis. Proponents of raising analyses assume that the possessor must be thematically licensed within the possessum, which is not obviously the case. An alternative is to take the possession relation to be mediated by a functional head in the matrix clause, as in Pylkkänen's (2008) 'low applicative' analysis of external possession. Such an analysis accounts straightforwardly for the locality restrictions in (21): if the possessor and possessum must be specifier and complement of the applicative head (Appl) respectively, it follows that they cannot be separated by a category boundary other than a projection of Appl.[38] Similarly, the locality conditions that Deal (2013) observes for external possession in Nez Perce, which she takes to be evidence for movement, equally follow from a matrix functional head analysis. Consider first the fact that (22), in which *Angel* is the external possessor and triggers agreement on the verb, can only be interpreted with *Angel* as the possessor of the closest DP it c-commands, *pike* 'mother':

(22)   'ew-'nii-yey'-se-0   Angel-ne   pike   taaqmaał.
       3OBJ-give-μ-IMPERF-PRES Angel-OBJ   mother.NOM   hat.NOM
       'I'm giving Angel's mother a hat.' / '*I'm giving a/the mother Angel's hat.' (Deal 2013:403)

Deal interprets this as evidence that *Angel* has undergone possessor raising out of the DP headed by *pike*, triggered by the verbal probe that agrees with it. If *Angel* instead moved out of the DP headed by *taaqmaał* 'hat', Deal argues, this would violate relativised minimality. While this reasoning seems correct, it presupposes that the possessor must have originated inside the possessum DP for thematic reasons, which is not the case if possession is mediated by a matrix functional head. Deal's second locality argument is based on a set of 'synthetic possessive markers' in Deal that only appear with kinship terms. She argues that these occur in a parallel position to *of*-genitives in English, the complement position of N. If this is correct, and if they are DPs as Deal claims, then the present analysis straightforwardly accounts for the impossibility of extracting these possessors: the DP possessor cannot be extracted out of the DP possessum, by the PIC.[39] While this brief discussion

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[37] Raising analyses of external possession include Aissen (1979), Munro (1984), Davies (1986), Keach and Rochemont (1994), Landau (1999), Lee-Schoenfeld (2006), Rodrigues (2010) and Deal (2013). Base-generation analyses include Guéron (1985), Hole (2005), Vermeulen (2005), Shklovsky (2012) and É. Kiss (2014).

[38] There is one apparent problem for this analysis: that dative possessors in Hebrew can apparently be related to a DP inside an (argument) PP (Landau 1999). As Pylkkänen notes, though, it is not obvious that these really involve external possession.

[39] What is not immediately obvious under the suggested analysis is how to account for cross-linguistic variation in whether external possessors must be interpreted as 'affected' (in particular, whether they must be positively

certainly does not resolve all of the outstanding questions about external possession (see Deal 2017 for in-depth discussion), my intention here has been to show that the lack of agreement between possessor and possessum in external possessor constructions does not present a clear counterexample to the present proposal.

A second type of apparent counterexample comes from the Germanic languages that allow 'possessor-doubling', illustrated by Dutch and German in (23):[40]

(23) a. de   jongen z'n   fiets   [Dutch]
          the   boy   his   bicycle
          'the boy's bicycle' (Gavruseva 2000:762)

      b. dem   Jungen   sein   Fahrrad   [German]
          the.DAT.SG boy-DAT.SG   his.NOM.SG   bicycle
          'the boy's bicycle'

Notably, even though the possessive pronoun agrees in gender and number with the lexical possessor, which is arguably xNP-peripheral in the relevant sense (e.g., Gavruseva 2000), the possessor cannot be extracted, as shown in (24):

(24) a. *Wie$_i$ heb je   [$_{DP}$ t_i d'r fiets] gestolen?   [Dutch]
          who   have you   her bike stolen
          'Whose bike have you stolen?' (Haegeman 2004:212)

      b. *Wem$_i$ hast du   [$_{DP}$ t_i sein Fahrrad] gestohlen? [German]
          who.DAT have you   his bike   stolen
          'Whose bike have you stolen?'

In fact, given plausible assumptions about the structure of possessor-doubling constructions, possessor-extraction is expected to be impossible in this case. Unlike in Hungarian possessives, the noun itself does not bear an agreeing affix. Rather, assuming that possessive pronouns in Germanic are determiners (Alexiadou et al. 2007:567 and references cited there), it is D that agrees with the possessor. If the possessor must be NP-internal, this entails that possessive pronouns must be accompanied by a possessor xNP that merges with N, satisfying its optional theta-selector.[41] For example, (23a) might have the underlying structure in (25a). In order to satisfy the second c-selector of D, the full DP *de jongen* moves to SpecDP as in (25b):

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or negatively mentally affected by the matrix event; Haspelmath 1999). Deal notes, following Haspelmath, that the majority of external possession languages studied require external possessors to be 'affected', but that there exist some languages that do not, including Nez Perce, Tzotzil (Aissen 1979), Sierra Popoluca (Marlett 1986), Choctaw (Munro 1984; Davies 1986:ch. 3) and Chickasaw (Munro 1984). (Deal also mentions Malagasy as a potential case, citing Keenan and Ralalaoherivony 2001, but these authors claim that the external possessor must be affected in Malagasy.) Interestingly, in all of these languages, the external possessor triggers agreement on the matrix predicate. It is not clear to me at the moment how to account for this correlation, if it proves to be empirically robust. (Note, though, that the reverse implication does not seem to hold: Swahili is a language in which external possessors trigger matrix agreement, but are subject to an affectedness requirement; Deal 2017.)

[40] The German examples in (23b) and (24b) are due to an anonymous reviewer of this paper.

[41] I assume that, in the absence of a 'full' possessor, it is *pro* that merges with N.

(25) a.

D[Agr:, N:N, R:D]
  D[Agr:, N:]   N[R:, Poss:2]
     z'n   N[R:, Poss:]   D₂
              fiets   de jongen

b.

D[Agr:2, N:N]
  D₂   D[Agr:, N:N, R:D]
 de jongen   D[Agr:, N:]   N[R:, Poss:2]
              z'n   N[R:, Poss:]   t₂
                       fiets
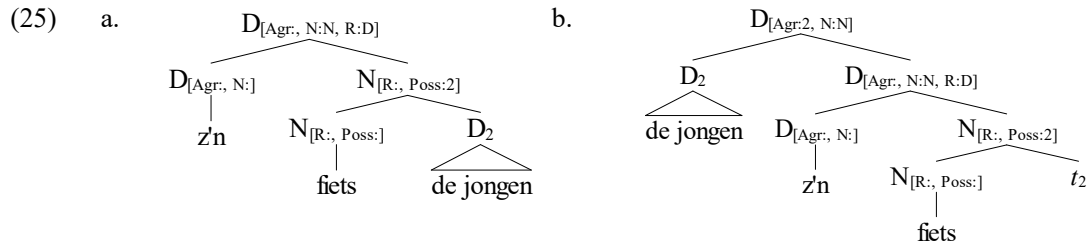
Possessor-doubling in Dutch and German thus has essentially the same structure as English Saxon genitives, with the difference that the possessive determiner licenses the possessor via Agree rather than via c-selection. However, because the possessor must have originated in NP to obtain its possessor interpretation, it cannot move to an adjoined position outside xNP, by the PIC. (I assume that D projects in (25b) as a last resort to permit the possessor to satisfy D's Agr selector without violating the PIC.) Thus, a construction that at first sight looks to be a counterexample to the proposal turns out to behave as expected.[42]

3.2. Agreement is insufficient: The role of peripherality

While the present analysis predicts that (potentially) overt agreement is a necessary condition for xNP-extraction from xNP, it does not predict that it is a sufficient condition. This is because agreement may potentially hold between an xNP α and a possessor or AP contained within α's extended projection. In this case, regardless of the presence of agreement, extraction should be blocked by the PIC. This situation can be illustrated by the contrast between dative and nominative possessors in Hungarian: dative possessors, which necessarily precede the definite determiner of the possessum, may be extracted, while nominative possessors, which necessarily follow the definite determiner (if it occurs), cannot be extracted:[43]

---

[42] Another potentially more difficult case comes from the Uto-Aztecan language Northern Paiute. Toosarvandani (2014) observes that genitive possessors can be extracted in this language, giving the example in (i):

(i)   Hagaᵢ   ɨɨ   [DP tᵢ kaadzi] pisapi?
         who.GEN 2SG.NOM   car   like.DUR
         'Whose car do you like?' (Toosarvandani 2014:801)

Notably, there is no overt agreement between the possessor and possessum in this case. One possibility that could be considered is that (i) involves a possessor of the Russian type, but with covert agreement. (This is consistent with the fact that Northern Paiute appears to lack true articles, which would make it an NP-language, potentially allowing extraction of agreeing possessors.) As Toosarvandani also notes, there is a kind of agreement between A and N in Northern Paiute, such that A bears the case suffix that might be expected to appear on N (here, nominative, as the possessive functions as a subject):

(ii)   [[Miitsi-'yu nana] dua] habi-hu.
         short-NOM   man   son   lie-PFV
         'The short man's son fell down.' (Toosarvandani 2014:799)

One possibility, then, is that possessors are also subject to this kind of 'case agreement', but that Northern Paiute only allows one of the two case suffixes to be overtly expressed. Of course, more research is needed to check whether this is a viable analysis.

[43] I am following Szabolcsi (1983/84; 1994) in taking the possessor in (26a) to be nominative, as it generally appears in the same form as subjects of clauses. There are alternative views in the literature – for example, Chisarik and Payne (2003) argue that these possessors bear a 'new genitive' case, and Dékány (2011) argues that they are caseless – but the question of which is correct does not affect the argumentation here.

(26)   a.   (a) Mari   kalap-ja
               the Mari.NOM hat-POSS.3SG
               'Mari's hat'
       b.   *Mari$_i$ fekete   volt   [a t_i kalapja].
               Mari.NOM black   was   the   hat:POSS.3SG:NOM
               'Mari's hat was black.' (Szabolcsi 1994:180)

Assuming that APs are universally generated lower than D in DP languages, this account extends to the ban on AP-extraction in Hungarian. For example, in (4c) above the AP *magasakat* agrees in number and case with the head N *lányokat*, but extraction of the AP is impossible. Under the present proposal, this is because extraction must take place from a position dominated by DP, as shown in (27a) below. In order for this analysis to work, however, it is important to ensure that it is not possible for an agreeing AP in Hungarian to be generated as an adjunct to the DP with which it agrees and linked to the head noun via Agree, as in (27b):

(27)   a.

       b.
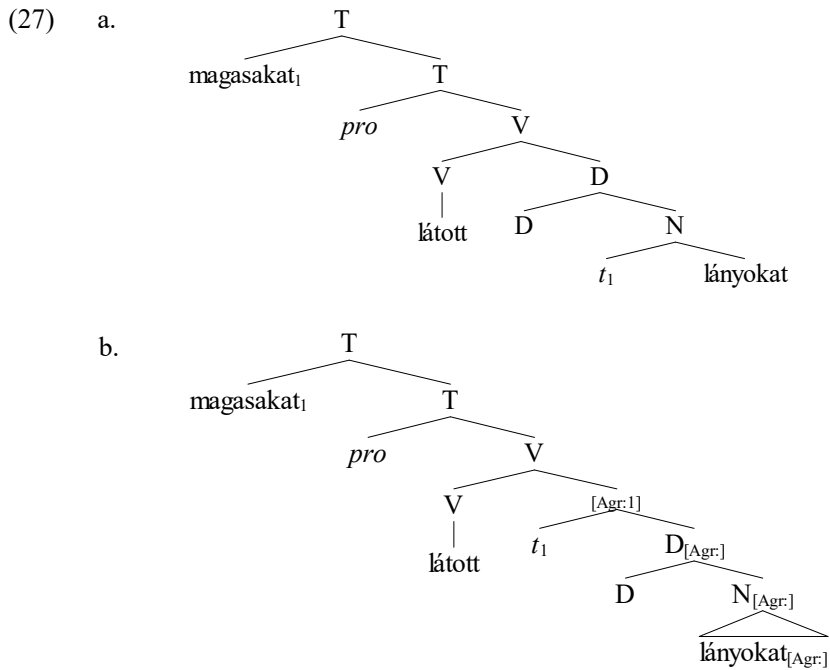
If (27b) were a possible structure, the AP would incorrectly be predicted to be extractable. In fact, however, it should be impossible to generate this structure if agreeing APs introduce an Agree selector, as argued in §3.1 (following Franco et al. 2015). In order for the AP to be interpreted as an attributive modifier, the Agree selector that it introduces must undergo function identification with the Agree selector of the head N, so that the resulting 'identified' selector can be satisfied by D. For this to be possible, however, the AP must be generated in a position c-commanded by this D, given that Inclusiveness only permits upward percolation of selectors. Thus, in (27b) N's Agree selector will be satisfied by D before it ever reaches a position where it could undergo function identification with A's Agree selector. The analysis, then, shares the prediction of Bošković (2005) that attributive APs will never be extractable in DP languages, regardless of whether they agree with the head N. I do not know of any counterexamples to this prediction. An interesting consequence of the present analysis, then, is that it renders redundant Bošković's anti-locality-based explanation of this generalisation,

which simply follows here from the requirement for attributive AP to be generated lower than D, the PIC and the lack of an escape hatch in xNP. Given the stipulative nature of the anti-locality condition – for example, why should crossing an adjunction segment, but not a category, be permitted? – this seems a desirable result.

The account also extends to agreeing possessors. As we have seen, Russian – by hypothesis an NP language – permits extraction of agreeing possessors and APs. By contrast, Bulgarian and Macedonian lack AP-extraction, as shown for Bulgarian in (28a) (Bošković 2005:3; though see Fanselow and Féry 2013 for some qualifications to this claim), and Bulgarian also lacks possessor-extraction, as shown in (28b):[44]

(28) a.   *Novata$_i$ prodade Petko [t_i kola].
           new:the sold   Petko   car
           'The new car, Petko sold.' (Bošković 2005:3)
      b.   *Čija$_i$ xaresvaš [t_i kola]?
           whose:F.SG like:2SG   car:F.SG
           'Whose car do you like?' (Margarita Dimitrovna p.c.)

This is expected given that Bulgarian and Macedonian have developed definite articles, and should thus be considered DP languages (Bošković 2005; 2008; 2012). By the same reasoning used above for APs, agreeing possessors are attributive modifiers and hence must be generated below D. Examples such as (28) thus involve movement out of DP, violating the PIC.

The analysis also makes an interesting prediction about extraction of phrases introduced by agreeing 'linkers' (henceforth *linker phrases* or *LPs*) in languages such as Hindi, Pashto, Albanian and Romanian. Franco et al. (2015) provide evidence that linkers are D elements rather than prepositions. Given this, we expect that an LP will only be extractable from an xNP that it modifies if (i) the linker bears overt agreement with the possessum, and (ii) the LP occurs outside all projections of the possessum. The agreement condition can be illustrated by comparing the Indic languages Hindi and Pashto, both of which lack articles and can hence be treated as NP languages.[45] Furthermore, possessors in both languages are accompanied by linkers. They differ, however, in that linkers in Hindi show overt agreement with the possessum, while the linker in Pashto is invariant. Under the present proposal, then, we expect that Hindi will pattern with Russian, allowing possessor-extraction, while Pashto will pattern with Mandarin, disallowing possessor-extraction. As Roberts (2000) shows, this is correct:

(29) a.   Kis-kii$_i$ tum-ne   [t_i kitaab]   paRh-ii   thii?
           who-GEN.F.SG you-ERG   book.F.SG read-PERF.F.SG PAST
           'Whose book had you read?' (ibid.:118)
      b.   *[De tsha]$_i$ taa   [t_i kitab] pe ashpazkhana   kee we   lwest?
           POSS who.OBL 2SG.OBL   book   in kitchen   in   PERF read.PAST.3SG
           'Whose book did you read in the kitchen?' (loc. cit.)

---

[44] I have not been able to check the prediction about possessor-extraction for Macedonian. Note that the proposal specifically refers to extraction of xNP and xAP (leaving aside xPP for the time being). For example, extraction of PP possessors is possible in Bulgarian (e.g., Dimitrova-Vulchanova and Giusti 1998). For more discussion of PP-extraction from xNP, see §4.

[45] Note that Pashto and Hindi are classified as NP languages even though linkers are Ds (cf. the discussion of demonstratives in Russian in §3.3). A 'DP language', then, is one in which *every* extended projection of N contains D. (See also footnote 25.)

The underlying structures for the relevant NPs are given below:

(30)   a.

$N_{[Agr1*2:\#]}$
- $D_{[Agr2:]}$
  - N
    - kis
  - $D_{[Agr2:]}$
    - -kii
- $N_{[Agr1:]}$
  - kitaab

b.

$N_{[D:1]}$
- D_1
  - D
    - de
  - N
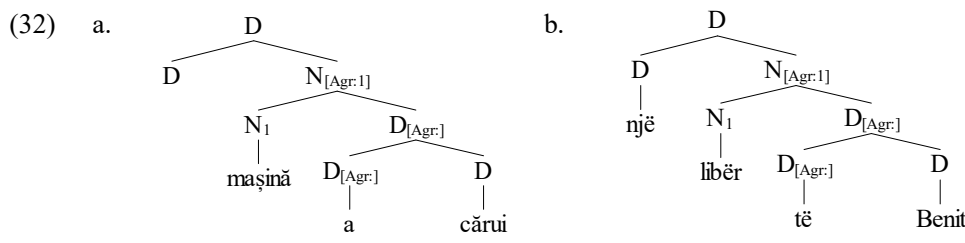   - tsha
- $N_{[D:]}$
  - kitab
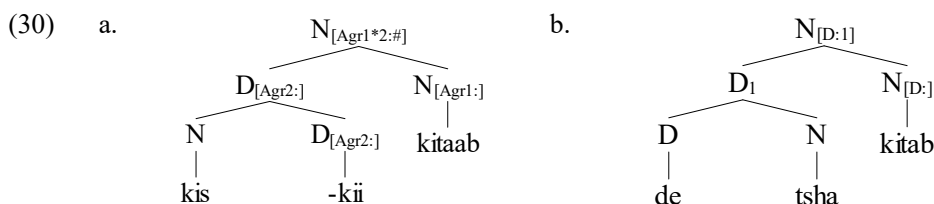
The difference between the two languages thus reduces to whether the possessor LP (a DP) is licensed via percolation of an Agree selector (Hindi) or by percolation of the possessum N's c-selector (Pashto).

   In NP languages, the possibility of extraction is normally determined by agreement alone. In article (DP) languages, on the other hand, we expect the peripherality condition to apply. Consider, for example, Albanian and Romanian, which both have articles, and in which possessors are accompanied by a linker. In Albanian, possessors are always preceded by a linker that agrees with the possessum for gender, number, case and definiteness (Campos 2009). In Romanian, possessors are preceded by a linker only when not immediately preceded by the possessum N; this linker agrees with the possessum for gender and number (Giurgea and Dobrovie-Sorin 2013). Given that agreeing possessors are attributive modifiers, we expect LPs in both languages to be generated below D. Thus, even though the LPs satisfy the agreement condition, they fail the peripherality condition, and extraction of LP should be ruled out. This seems to be correct. The ban on extraction is particularly clear in Romanian: examples such as (31a) are simply ungrammatical. In Albanian, by contrast, examples such as (31b) are possible. However, a native speaker reports concerning this example that "the indefinite feels like an afterthought/extraposition of sorts (hence the comma)" (Dalina Kallulli p.c.). It is therefore likely that we are not dealing here with true extraction of the linker phrase:[46]

(31)   a.   *[A   cărui]ᵢ iti   place   [tᵢ mașină   tᵢ]?
             al.FSG whose you.DAT please   car(FSG)
             '*Whose do you like car?' (Ion Giurgea, Mihaela Marchis Moreno p.c.)
       b.   Të   Benit   lexova, një libër.
             LNK.ACC.MSG.INDEF   Ben:GEN   I.read a   book
             'A book of Ben's, I read.' (Dalina Kallulli p.c.)

The structures of the relevant DPs are given below:[47]

(32)   a.

D
- D
- $N_{[Agr:1]}$
  - N_1
    - mașină
  - $D_{[Agr:]}$
    - $D_{[Agr:]}$
      - a
    - D
      - cărui

b.

D
- D
  - një
- $N_{[Agr:1]}$
  - N_1
    - libër
  - $D_{[Agr:]}$
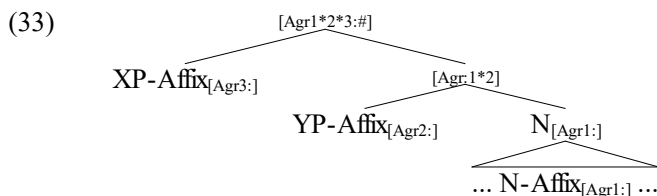   - $D_{[Agr:]}$
      - të
    - D
      - Benit

---

[46] This, of course, raises the question of how agreement arises on the linker if it is never attached to the possessum. The most plausible reason is that a linker phrase such as *të Benit* can involve an elliptical possessor, as such phrases can stand alone without an overt possessor (Dalina Kallulli p.c.).

[47] Note that interrogative possessors in Romanian surface to the left of the possessum. I assume that the structure of such possessives is similar to that of English Saxon genitives, with movement of the possessor to SpecDP of the possessum – see (9) above.

In conclusion, there seems to be good evidence, beyond the well-known distinction between dative and nominative possessors in Hungarian, for the peripherality condition imposed by the present analysis.

3.3. Peripherality is not absolute: The case of Slavic

It was argued in §2 that only possessors that can independently occur peripherally can be extracted. The explanation for this under the present analysis is that a possessor can move 'out' of xNP by adjoining to the highest projection of xNP, because only in this position is the possessor not dominated by any categorial labels of xNP. In fact, the analysis imposes a subtler notion of peripherality than simply the ability to appear to the left (or right) of all elements belonging to xNP. Given that more than one dependent of xNP can agree with the head noun, it should be possible for more than one dependent to adjoin to the same xNP, as schematised in (33):

(33)

```
                    [Agr1*2*3:#]
              _____|_____
             |             |
   XP-Affix[Agr3:]      [Agr:1*2]
                      ____|____
                     |         |
            YP-Affix[Agr2:]   N[Agr1:]
                             ___|___
                            |       |
                      ... N-Affix[Agr1:] ...
```

Suppose that YP is a possessor and XP is a modifier that must precede possessors. If both XP and YP agree with N, then each of XP, YP and N should bear an affix that introduces an Agree selector. In order to obtain the attributive interpretation of XP and YP, these Agree selectors must then percolate upwards and undergo function identification, eventually giving rise to a single 'identified' selector, Agr1*2*3 in (33), which is either satisfied by D (in a DP language) or by default (in an NP language, as in (33)). Now, if Agree is responsible for ensuring the attributive interpretations of XP and YP, then categorial projection of N should not be required, as the only purposes this serves under the present analysis are (i) c-selection and (ii) internal theta-marking. In other words, XP and YP should both be immediately dominated by an unlabelled node, and the PIC should thus not prevent extraction of either element, even the non-peripheral possessor.

Because possessors quite often precede modifiers of N, this prediction is quite difficult to test, but Russian provides one clear case in which it is borne out. The evidence involves certain intricate properties of Russian numerals; in particular, the fact that certain numerals both agree with N and determine the case of N and any dependents of N that they c-command. For example, the numeral *dva* 'two' both agrees in gender with its head N and requires N to occur in a particular form that Rappaport (2002) terms the 'paucal case', which is normally identical to the genitive singular. In addition, any dependents of N c-commanded by *dva* must occur in the genitive plural form. These properties are illustrated in (34a) (see, e.g., Corbett 1993; Rappaport 2002; Pesetsky 2013 for more in-depth discussion). Of particular relevance here is that a possessor may either follow or precede a numeral. If the possessor follows the numeral, then the possessor appears in the genitive plural form, as in (34a). If the possessor precedes the numeral, then the possessor's case is determined by the syntactic context in which the xNP as a whole occurs, as in (34b), which illustrates default nominative:[48]

(34)   a.   dva   Sašinyx   korotkix   romana
            two.M   Sasha:POSS:GEN.MPL   short:GEN.MPL   novel:PAUC
            'two of Sasha's short novels'
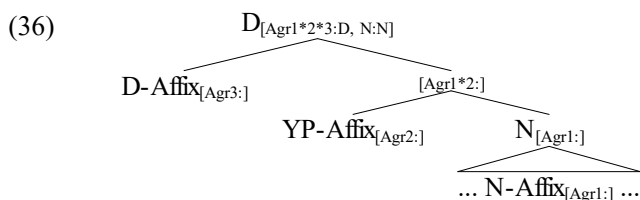
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[48] The examples in (34) and (35), and in footnote 49, are due to Elena Titov (p.c.).

b.   Sašiny   dva   korotkix   romana
      Sasha:POSS:NOM.MPL two.M   short:GEN.MPL   novel:PAUC
      'Sasha's two short novels'

(34) thus provides us with concrete examples of the abstract structure in (33) (leaving the adjective *korotkix* aside). Crucially, although the possessor may either precede or follow the numeral, we can use the case form of the possessor as a diagnostic for its launching site (pre- vs. post-numeral) when it undergoes extraction. The present analysis predicts that the possessor should be extractable from either position, and this is the case, as shown in (35):[49]

(35)   a.   Sašinyx$_i$ ja pročital [dva t_i korotkix   romana].
            Sasha:POSS:GEN.MPL I read   two.M   short:GEN.MPL novel:PAUC
    b.   Sašiny$_i$ ja pročital [t_i dva   korotkix   romana].
            Sasha:POSS:ACC.MPL I read   two.M short:GEN.MPL novel:PAUC
        'I read {a. two of Sasha's short novels / b. Sasha's two short novels}.'

This does not mean that we predict complete freedom of extraction for dependents of N in Russian. For example, if there is an independent reason why an XP that agrees with N must project its categorial feature to the dominating node, we predict that extraction of a lower agreeing YP should be impossible, as this would involve extraction out of xNP. For example, we might expect that, while agreeing phrases dependent on N do not block extraction of a lower possessor, phrases that belong to the extended projection of N should block such extraction. Indeed, the basic assumption behind the DP hypothesis – that D c-selects for N – entails under present assumptions that D projects its categorial feature to the dominating node. Thus, any lower elements cannot be extracted, by the PIC. Importantly, this ban should hold even when both D and the potential extractee agree with N, a situation illustrated in (36):

(36)
               D$_{[Agr1*2*3:D, N:N]}$
    D-Affix$_{[Agr3:]}$ [Agr1*2:]
           YP-Affix$_{[Agr2:]}$ N$_{[Agr1:]}$
                  ... N-Affix$_{[Agr1:]}$ ...

Interestingly, even Russian shows an analogue of this situation, namely when xNP is introduced by a demonstrative or occurs in a PP (e.g., Sekerina 1997; Pereltsvaig 2008b). For example, Pereltsvaig (2008b) reports that examples such as (37) are rejected even in colloquial Russian, which is much more tolerant of extraction than the standard language (see Kariaeva 2009 for similar observations from Ukrainian):

(37)   a.   * A ručka vas   ustroit ÈTA?
           and pen   you.DAT will.suit this
           'Well, will THIS pen satisfy you?' (Pereltsvaig 2008b:35)

---

[49] As predicted, the numeral or the AP can be extracted too:

(i)   a.   Dva$_i$ ja pročital [t_i Sašinyx   korotkix   romana].
             two.M I read   Sasha:POSS:GEN.MPL short:GEN.MPL novel:PAUC
    b.   Korotkix$_i$ ja pročital [dva Sašinyx t_i romana].
             short:GEN.MPL I read   two Sasha:POSS:GEN.MPL novel:PAUC

b.   *Novoj$_i$ my poexali [po t_i doroge].
       new   we   went   on   road
   'We went on the new road.' (ibid.:33)

As Pereltsvaig acknowledges, the analysis that she advocates, a variant of Fanselow and Ćavar's (2002) 'scattered deletion' analysis, cannot account for this restriction (cf. Bošković 2005; Stjepanović 2010; 2012 for arguments against scattered deletion as an alternative to 'direct extraction'). On the other hand, the ban follows straightforwardly under present assumptions if D and P are heads that c-select their sisters and hence obligatorily project.

3.4. Locality: Deep extraction

Finally, the present analysis accounts for the possibility of what Bošković (2012) calls 'deep left-branch extraction' – extraction of the possessor of a possessor – in Hungarian and Slavic. First, consider how the examples in (38a,b), illustrating embedded possession in Hungarian and Serbo-Croatian respectively, would be analysed under the present proposal:[50]

(38)   a.   [[Hannanak [a   babainak]]   [a   ruhait]].   [Hungarian]
                Hanna:DAT the   dolls:POSS:DAT the   clothes:POSS:ACC:3SG
                'Hanna's dolls' clothes' (Kriszta Szendrői p.c.)
     b.   [[čije   tetke]   kumu]   [Serbo-Croatian]
                whose   aunts   stepmother
                'whose aunts' stepmother' (Fanselow and Féry 2013)

In Hungarian (38a), the head of the 'higher' possessor *babainak* is referenced by the possessive affix on *ruhait*, licensing adjunction of the 'higher' possessor *Hannanak a babainak*. Then, within this possessor, the embedded possessor *Hannanak* is referenced by the possessive affix on *babainak*, licensing adjunction of the embedded possessor to the DP *a babainak*. This leads us to the structure in (39a), in which *ruhait* introduces an Agree selector satisfied by *Hannanak a babainak*, and *babainak* introduces an Agree selector satisfied by *Hannanak*. The Serbo-Croatian example (38b) is similar, except that the possessors also introduce Agree selectors, which subsequently undergo function identification with that of N in the relevant nodes, as in (39b):[51]

(39)   a.

       b.
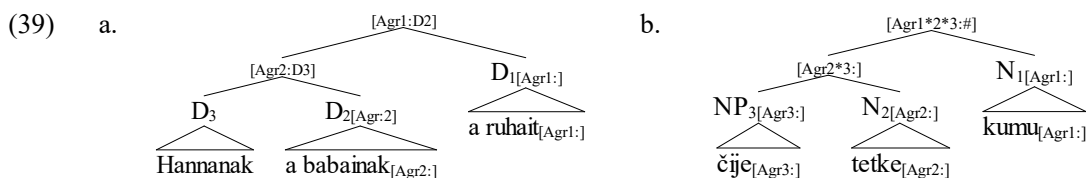
Given these structures, it should be possible to extract the embedded possessor, *Hannanak* in (39a), or *čije* in (39b), as it is not dominated by a categorial label of either the 'higher' possessor or the possessum. This is correct, as shown in (40a-b). Examples from Turkish, an agreeing-possessum

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[50] I choose Serbo-Croatian here as an exemplar of Slavic NP languages, as, although its extraction profile is otherwise very similar to that of Russian, Russian does not seem to allow recursive possessives of the type in (38b), preferring to use post-nominal genitives instead (Elena Titov p.c.).

[51] I assume, in response to a reviewer's query, that the Adjunct Condition does not block extraction of DP$_3$/NP$_3$, as this phrase is not contained in the projection of the adjunct itself, but it is difficult to give empirical support for this assumption as compared with the alternative that adjunction itself produces a structure that cannot be extracted from.

language, and Hindi, an agreeing-possessor language, are provided in (40c-d) respectively to show that this phenomenon is not limited to Hungarian and Serbo-Croatian:

(40) a. Hannanak$_i$ megláttam   [[t_i [a babainak]]   [a ruhait]].   [Hun.]
       Hanna:DAT PRT:I.saw   the dolls:POSS:DAT the clothes:POSS:ACC:3SG
       'Hanna, I saw her dolls' clothes.' (Kriszta Szendrői p.c.)

      b. Čije$_i$ si   video [[t_i tetke] kumu]?   [SC]
       whose you.are seen   aunts stepmother
       'Whose aunts' stepmother did you see?' (Fanselow and Féry 2013)

      c. Ali-in$_i$ anne-m [[t_i ev-i-nin]   salon-u-nu]   temizle-miş?
       Ali-3GEN mother-1POSS house-3POSS-3GEN living.room-3POSS-ACC clean-EVD
       'Ali, my mother has cleaned his house's living room.' (Güliz Günes p.c.)

      d. Kis-kii$_i$ tum socte ho ki [[t_i maaN kii]   kitaab]   corii ho gayii?
       who-GEN.F.SG you think   that   mother GEN.F.SG book.F.SG stolen was
       'Whose mother's book do you think was stolen?' (Anoop Mahajan p.c.)

Once again, it is worth considering whether there are any situations in which deep LBE should be ruled out. One such situation is where the 'higher' dependent of N fails to agree with N. In this case, by hypothesis, the dependent must be formally licensed through c-selection by N. As a result, this dependent and any of its own dependents should be trapped inside xNP, by the PIC. Consider, for example, Serbo-Croatian embedded possessives of the type in (41a), in which the 'higher' possessor is a post-nominal genitive. Given that c-selection involves percolation of the c-selector's categorial feature (here, N), (41a) will have the structure in (41b) (I assume that genitive case represents the K category, and that c-selection for genitive is thus c-selection of K; cf. Bittner and Hale 1996):

(41) a. [prijatelj [čije majke]]
       friend.NOM whose mother.GEN
       'a friend of whose mother'

      b.

Therefore, both the 'higher' possessor *čije majke* and the embedded possessor *majke* are dominated by a label of the 'higher' possessum's xNP, and the PIC should prevent extraction of either. Indeed, it has been observed that neither genitive complements of N, nor prenominal possessors of genitive complements of N, can be extracted (Zlatić 1997; Bošković 2005):[52]

(42) a. *[Ovog   studenta]$_i$ sam pronašla [knjigu t_i].
       this:GEN.MSG student:GEN.MSG I.am found   book:ACC.FSG
       '(*)Of this student, I found the book.' (Zlatic 1997:40, ch. 5)

---

[52] Other languages in which structural genitives cannot be extracted from xNP include Basque (Artiagoitia 2012) and German (e.g., Gavruseva 2000; Klaus Abels p.c.). In addition, Corver (1990) and Kariaeva (2009:243) show that Czech and Ukrainian respectively disallow both extraction of adnominal genitives and extraction out of them.

b.   *Čije_i   je on vidio [prijatelja [*t*_i majke]]?
          whose is he seen friend   mother
          'Whose mother did he see a friend of?' (Bošković 2005:8)

The present analysis thus accounts for the possibility of deep possessor-extraction, in languages with recursive agreeing possessors, and the ban on extraction from non-agreeing possessors, again without the need to invoke successive-cyclic movement and anti-locality.

4. Structural case, inherent case and PPs

4.1. Extraction of structural- vs. inherent-case dependents of N

The focus of the article so far has been on the extraction of xNPs and xAPs – in other words, constituents that potentially agree with N – from xNP. It has been shown that, in many cases, extractability correlates with overt agreement. As we have just seen, the present proposal also accounts for the ban on extraction of genitive arguments of N in Serbo-Croatian. This fact is particularly interesting because it shows that extractability is not simply determined by whether the relevant grammatical relation is 'recoverable' from overt morphology (*pace* Horn 1983:188). On the other hand, it does not seem to be entirely true that morphological case never has ameliorating effects on extraction. For example, Bošković (2012) observes that arguments of N are extractable from xNP in Serbo-Croatian if they bear inherent case. Bošković (2012; 2014b) and Talić (2013) attempt to account for this fact by treating inherent-case complements of N as PPs headed by a silent P (cf. Emonds 1987; Asbury 2008). This additional structure then permits the xNP complement of this P to be extracted without violating anti-locality. The extractability of both PP and inherent-case arguments of N seems to be a serious problem for the present analysis, as it should simply not be possible for any constituent to be extracted from xNP, regardless of the presence of a (silent or overt) P. In this section, I will argue for an alternative analysis of the extraction of inherent-case and PP complements of N, based on the idea that (certain) Ps are predicates that license an external argument, like Vs but in contrast to Ns. I will show that this analysis is arguably preferable to one based on anti-locality.

        Recall that the present account of Serbo-Croatian (42a) is based on the idea that the host N must project in order to license the structural genitive xNP formally via c-selection. As a result, the PIC prevents extraction of the genitive. By contrast, Bošković's (2014b) account of (42a) is based on the idea that NP is a phase in Serbo-Croatian. In that case, the impossibility of extracting complements of N follows from the anti-locality condition, which prevents the genitive from moving from the complement position of N to the escape hatch position SpecNP. There are, however, reasons to doubt that this is the right approach in general to the ban on extraction of structural-case complements. For example, consider the behaviour of genitive arguments of N in Colloquial Finnish (see, e.g., Vainikka 1989; 1993; Brattico and Leinonen 2009 for arguments that genitive in Finnish is structural), which has developed a definite article based on the demonstrative *se* 'this', and hence can be considered a DP language (e.g., Franks 2007). In this language, genitive possessors, which uniformly precede the noun, are flexible in their positioning with respect to the definite article, as shown in (43) (examples from Otto Nuoranne p.c.):

(43)   a.   se   Jannen   koira
                the   John- GEN dog
       b.   Jannen   se   koira
                John-GEN   the   dog
                Both: 'John's dog'

It seems reasonable to assume that the possessor in (43b) occupies SpecDP or some other specifier position higher than D. Under Bošković's approach, then, further extraction of the possessor would not violate anti-locality, and hence should be possible. In fact, though, LBE in general is impossible in Colloquial Finnish (Franks 2007):[53]

(44) *Jannen$_i$ vihaan   [t_i sitä   kissaa].
      John:GEN hate:1SG   the:PART cat:PART
      'I hate John's cat.' (Otto Nuoranne p.c.)

Under the present analysis, these examples fall together with Serbo-Croatian (42a). As the genitive possessor does not participate in overt agreement with its host N, it must be formally and thematically licensed under domination by a projection of the possessum. As a result, the PIC prevents extraction of the possessor from the possessum.[54]

     We now turn to a potentially problematic fact for the present analysis, namely that inherent-case complements of N can be extracted in Serbo-Croatian, as shown in (45a) (Zlatić 1994; Bošković 2014b). That it is inherent case that facilitates extraction here is further supported by the fact that adnominal genitives in Greek and Russian may also be extracted (see Anagnostopoulou 2003; Franks 1994 for evidence that adnominal genitive is inherent in Greek and Russian respectively):[55]

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[53] Literary Finnish, which lacks articles and hence can be classified as an NP language, allows AP-extraction from NP (Franks 2007). Because possessives contrast with APs in not exhibiting a true agreement paradigm, the present proposal would predict that possessor extraction should be impossible even in Literary Finnish. I have not been able to test this prediction.

[54] Although Finnish does have a set of possessive affixes for all person and number combinations, they are obligatory only with pronominal (including *pro*) possessors, as shown in (ia). Full DP possessors, on the other hand, must occur without a possessive marker, as shown in (ib) (examples from Toivonen 2000:581–583):

(i)   a.   Pekka näkee hänen ystävänsä/*ystävän.
          Pekka sees his/her friend:3SG/friend:ACC
          'Pekka sees his/her friend.'
      b.   Pekka näkee Jukan   ystävän/*ystävänsä.
          Pekka sees Jukka:GEN friend:ACC/friend:3SG
          'Pekka sees Jukka's friend.'

It is this that differentiates Finnish from Hungarian, which requires a possessive marker (although not necessarily a fully agreeing one) with both pronominal and full DP possessors. This contrast might suggest that the possessive marker in Hungarian is crucially implicated in mediating the possession relation, while that in Finnish is not. Furthermore, the fact that pronominal possessors also cannot be extracted in Finnish, despite obligatory agreement, suggests that it is not strictly speaking the presence of an agreeing element that licenses extraction, but the presence of an agreeing element that is crucially implicated in mediating the possession relation (i.e., obligatory in all cases).

[55] Kariaeva (2009) observes that genitive complements of N can be extracted in Ukrainian as well. Assuming that these also have inherent-case status, this is accounted for. However, another observation of Kariaeva's presents a puzzle for the analysis of inherent-case complements as PPs proposed below. Although LBE from an *in situ* inherent-case complement of N is not possible, LBE from an extracted inherent-case complement of N is possible (see also Fanselow and Ćavar 2002):

(i)   a.   *Ivan NOVOHO   zahubyv knyžku   profesora.
          Ivan new:GEN.MSG lost   book:ACC professor:GEN(MSG)
      b.   NOVOHO   Ivan profesora   zahubyv knyžku.
          new:GEN.MSG Ivan professor:GEN(MSG) lost   book:ACC
          Both: 'Ivan lost the book of the NEW professor.'

(45) a. Čime_i   ga je [pretnja   t_i] uplašila?
          what:INSTR him is threat:NOM scared
          'The threat of what scared him?' (Bošković 2014b:91)

      b. Tinos_i   mu   ipes   pos dhiavases [to vivlio t_i].
          who:GEN me.GEN you.said that you.read   the book
          'Whose book did you tell me you read?' (Horrocks and Stavrou 1987:89)

      c. [Ètogo   STUDENTA]_i ja našel [knigu   t_i].
          this:GEN.MSG student:GEN   I   found   book:ACC
          '(*)Of this STUDENT, I found a book.' (Elena Titov p.c.)

Bošković (2014b) argues that the difference between (42) and (45a) can be accounted for if inherent-case complements contain a silent case-assigning head (here, F) similar to English *of*, and if examples such as (45) involve movement of the NP complement of this functional head (NP$_2$ below):

(46)
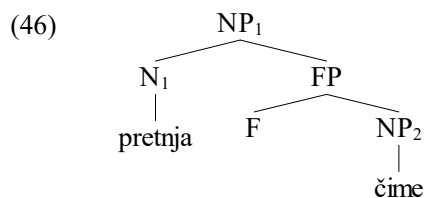
In order to extract NP$_2$ out of NP$_1$ without violating the PIC, NP$_2$ must first move to SpecNP$_1$, under standard assumptions. If NP$_2$ were the complement of N$_1$, then this movement would violate anti-locality, as it would not cross an XP boundary. On the other hand, given the presence of a silent functional head F, movement of NP$_2$ to SpecNP$_1$ crosses FP and hence does not violate anti-locality.

As Talić (2013) points out, this account suffers from a number of problems. The first concerns the status of FP, which could either belong to the extended projection of N$_2$ or constitute its own extended projection. Regardless of which is the case, though, FP would be expected to be phasal, which reintroduces the anti-locality problem: NP$_2$ must first move to SpecFP, but this would violate anti-locality. A second problem is that it is not clear why F can be stranded by extraction of NP, as is necessary under this analysis, because Serbo-Croatian does not normally allow P-stranding. Finally, not just inherent-case NPs, but also PPs, may be extracted from NP in Serbo-Croatian. Given that this should involve movement of a PP complement of N to SpecNP prior to onward movement, PP-extraction should violate anti-locality. Talić notes that the obvious solution to this problem – postulating a silent F taking PP as its complement – is implausible, as PPs do not receive case. Bošković's (2014b) response to this specific problem is to treat all PP dependents of N in Serbo-Croatian as adjuncts. Given the assumption that a PP adjoined to NP is not dominated by NP, PP may be extracted without first moving to SpecNP, and hence without violating anti-locality. Talić, however, finds this unappealing in that it requires us to treat semantically equivalent PPs as complements in English but as adjuncts in Serbo-Croatian, without independent motivation.

Talić's own analysis is based on Bošković's (2013b) treatment of 'extraordinary left-branch extraction', a phenomenon involving apparent movement of a non-constituent (P plus the A modifying its complement NP) out of NP – see (47a) below. Bošković argues that extraordinary LBE does not involve non-constituent movement; rather, the AP first moves to SpecPP, with the P subsequently undergoing procliticisation to AP (not indicated below). P+AP then makes up a constituent and can thus undergo further movement. Although the first movement violates anti-locality, Bošković and Talić assume that this violation, which is registered on the head of the phase to whose specifier the illegitimate movement takes place, is avoided if that head is not realised at PF, as

is the case here. Talić adapts this analysis to extraction of PP and inherent-case complements of N, arguing that in both cases NP moves to SpecPP and P procliticises to N, as in (47c) for (45b):

(47)   a.   U   veliku   on   uđe   sobu.
                In   big   he   entered room
   'He entered the big room.' (Bošković 2005:30)

       b.   c.
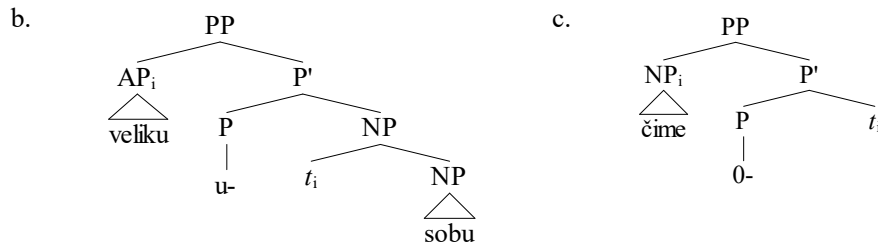
Certain aspects of this analysis, too, seem questionable. First, as with the assumed movement to SpecxNP that precedes movement out of xNP, there does not appear to be any strong evidence, besides extraordinary LBE itself, for movement to SpecPP. In addition, like Bošković's approach to LBE, the analysis relies on a distinction between the underlying adjoined position of nominal modifiers and the landing site, a specifier position. This is crucial in order to ensure that the launching site of the modifier is not dominated by NP, while the landing site of the modifier is dominated by PP. Yet it is not really clear that there is any independent motivation for this distinction in the status of the modifier's underlying and base positions, and so this aspect of the analysis looks somewhat stipulative. Furthermore, the analysis relies on Bošković's idea that the anti-locality violation induced by AP-movement to SpecPP in (47b) is cancelled by procliticisation of P; this is because of his assumptions that (i) the anti-locality violation is registered on the phase head P as a PF-uninterpretable feature and (ii) this feature is not present on the trace/copy of P. It is not clear, however, in what sense an anti-locality violation could plausibly be a property of the PF interface. Finally, and perhaps most seriously, it is not clear how procliticisation is able to feed XP-movement under this analysis. As the P attaches at the phrasal level, cliticisation here cannot be derived by head-movement, as might be expected if it were purely syntactic. The most obvious alternative is that it is a kind of PF-movement, but in that case it should not be able to feed further movement of P+A, under standard assumptions.

4.2. Inherent-case and PP dependents of N as adjuncts
I would like to suggest that the view of 'extraction from xNP' put forth in this paper offers an alternative perspective on the facts in §4.1 that can account for the extractability of PP and inherent-case dependents of N without suffering from the above problems. The solution I will sketch here is once again based on the idea that apparent extraction from xNP in fact involves extraction from an adjoined position not dominated by any of xNP's categorial labels. Thus, I suggest that extractable PP dependents of N, even those that are semantically arguments, are syntactically adjuncts (e.g., Grimshaw 1990, Bošković 2014b).[56] How can PP be adjoined in this sense, given that there is no

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[56] Grimshaw (1990) divides PP dependents of N into true adjuncts, a(rgument)-adjuncts and true arguments (see also, e.g., Zubizarreta 1985; Szabolcsi 1992; Samek-Lodovici 2003). While true adjuncts such as the *by*-phrase in (ia) merely modify the R-role of the head N, a-adjuncts such as the *by*-phrase in (ib) modify a thematic role belonging to N's LCS. The treatment of both of these as syntactic adjuncts is supported by the fact that they are optional (Grimshaw 1990:109). By contrast, complex event nominals take true arguments (complements), such as the *of*-phrase in (ib), as reflected by the fact that these are obligatory (the adjective *constant* here forces the complex event interpretation):

overt phi-feature agreement between PP and its xNP host? I would like to suggest that, contrary to first appearances, P does in fact agree overtly, but that agreement here is with a theta-role rather than with a set of phi-features. That is, given that a particular preposition normally specifies thematic information (e.g., *to* for Goals; *for* for Beneficiaries; *by* for Agents), it can be seen as overtly agreeing with thematic information present in the predicate of which the PP is a dependent. Consider, for example, the English DP *an invasion of Iraq*. Here it is clear that, semantically at least, the PP represents a Theme argument of the head N. Suppose, following Grimshaw (1990), that nouns (with the possible exception of those heading complex event nominals) do not assign syntactic theta-roles, but do have a semantic argument structure as part of their 'lexical conceptual structure' (LCS). Thus, the LCS of the noun *invasion*, for example, would be expect to have at least Agent and Theme arguments. I will assume that such 'theta-roles' are syntactically present, but are represented as simple privative features rather than as selectors, and that they may percolate to the highest node in xNP, being a property of the extended projection as a whole. On this analysis, the structure of *an invasion of Iraq* will look as in (48):

(48)
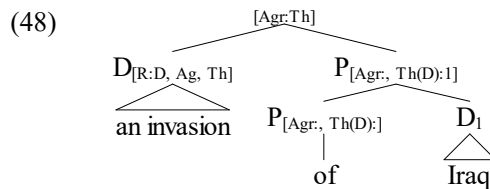
That is, P c-selects for a DP Theme complement, and the Agree relation P establishes with *an invasion* then identifies P's Theme with the Theme argument of *invasion*.

Given this proposal, we can account for the fact that, in contrast to structural-case dependents of N, PP 'arguments' of N can be extracted, as illustrated below for English and Serbo-Croatian (examples from Talić 2013:134–135):

(49) a. ?To which problem did you discover solutions?
      b. Za koji problem si otkrio rjesenja?
          to which problem you.are discovered solutions

Given the assumption that inherent-case xNPs are PPs, we can also account for the fact that inherent-case dependents of N can be extracted, as seen in (45) above. Next, consider the fact that the examples in (45) and (49b) involve extraction from a structural-case (accusative) NP. What about extraction from PPs and inherent-case NPs (also PPs, under this account)? I will assume, in common with Talić, that PP is a phase (see also van Riemsdijk 1978; Abels 2012), and make the further assumption that PP, like NP, lacks an escape hatch in Serbo-Croatian.[57] We can then immediately account for a

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(i) a. a book (by Chomsky)
     b. the constant assignment *(of unsolvable problems) (by the teacher)

If this basic division in syntactic adjuncts and complements is correct, the analysis in the main text predicts that true arguments of complex event nominals should not be extractable, as this should violate the PIC. Unfortunately, because complex event nominals must occur with a definite determiner (or a definite possessor), it is difficult to control for the possibility that (ii) is relatively bad because of a 'definiteness island' effect:

(ii) ?*Of what kind of problems did you witness the constant assignment by the teacher?

[57] In a previous draft, I suggested that PPs might universally lack an escape hatch. As two reviewers point out, this raises the question of how to account for P-stranding. One reviewer notes that, if PPs generally lack an

difference that has been observed in the literature between accusative and dative NPs in Serbo-Croatian: only accusative NPs permit extraction of PPs (Fanselow and Ćavar 2002; cf. Starke 2001; all subsequent Serbo-Croatian judgements from Radovan Miletić p.c.):

(50)   a.   Iz   kojeg grada je uvredio devojku?
                from which city   is insulted girl
                'He insulted a girl from which city?'
       b.   *Iz   kojeg grada se   zahvalio   devojci?
                from which city   REFL thanked   girl
                'A girl from which city was thanked?'

By contrast, both accusative and dative NPs appear to allow left-branch extraction of agreeing modifiers:

(51)   a.   Koju   devojku je uvredio?
                which   girl   is insulted
                'Which girl did he insult?'
       b.   ?Kojoj se   zahvalio devojci?
                which REFL thanked girl
                'Which girl was thanked?'

The possibility of (51b) is expected provided that whatever allows for extraordinary LBE in examples such as (47a) also allows it for the silent P of inherent-case 'NPs'. Examples such as (47a) have typically been analysed in terms of a standard underlying structure in which P selects for NP and A is adjoined to NP (e.g., Franks and Progovac 1994; Bošković 2005; 2013b; Talić 2013). Under the present analysis, however, there is another possibility to consider. Note that the languages in which extraordinary LBE has been documented, such as the Slavic languages and Greek (Bošković 2005; Kariaeva 2009), show overt agreement between the head N and the modifier. Under present assumptions, then, examples such as (47a) might be expected to involve an adjunction structure consisting of the P+A adjoined to the N (cf. Borsley and Jaworska 1989), licensed by agreement between A and N. Suppose, accordingly, that P's c-selectional feature in these languages can be satisfied not only by N, but also by A. This can be implemented either by treating A as nominal (cf. the classification of A as [+N +V] in Chomsky 1970), or by stipulating that P selects for K (case). The suggested structure underlying (47) is given in (52):

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escape hatch, P-stranding must involve adjunction of xNP to PP under the present analysis. The reviewer notes that this analysis might account for why P-stranding is easier with prepositions that are more functional in nature, as these are less likely to assign a theta-role and thus to require an Agree relation between P and the xNP. The reviewer further notes that this might also help to account for the fact that P-stranding in English goes hand-in-hand with loss of case morphology, if (as seems plausible) case cannot be assigned across an adjunction structure. Furthermore, pied-piping tends to prefer preservation of case in examples such as *With who(m) did you go out?*. From a cross-linguistic perspective, too, this analysis is consonant with the fact that the P-stranding Germanic languages have much less case morphology than the non-P-stranding ones. On the other hand, given that xNPs are standardly assumed to bear abstract Case features whether or not they are realised morphologically, together with the fact that the Germanic P-stranding languages do not lack morphological case altogether, I leave this as an unresolved issue, assuming in the main text that languages are parameterised with respect to whether PP is an escape hatch.

(52)

$V_{[Go(P):2]}$

$V_{[Go(P):]}$ $[Agr1*2:\#]$

uđe

$P_{2[Agr2, Go(N):1]}$ $N_{[Agr1:]}$

$P_{[Go(N):]}$ $A_{1[Agr2:]}$ sobu
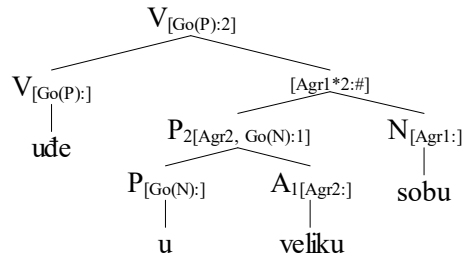
u   veliku

I am assuming here that the Agree selector of P is optional, so that P here only selects for a Goal complement; the resulting PP is then selected for by the verb, as it is the closest P-bearing constituent dominated by V's theta/c-selector. The A *veliku* in turn satisfies P's c-selectional feature and introduces its own Agree selector, which percolates upwards until it is identified with the Agree selector of N, the identified selector then being satisfied by default. Given this structure, P+A can be extracted without violating the PIC, as it is not dominated by a label of N. Likewise, if inherent-case NPs involve a silent P, then the contrast between (50b) and (51b) can be accounted for: extraordinary LBE – and hence a structure like (52) – is possible with a pre-nominal modifier such as *kojoj*, but not with a post-nominal modifier such as *iz kojeg grada*.

Finally, the analysis predicts that extraction *from* a dependent of N should be impossible. This appears to be borne out by the examples in (53–54), showing that standard and extraordinary LBE from a dependent of N are difficult are impossible in Serbo-Croatian and Russian (note that the Russian noun *pomošč* 'help' requires inherent dative case on its complement):[58,59]

(53)   a.   ?/*Kakvom$_i$ ga   je uplašila [pretnja   [t_i smrću]]?
            what.kind.of:INSTR.MSG him is scared   threat:NOM   death:INSTR
            'Of what kind of death did a threat scare him?'

       b.   *Kakomu$_i$ ego   obradovala [pomošč   [t_i rebënku]]?
            what.kind.of:DAT.MSG him.ACC   pleased   help.NOM   child:DAT
            'The help (given) to what kind of child pleased him?' (Elena Titov p.c.)

(54)   a.   *[Za   koji]$_i$ si   otkrio [rješenja [t_i problem]]?
            to   which are discovered solutions   problem
            'To which problem have solutions been discovered?'

       b.   *[Do kotoroj]$_i$ ty znaeš' [dorogu   [t_i derevni]]?
            to   which:GEN.FSG you know road:ACC   village:GEN
            'Which village do you know the road to?' (Elena Titov p.c.)

The difficulty of LBE from a dependent of N is surprising under Talić's analysis, as it should be possible for the *wh*-word to move to SpecPP without violating anti-locality – in (53) because the P is null, and hence no anti-locality violation arises; in (54) because P can procliticise to the *wh*-word, cancelling the anti-locality violation. By contrast, I would like to suggest that the present analysis can account for the ill-formedness of (53–54). For example, (55a) represents the structure that would be necessary to derive (54b):

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(55)   a.

N[R:#, Go]   [Agr1*2*3:#]
dorogu   P2[Agr2*3:, Go(N):1]   N[Agr1:]
              P[Agr3:, Go(N):]   A1[Agr2:]   derevni
              do   staroj

b.

                    [Agr3:Go]
N[R:#, Go]   P2[Agr3:, Go(N):1]
dorogu   P[Agr3:, Go(N):]   [Agr1*2:#]
              do   A[Agr2:]   N1[Agr1:]
                                  staroj   derevni
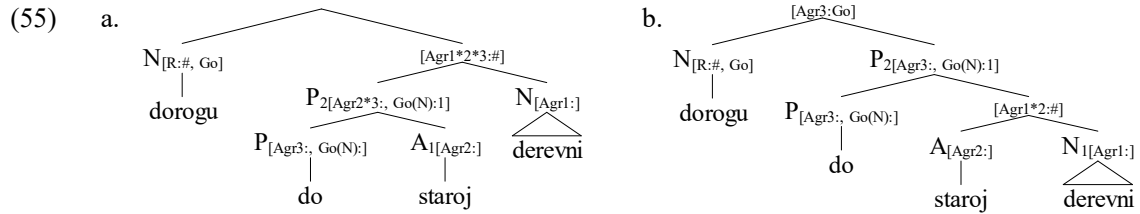
Here, in order for the 'PP' *do staroj derevni* to be interpreted as a dependent of N, P must introduce an Agree selector that can be satisfied by the Goal feature of N. In the 'P+A' structure in (55a), however, assuming that Agree selectors are not distinguished in the syntax, the Agree selector of P will necessarily be identified with that of A (cf. the discussion of theta-roles and identification in Neeleman and Van de Koot 2002), and ultimately with that of the N *derevni*, and hence will be unable to reach the node immediately dominating the host N *dorogu*. By contrast, in the 'standard' structure in (55b), the Agree selector of P can percolate upwards and be satisfied by the Goal role of *dorogu* without encountering the Agree selectors of A and N. In this case, however, P and A do not form a constituent, and so extraordinary LBE is ruled out. This accounts for the examples in (53) and (54), though with the caveat in footnote 58.

　　　For space reasons, a fuller discussion of extraction in SC must be left for future work (see, e.g., Bošković 2014b for an indication of some of the challenges that must be met). Nevertheless, I have tried to show that the present proposal enables an analysis of extraordinary LBE that does not suffer from some of the problems of 'successive-cyclic' approaches. In particular, it avoids reference to two conceptually problematic aspects of Talić's analysis: anti-locality (see p. 24) and the idea that extraordinary LBE is derived through procliticisation of P (presumably PF-movement) followed by narrow-syntactic movement.

5. Conclusion

I have argued that xNPs are phases that do not permit successive-cyclic movement, in the spirit of Bach and Horn (1976) and Bosque and Gallego (2014). Whereas these authors focus on apparent extraction of PP from xNP, the main focus here has been on the extraction of xNPs (possessors) and xAPs, elements that potentially enter into an overt agreement relation with their host. I argued that this agreement relation represents a morphological satisfaction of the host N's theta-selector, with the agreeing affix introducing its own Agree selector that enables it to be linked semantically to a possessor or AP. The analysis is supported by the robust cross-linguistic correlation between (potentially) overt agreement and extraction. Furthermore, the peripherality restriction that holds of possessor-extraction – as well as the exceptions to it discussed in §3.3 – are more straightforwardly accounted for by simply treating xNP as uniformly blocking extraction than by permitting successive-cyclic movement through SpecxNP but restricting it through an anti-locality condition. §4 examined an apparent exception to the agreement/extraction generalisation: the mobility of PP and inherent-case dependents of N. I proposed a solution based on the idea that (certain) Ps take their xNP 'host' as an external argument. While serious questions remain about the mechanisms governing apparent PP-extraction from xNP (e.g., Bosque and Gallego 2014; Cinque 2014), this analysis once again seems preferable to an anti-locality-based account.

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